Appendix C Vol. 3

HRGS Borehole Geophysical Logging – Data Report

HRGS

BOREHOLE GEOPHYSICAL LOGGING – DATA REPORT
FORT DRUM ERCIP WELL FIELD EXPANSION PROJECT
FORT DRUM ARMY AIRBASE, NEW YORK

Prepared for:

Arcadis U.S., Inc
One Lincoln Center, 110 West Fayette Street
Syracuse, New York 13202

Prepared by:

Hager-Richter Geoscience, dba HR Geological Services in New York

2 Industrial Way S/2	846 Main Street
Atkinson, New Hampshire 03811	Fords, New Jersey 08863

Robert L. Garfield, P.G. (NY 000041)
Owner / Principal Borehole Geophysicist

File 24RG60
January 2025

© 2025 Hager-Richter Geoscience, Inc., dba HR Geological Services in New York

HAGER-RICHTER GEOSCIENCE
Atkinson, NH & Fords, NJ

HRGS
HAGER-RICHTER GEOSCIENCE

GEOPHYSICS FOR THE ENGINEERING & ENVIRONMENTAL COMMUNIITIES

2 Industrial Way S/2, Atkinson, NH 03811 (603.893.9944)
846 Main Street, Fords, NJ 08863 (732.661.0555)

www.hager-richter.com

January 7, 2025
File 24RG60

Suzie Bower
Arcadis U.S., Inc
One Lincoln Center
110 West Fayette Street
Syracuse, New York 13202

Tel: 315.671.9147
Mob: 315.569.1663
Email: Suzie.Bower@arcadis.com

RE: Borehole Geophysical Logging
Fort Drum ERCIP Well Field Expansion Project
Fort Drum Army Airbase, New York

Dear Ms. Bower:

Hager Richter Geoscience, dba HR Geological Services in New York, (HRGS) is pleased to submit this data report to Arcadis U.S., Inc for borehole geophysical logging services provided in support of the Fort Drum ERCIP Well Field Expansion Project at the Fort Drum Army Airbase in New York.

BOREHOLE GEOPHYSICAL LOGGING SCOPE OF WORK

Borehole geophysical logging was conducted December 17-19, 2024, in the following seven (7) boreholes for the Fort Drum ERCIP Well Field Expansion Project at the Fort Drum Army Airbase in New York.

- A4-OBS-01D
- A4-OBS-11
- A4-OBS-12
- A4-OBS-13
- A4-OBS-14
- Well-3R
- Well-4R

The borehole geophysical logging program consisted of the following in each of the logged boreholes. At the time of the borehole geophysical logging field work, each borehole was cased with 4-inch steel casing through the overburden and unstable shallow bedrock, and each borehole had 3.8-inch diameter open bedrock below the casing available for the borehole geophysical logging.

- Optical Televiewer (OTV)
- Acoustic Televiewer (ATV)
- Caliper
- Fluid Temperature
- Fluid Conductivity
- Heat Pulse Flow Meter (HPFM) Under Ambient Conditions

HRGS

EXPLANATION OF THE BOREHOLE GEOPHYSICAL DATA INTERPRETATION AND PRESENTATION

The datum for depths in this report is the top of the steel casing of each borehole. The optical televiewer (OTV) data and acoustic televiewer (ATV) data are referenced to true north using a magnetic declination of 12° west. The data report consists of the following.

Borehole Geophysical Logging Figure – The borehole geophysical logging figure is meant to be printed on standard portrait 8.5-inch x 11-inch paper and consists of the following.

Figure 1. Televiewer explanation figure

- **Borehole Geophysical Logs** – The borehole geophysical logs are provided at a scale of 1-inch to 2-feet, are meant to be printed on 11-inch-wide paper, and consist of the following.

Track #	Log & Description
1.	OTV Image
2.	Depth
3.	ATV Amplitude
4.	ATV Travel Time
5.	Caliper – borehole diameter in inches
6.	Fluid Temperature & Fluid Conductivity
7.	Depth
8.	HPFM Under Ambient Conditions Borehole Flow Interpretation

- **Summary of Borehole Flow Tables** – The borehole flow tables summarize the borehole flow conditions in each borehole individually, are meant to be printed on standard portrait 8.5-inch x 11-inch paper, and consists of the following.

Column #	Description
1.	Depth
2.	Comments o Borehole Conditions/Construction o Borehole Flow Interpretation

BOREHOLE GEOPHYSICAL LOGGING RESULTS

Summary of Borehole Flow. The borehole flow interpretation is based primarily on the HPFM data acquired under ambient conditions along the with fluid properties (temperature and conductivity) and the presence of open bedrock fractures evident in the borehole televiewer (OTV and ATV) data. The tables provided in this data report summarize the borehole flow condition in each borehole at the time of logging, specifically the approximate depths and rates where flow was detected with the HPFM into and out of the boreholes from hydraulically transmissive bedrock fractures under ambient conditions.

HRGS

LIMITATIONS ON USE OF THIS REPORT

This data report was prepared for the exclusive use of Arcadis U.S., Inc. No other party shall be entitled to rely on this Report, or any information, documents, records, data, interpretations, advice, or opinions given to Client by Hager Richter Geoscience, dba HR Geological Services in New York, (HRGS) in the performance of its work. The report relates solely to the specific project for which HRGS has been retained and shall not be used or relied upon by Client or any third party for any variation or extension of this project, any other project, or any other purpose without the express written permission of HRGS. Any unpermitted use by Client or any third party shall be at Client's or such third party's own risk and without any liability to HRGS.

HRGS has used reasonable care, skill, competence, and judgment in the performance of its services for this project consistent with professional standards for those providing similar services at the same time, in the same locale, and under like circumstances. Unless otherwise stated, the work performed by HRGS should be understood to be exploratory and interpretational in character and any results, findings or recommendations contained in this report or resulting from the work proposed may include decisions which are judgmental in nature and not necessarily based solely on pure science or engineering. It should be noted that our interpretations may be modified if additional information is provided to HRGS.

Except as expressly provided in this Limitations section, HRGS makes no other representation or warranty of any kind whatsoever, oral or written, expressed or implied; and all implied warranties of merchantability and fitness for a particular purpose, are hereby disclaimed.

If you have any questions or comments on this data report, please contact us at your convenience. It has been a pleasure to work with Arcadis U.S., Inc. on this project. We look forward to working with you again in the future.

Sincerely,
HAGER-RICHTER GEOSCIENCE, INC.

Robert L. Garfield

Robert L. Garfield, P.G.
Owner / Principal Borehole Geophysicist

HRGS

BOREHOLE GEOPHYSICAL LOGGING FIGURE

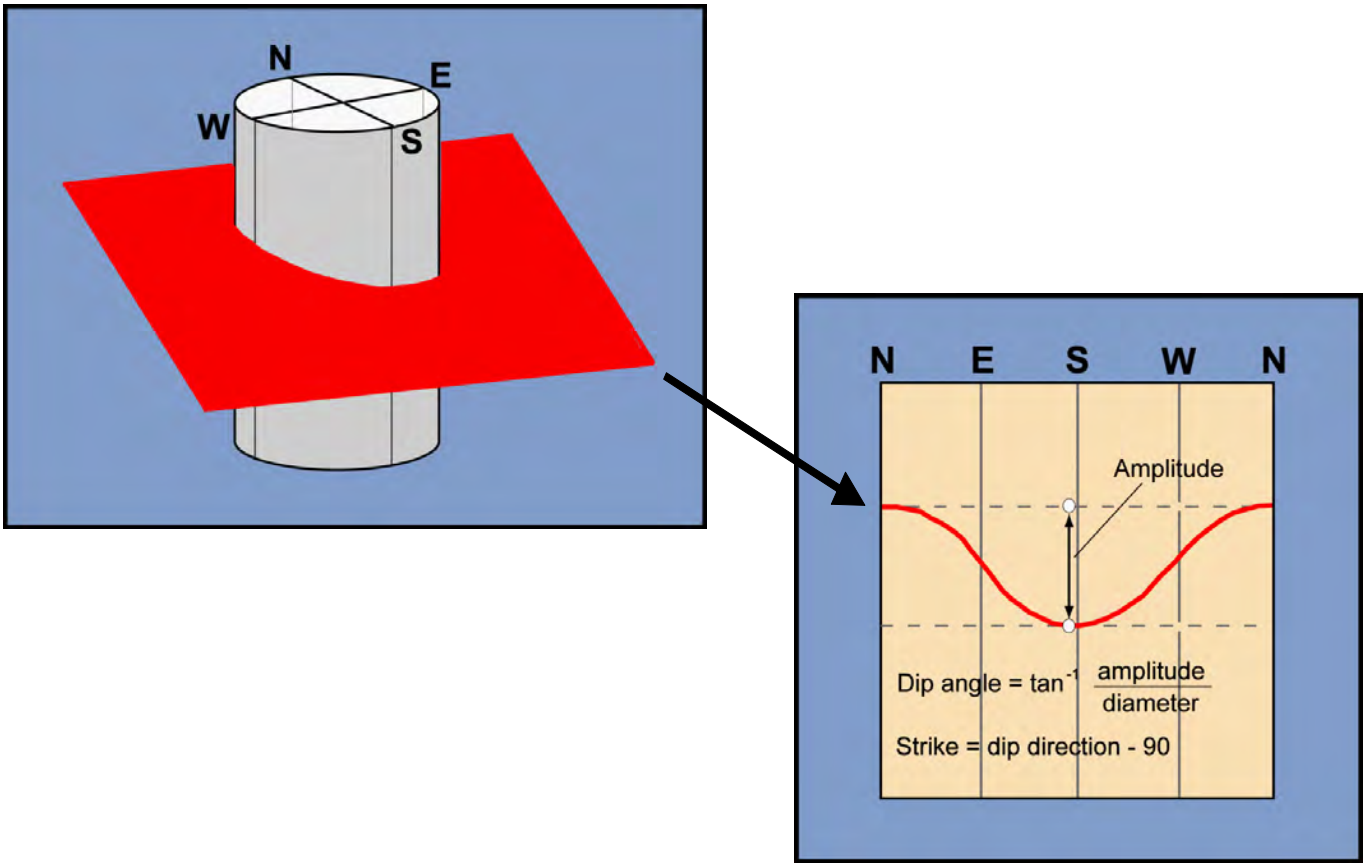


Figure 1. Televiewer explanation. The image on the left depicts a planar structure in red, such as a fracture or bedding plane, intersected by a borehole. The image on the right depicts the same structure unwrapped as it would be displayed in an optical televiewer (OTV) or acoustic televiewer (ATV) log.

Figure modified from: Garfield, R.L., Day-Lewis, F.D., Gray, M.B., Johnson, C.D., Williams, J.H. and Day-Lewis, A.D.F., 2003, Fractured-Rock Aquifer Characterization within a Regional Geologic Context: Results from the Bucknell University Hydrogeophysics Test Site, GSA Northeastern Section, 38th Annual Meeting, Paper No. 25-19.

HRGS

BOREHOLE GEOPHYSICAL LOGS

HRGS
dba HR Geological Services in New York

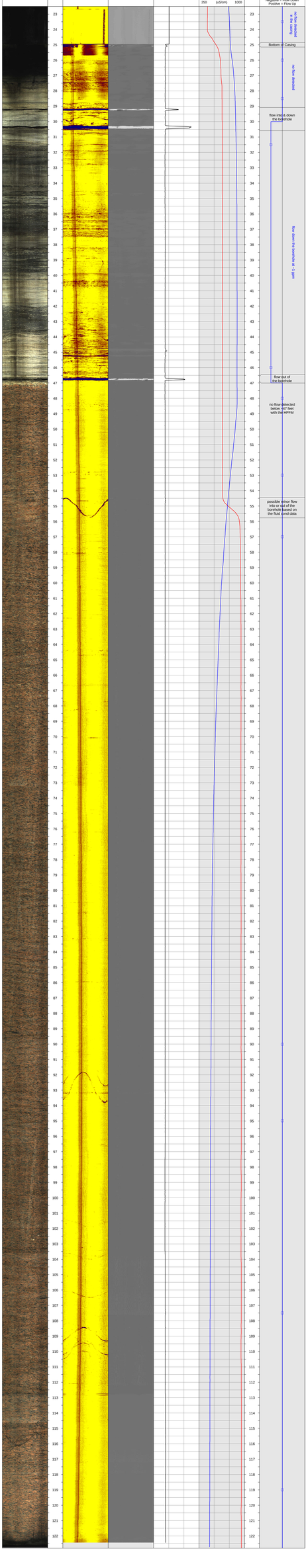
Atkinson, NH (603.893.9944)
Fords, NJ (732.661.0555)

www.hager-richter.com

A4-OBS-01D - BOREHOLE GEOPHYSICAL LOGS

CLIENT:	ARCADIS U.S.	HRGS FILE:	24RG60
PROJECT:	Fort Drum ERCIP Well Field Expansion Project	LOG DATUM:	Top of the 4-inch Steel Casing
LOCATION:	Fort Drum Army Airbase, New York	TOP OF CASING:	3.0 Feet Above the Ground Surface
LOGGING GEOPHYSICIST(S):	Nick DeCristofaro & Vanja Dezelic	ORIENTATION REFERENCE:	True North (Magnetic Declination = 12° West)
PROJECT REP(S) ON-SITE:	Josh Miller	BOREHOLE DIAMETER:	3.8 Inches (HQ-Cored)
LOGS PROCESSED BY:	Robert Garfield, P.G. & Nick DeCristofaro	WATER LEVEL DEPTH:	4.9 Feet

A4-OBS-01D - Borehole Geophysical Logs



HRGS
dba HR Geological Services in New York

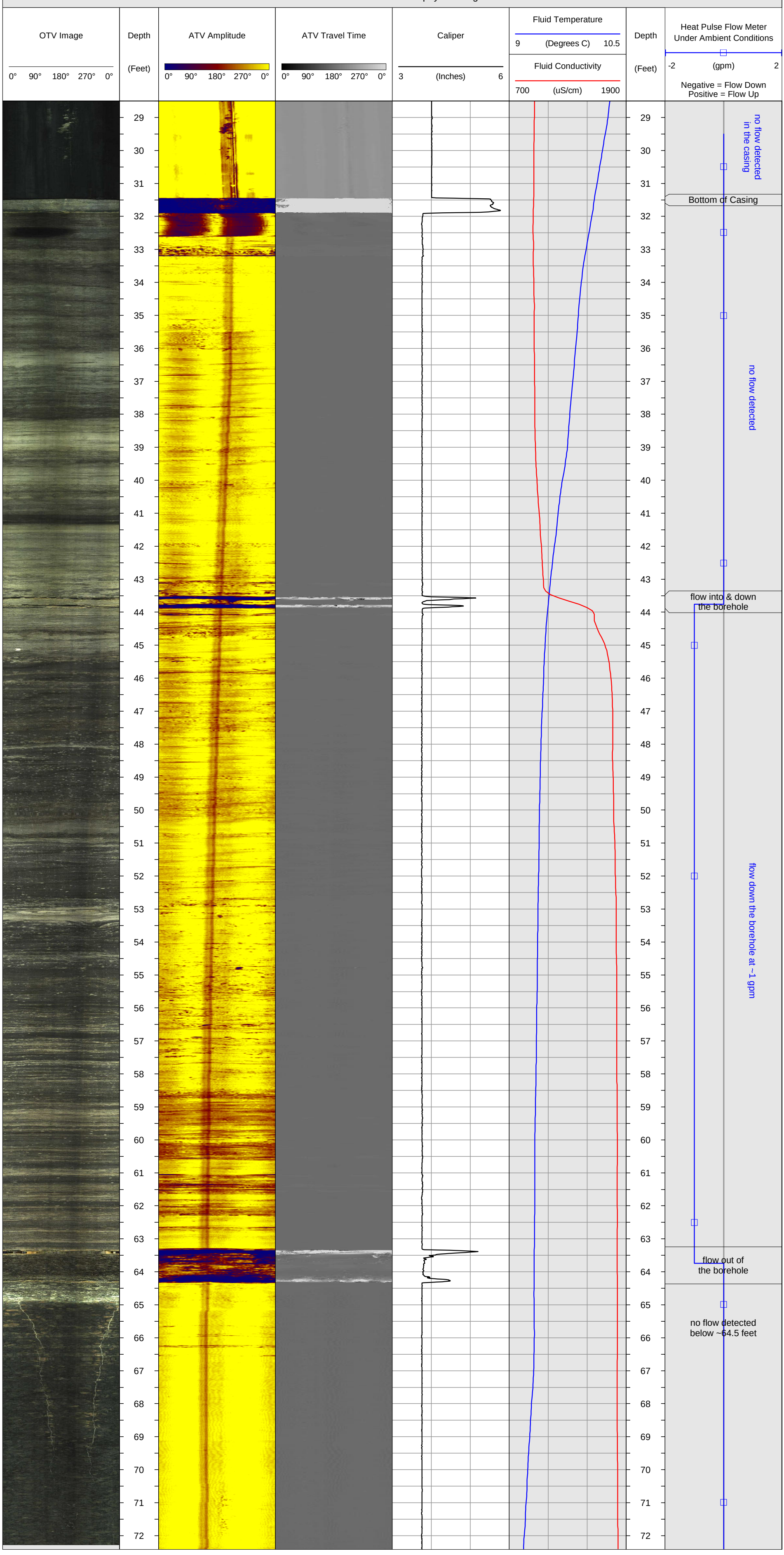
Atkinson, NH (603.893.9944)
Fords, NJ (732.661.0555)
www.hager-richter.com

A4-OBS-11 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: December 18 & 19, 2024

CLIENT:	ARCADIS U.S.	HRGS FILE:	24RG60
PROJECT:	Fort Drum ERCIP Well Field Expansion Project	LOG DATUM:	Top of the 4-Inch Steel Casing
LOCATION:	Fort Drum Army Airbase, New York	TOP OF CASING:	2.9 Feet Above the Ground Surface
LOGGING GEOPHYSICIST(S):	Nick DeCristofaro & Vanja Dezelic	ORIENTATION REFERENCE:	True North (Magnetic Declination = 12° West)
PROJECT REP(S) ON-SITE:	Josh Miller	BOREHOLE DIAMETER:	3.8 Inches (HQ-Cored)
LOGS PROCESSED BY:	Robert Garfield, P.G. & Nick DeCristofaro	WATER LEVEL DEPTH:	12.6 Feet

A4-OBS-11 - Borehole Geophysical Logs



HRGS
dba HR Geological Services in New York
Atkinson, NH (603.893.9944)
Fords, NJ (732.661.0555)
www.hager-richter.com

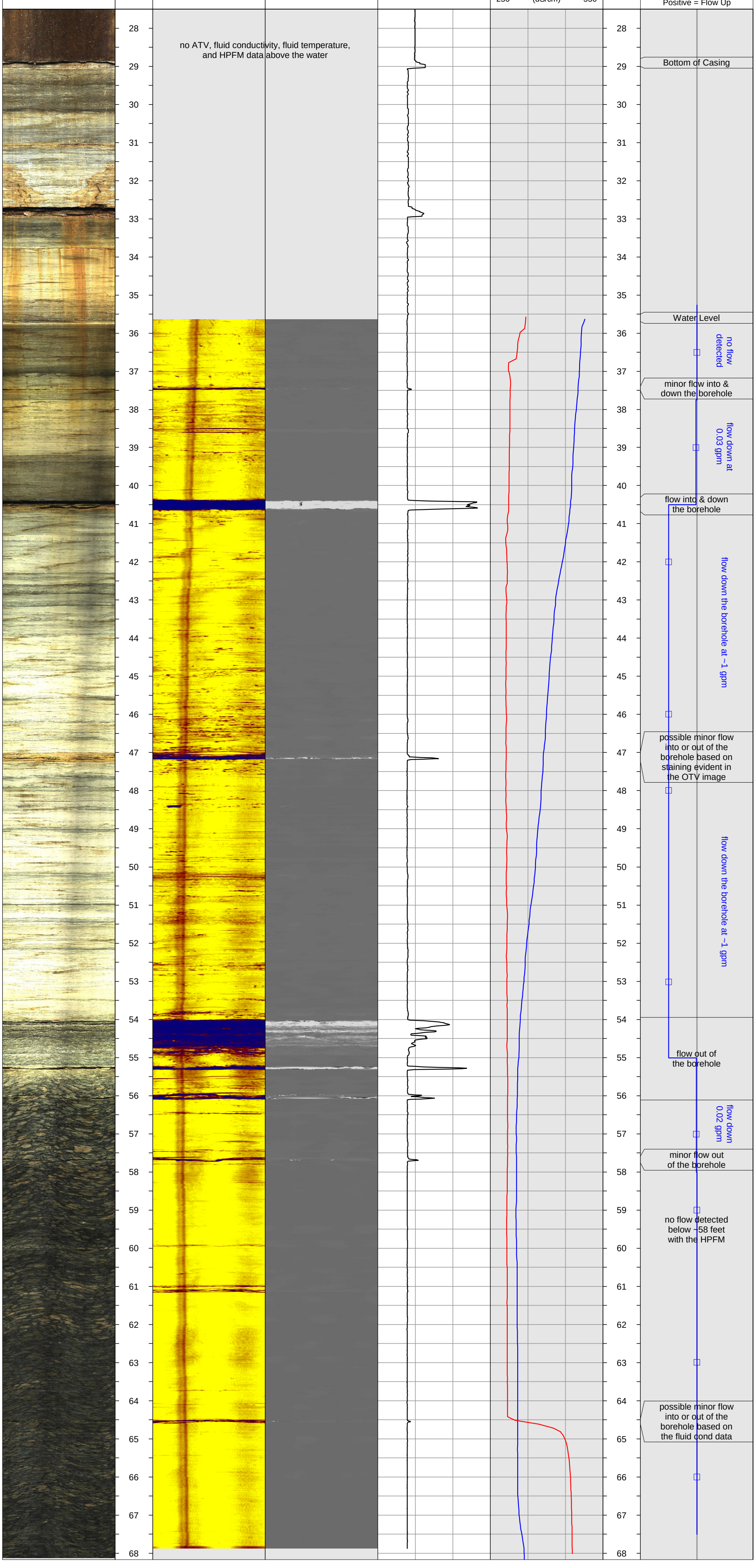
A4-OBS-12 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: December 18, 2024

CLIENT:	ARCADIS U.S.	HRGS FILE:	24RG60
PROJECT:	Fort Drum ERCIP Well Field Expansion Project	LOG DATUM:	Top of the 4-Inch Steel Casing
LOCATION:	Fort Drum Army Airbase, New York	TOP OF CASING:	2.9 Feet Above the Ground Surface
LOGGING GEOPHYSICIST(S):	Nick DeCristofaro & Vanja Dezelic	ORIENTATION REFERENCE:	True North (Magnetic Declination = 12° West)
PROJECT REP(S) ON-SITE:	Josh Miller	BOREHOLE DIAMETER:	3.8 Inches (HQ-Cored)
LOGS PROCESSED BY:	Robert Garfield, P.G. & Nick DeCristofaro	WATER LEVEL DEPTH:	35.5 Feet

NOTES: Acoustic caliper data can only be acquired in the water-filled portion of the borehole. The caliper data plotted in the logs below are 3-arm caliper data in the air-filled portion of the borehole and acoustic caliper data in the water-filled portion of the borehole.

A4-OBS-12 - Borehole Geophysical Logs



HRGS
dba HR Geological Services in New York

Atkinson, NH (603.893.9944)
Fords, NJ (732.661.0555)
www.hager-richter.com

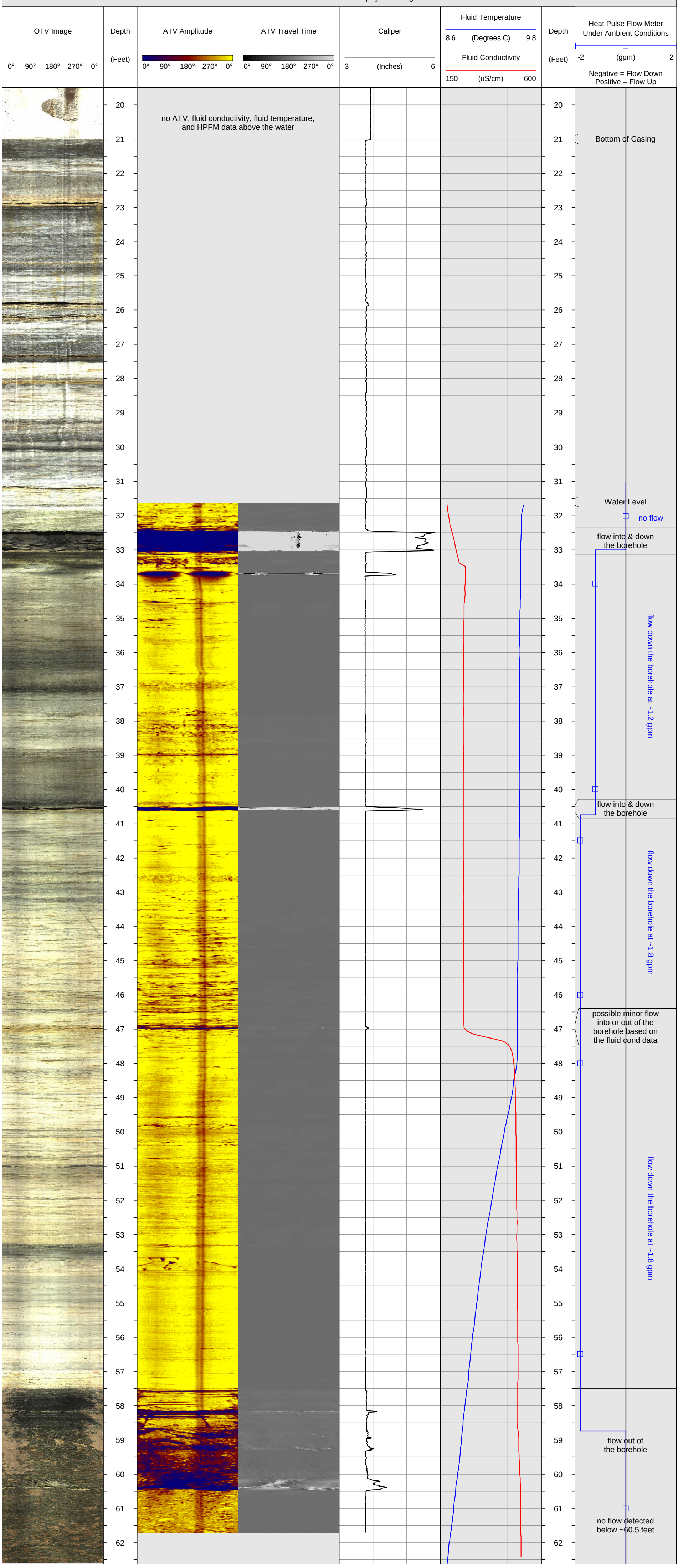
A4-OBS-13 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: December 17 & 18, 2024

CLIENT:	ARCADIS U.S.	HRGS FILE:	24RG60
PROJECT:	Fort Drum ERCIP Well Field Expansion Project	LOG DATUM:	Top of the 4-Inch Steel Casing
LOCATION:	Fort Drum Army Airbase, New York	TOP OF CASING:	3.1 Feet Above the Ground Surface
LOGGING GEOPHYSICIST(S):	Nick DeCristofaro & Vanja Dezelic	ORIENTATION REFERENCE:	True North (Magnetic Declination = 12° West)
PROJECT REP(S) ON-SITE:	Josh Miller	BOREHOLE DIAMETER:	3.8 Inches (HQ-Cored)
LOGS PROCESSED BY:	Robert Garfield, P.G. & Nick DeCristofaro	WATER LEVEL DEPTH:	31.6 Feet

NOTES: Acoustic caliper data can only be acquired in the water-filled portion of the borehole. The caliper data plotted in the logs below are 3-arm caliper data in the air-filled portion of the borehole and acoustic caliper data in the water-filled portion of the borehole.

A4-OBS-13 - Borehole Geophysical Logs



HRGS

dba HR Geological Services in New York

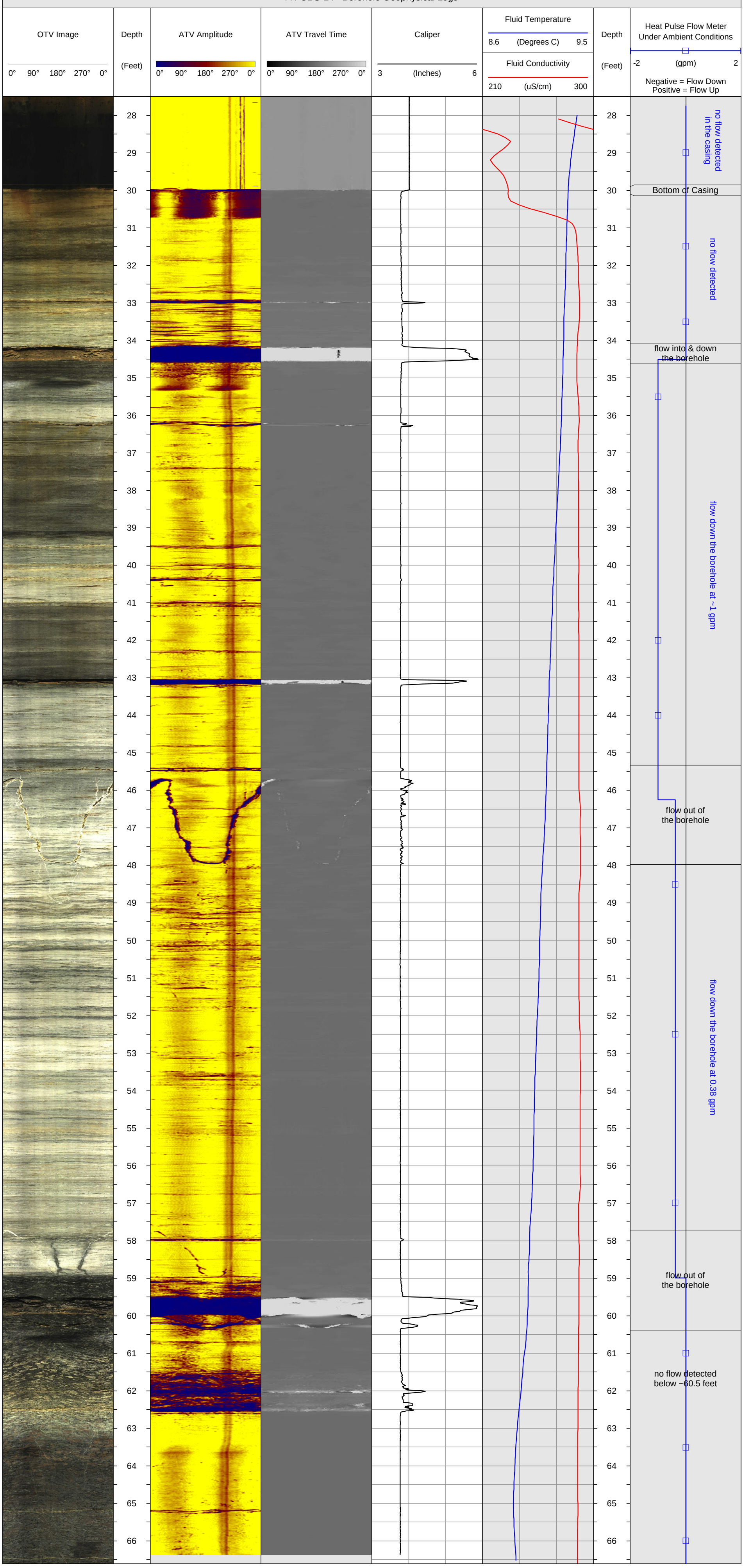
Atkinson, NH (603.893.9944)
Fords, NJ (732.661.0555)
www.hager-richter.com

A4-OBS-14 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: December 17 & 18, 2024

CLIENT:	ARCADIS U.S.	HRGS FILE:	24RG60
PROJECT:	Fort Drum ERCIP Well Field Expansion Project	LOG DATUM:	Top of the 4-Inch Steel Casing
LOCATION:	Fort Drum Army Airbase, New York	TOP OF CASING:	2.0 Feet Above the Ground Surface
LOGGING GEOPHYSICIST(S):	Nick DeCristofaro & Vanja Dezelic	ORIENTATION REFERENCE:	True North (Magnetic Declination = 12° West)
PROJECT REP(S) ON-SITE:	Josh Miller	BOREHOLE DIAMETER:	3.8 Inches (HQ-Cored)
LOGS PROCESSED BY:	Robert Garfield, P.G. & Nick DeCristofaro	WATER LEVEL DEPTH:	27.4 Feet

A4-OBS-14 - Borehole Geophysical Logs



HRGS

dba HR Geological Services in New York

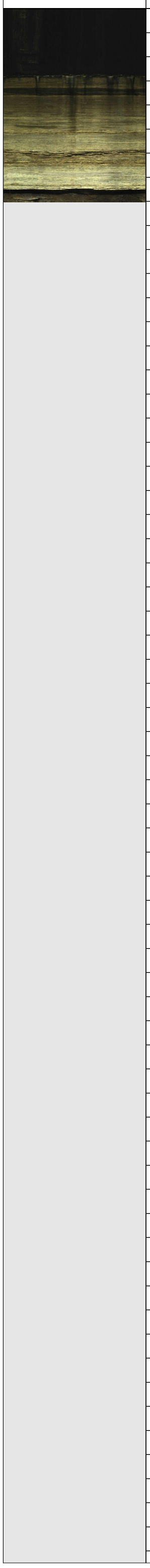
Atkinson, NH (603.893.9944)
Fords, NJ (732.661.0555)
www.hager-richter.com

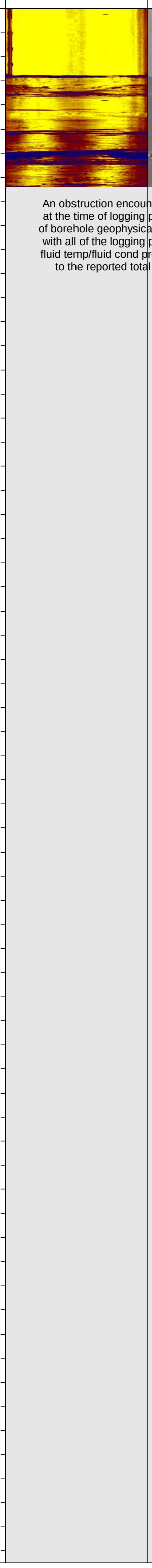
WELL-3R - BOREHOLE GEOPHYSICAL LOGS

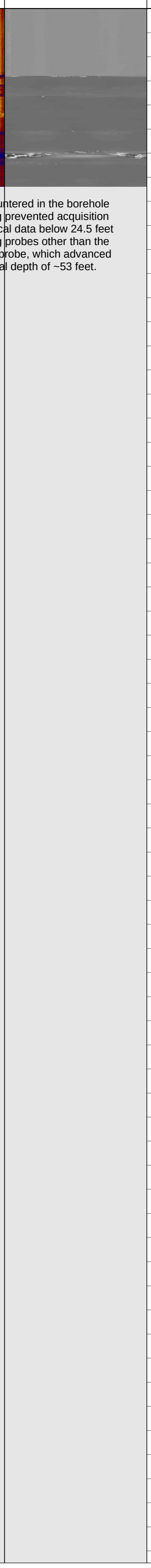
DATE(S) LOGGED: December 17 & 18, 2024

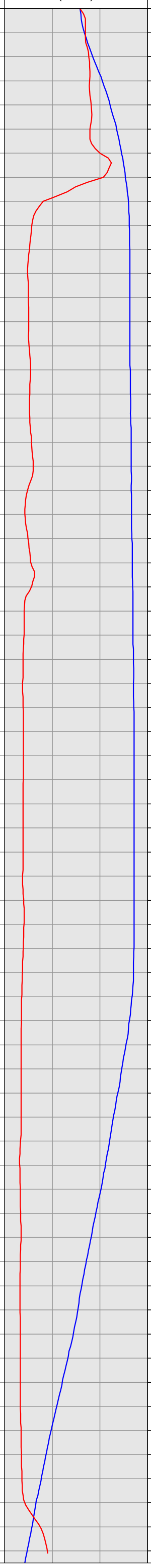
CLIENT:	ARCADIS U.S.	HRGS FILE:	24RG60
PROJECT:	Fort Drum ERCIP Well Field Expansion Project	LOG DATUM:	Top of the 4-Inch Steel Casing
LOCATION:	Fort Drum Army Airbase, New York	TOP OF CASING:	2.8 Feet Above the Ground Surface
LOGGING GEOPHYSICIST(S):	Nick DeCristofaro & Vanja Dezelic	ORIENTATION REFERENCE:	True North (Magnetic Declination = 12° West)
PROJECT REP(S) ON-SITE:	Josh Miller	BOREHOLE DIAMETER:	3.8 Inches (HQ-Cored)
LOGS PROCESSED BY:	Robert Garfield, P.G. & Nick DeCristofaro	WATER LEVEL DEPTH:	17.4 Feet

Well-3R - Borehole Geophysical Logs









Depth (Feet): 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52

An obstruction encountered in the borehole at the time of logging prevented acquisition of borehole geophysical data below 24.5 feet with all of the logging probes other than the fluid temp/fluid cond probe, which advanced to the reported total depth of ~53 feet.

Comments

- Bottom of Casing
- possible flow into or out of the borehole based on the fluid temp & fluid cond data
- possible flow into or out of the borehole based on the fluid cond data
- possible flow into or out of the borehole based on the fluid temp data
- possible flow into or out of the borehole based on the fluid cond data

HRGS
dba HR Geological Services in New York

Atkinson, NH (603.893.9944)
Fords, NJ (732.661.0555)
www.hager-richter.com

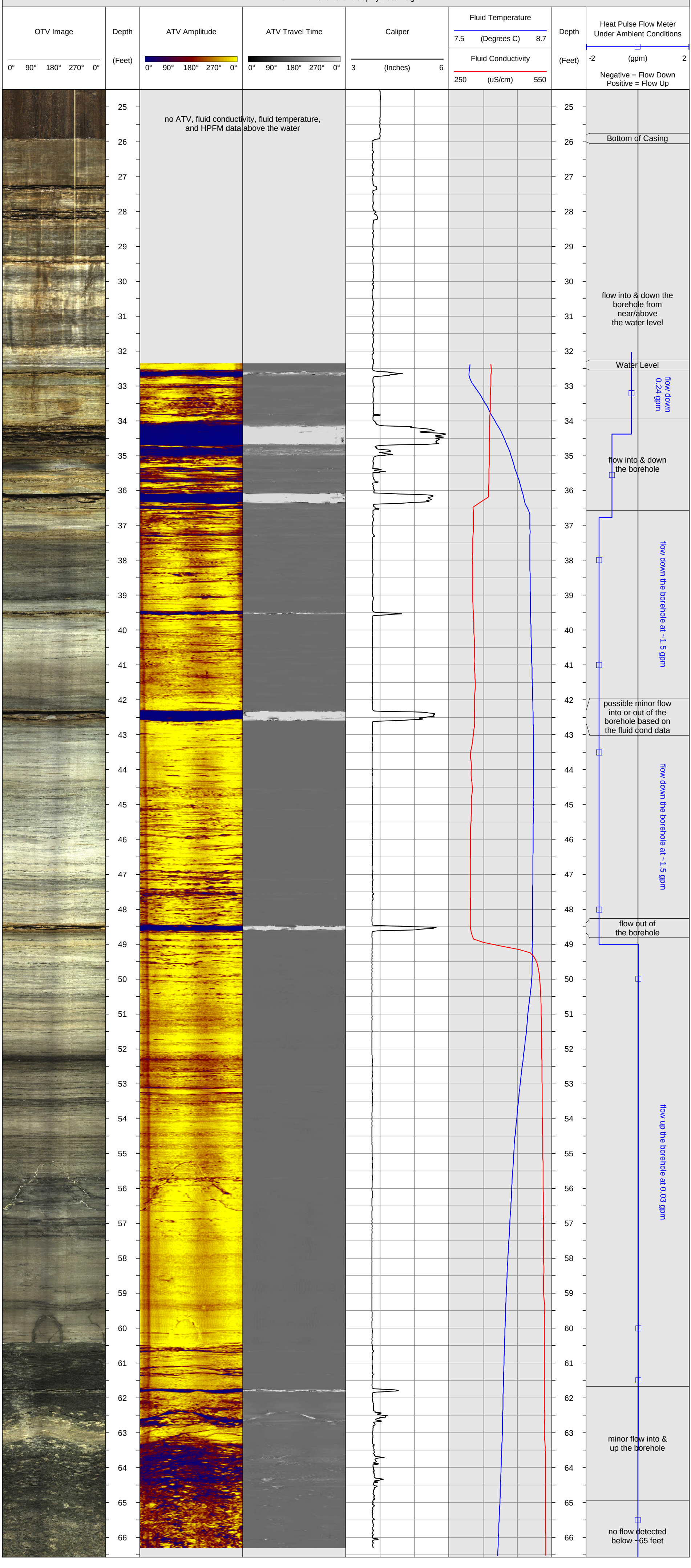
WELL-4R - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: December 17 & 18, 2024

CLIENT:	ARCADIS U.S.	HRGS FILE:	24RG60
PROJECT:	Fort Drum ERCIP Well Field Expansion Project	LOG DATUM:	Top of the 4-Inch Steel Casing
LOCATION:	Fort Drum Army Airbase, New York	TOP OF CASING:	2.2 Feet Above the Ground Surface
LOGGING GEOPHYSICIST(S):	Nick DeCristofaro & Vanja Dezelic	ORIENTATION REFERENCE:	True North (Magnetic Declination = 12° West)
PROJECT REP(S) ON-SITE:	Josh Miller	BOREHOLE DIAMETER:	3.8 Inches (HQ-Cored)
LOGS PROCESSED BY:	Robert Garfield, P.G. & Nick DeCristofaro	WATER LEVEL DEPTH:	32.4 Feet

NOTES: Acoustic caliper data can only be acquired in the water-filled portion of the borehole. The caliper data plotted in the logs below are 3-arm caliper data in the air-filled portion of the borehole and acoustic caliper data in the water-filled portion of the borehole.

Well-4R - Borehole Geophysical Logs



HRGS

SUMMARY OF BOREHOLE FLOW TABLES

HRGS

dba HR Geological Services in New York

A4-OBS-01D - Summary of Borehole Flow Under Ambient Conditions	
CLIENT	ARCADIS U.S.
PROJECT	Fort Drum ERCIP Well Field Expansion Project
LOCATION	Fort Drum Army Airbase, New York
HRGS FILE	24RG60
DATE LOGGED	December 17 & 19, 2024
LOG DATUM	Top of the 4-Inch Steel Casing

A4-OBS-01D - Summary of Borehole Flow Under Ambient Conditions

Depth (Feet)	Comments
0.0	Top of the 4-Inch Steel Casing
3.0	Ground Surface
4.9	Water Level
4.9 - 25.0	no flow detected in the casing
25.0	Bottom of the 4-Inch Steel Casing
25.0 - 29.1	no flow detected
29.1 - 30.6	flow into & down the borehole
30.6 - 46.6	flow down the borehole at ~1 gpm
46.6 - 46.9	flow out of the borehole
46.9 - 54.5	no flow detected
54.5 - 55.8	possible flow into or out of the borehole based on the fluid cond data
55.8 - 122.8	no flow detected
122.8	Bottom of the Borehole (based on the geophysical logging)

HRGS

dba HR Geological Services in New York

A4-OBS-11 - Summary of Borehole Flow Under Ambient Conditions	
CLIENT	ARCADIS U.S.
PROJECT	Fort Drum ERCIP Well Field Expansion Project
LOCATION	Fort Drum Army Airbase, New York
HRGS FILE	24RG60
DATE LOGGED	December 18 & 19, 2024
LOG DATUM	Top of the 4-Inch Steel Casing

A4-OBS-11 - Summary of Borehole Flow Under Ambient Conditions

Depth (Feet)	Comments
0.0	Top of the 4-Inch Steel Casing
2.9	Ground Surface
12.6	Water Level
12.6 - 31.5	no flow detected in the casing
31.5	Bottom of the 4-Inch Steel Casing
31.5 - 43.5	no flow detected
43.5 - 43.9	flow into & down the borehole
43.9 - 63.2	flow down the borehole at ~1 gpm
63.2 - 64.4	flow out of the borehole
64.4 - 72.4	no flow detected
72.4	Bottom of the Borehole (based on the geophysical logging)

HRGS

dba HR Geological Services in New York

A4-OBS-12 - Summary of Borehole Flow Under Ambient Conditions	
CLIENT	ARCADIS U.S.
PROJECT	Fort Drum ERCIP Well Field Expansion Project
LOCATION	Fort Drum Army Airbase, New York
HRGS FILE	24RG60
DATE LOGGED	December 18, 2024
LOG DATUM	Top of the 4-Inch Steel Casing

A4-OBS-12 - Summary of Borehole Flow Under Ambient Conditions

Depth (Feet)	Comments
0.0	Top of the 4-Inch Steel Casing
2.9	Ground Surface
28.9	Bottom of the 4-Inch Steel Casing
35.5	Water Level
35.5 - 37.4	no flow detected
37.4 - 37.5	minor flow into & down the borehole
37.5 - 40.3	flow down the borehole at 0.03 gpm
40.3 - 40.7	flow into & down the borehole
40.7 - 47.0	flow down the borehole at ~1 gpm
47.0 - 47.2	possible minor flow into or out of the borehole based on staining evident in the OTV image
47.2 - 53.9	flow down the borehole at ~1 gpm
53.9 - 56.1	flow out of the borehole
56.1 - 57.6	flow down the borehole at 0.02 gpm
57.6 - 57.8	minor flow out of the borehole
57.8 - 64.5	no flow detected
64.5 - 64.6	possible flow into or out of the borehole based on the fluid cond data
64.6 - 68.1	no flow detected
68.1	Bottom of the Borehole (based on the geophysical logging)

HRGS

dba HR Geological Services in New York

A4-OBS-13 - Summary of Borehole Flow Under Ambient Conditions	
CLIENT	ARCADIS U.S.
PROJECT	Fort Drum ERCIP Well Field Expansion Project
LOCATION	Fort Drum Army Airbase, New York
HRGS FILE	24RG60
DATE LOGGED	December 17 & 18, 2024
LOG DATUM	Top of the 4-Inch Steel Casing

A4-OBS-13 - Summary of Borehole Flow Under Ambient Conditions

Depth (Feet)	Comments
0.0	Top of the 4-Inch Steel Casing
3.1	Ground Surface
21.0	Bottom of the 4-Inch Steel Casing
31.6	Water Level
31.6 - 32.4	no flow detected
32.4 - 33.1	flow into & down the borehole
33.1 - 40.5	flow down the borehole at ~1.2 gpm
40.5 - 40.7	flow into & down the borehole
40.7 - 46.8	flow down the borehole at ~1.8 gpm
46.8 - 47.0	possible minor flow into or out of the borehole based on the fluid cond data
47.0 - 57.5	flow down the borehole at ~1.8 gpm
57.5 - 60.5	flow out of the borehole
60.5 - 62.6	no flow detected
62.6	Bottom of the Borehole (based on the geophysical logging)

HRGS

dba HR Geological Services in New York

A4-OBS-14 - Summary of Borehole Flow Under Ambient Conditions	
CLIENT	ARCADIS U.S.
PROJECT	Fort Drum ERCIP Well Field Expansion Project
LOCATION	Fort Drum Army Airbase, New York
HRGS FILE	24RG60
DATE LOGGED	December 17 & 18, 2024
LOG DATUM	Top of the 4-Inch Steel Casing

A4-OBS-14 - Summary of Borehole Flow Under Ambient Conditions

Depth (Feet)	Comments
0.0	Top of the 4-Inch Steel Casing
2.0	Ground Surface
27.4	Water Level
27.4 - 30.0	no flow detected in the casing
30.0	Bottom of the 4-Inch Steel Casing
30.0 - 34.1	no flow detected
34.1 - 34.6	flow into & down the borehole
34.6 - 45.3	flow down the borehole at ~1 gpm
45.3 - 48.0	flow out of the borehole
48.0 - 57.7	flow down the borehole at 0.38 gpm
57.7 - 60.4	flow out of the borehole
60.4 - 66.6	no flow detected
66.6	Bottom of the Borehole (based on the geophysical logging)

HRGS

dba HR Geological Services in New York

Well-3R - Summary of Borehole Flow	
CLIENT	ARCADIS U.S.
PROJECT	Fort Drum ERCIP Well Field Expansion Project
LOCATION	Fort Drum Army Airbase, New York
HRGS FILE	24RG60
DATE LOGGED	December 17 & 18, 2024
LOG DATUM	Top of the 4-Inch Steel Casing

Well-3R - Summary of Borehole Flow

Depth (Feet)	Comments An obstruction encountered in the borehole at 24.5 feet prevented acquisition of HPFM data. The flow interpretation is based on the fluid temp & fluid cond data.
0.0	Top of the 4-Inch Steel Casing
2.8	Ground Surface
17.4	Water Level
21.9	Bottom of the 4-Inch Steel Casing
23.0 - 25.5	possible flow into or out of the borehole based on the fluid temp & fluid cond data
29.5 - 33.0	possible flow into or out of the borehole based on the fluid cond data
39.5 - 42.0	possible flow into or out of the borehole based on the fluid cond data
50.5 - 52.5	possible flow into or out of the borehole based on the fluid cond data
52.7	Bottom of the Borehole (based on the geophysical logging)

HRGS

dba HR Geological Services in New York

Well-4R - Summary of Borehole Flow Under Ambient Conditions	
CLIENT	ARCADIS U.S.
PROJECT	Fort Drum ERCIP Well Field Expansion Project
LOCATION	Fort Drum Army Airbase, New York
HRGS FILE	24RG60
DATE LOGGED	December 17 & 18, 2024
LOG DATUM	Top of the 4-Inch Steel Casing

Well-4R - Summary of Borehole Flow Under Ambient Conditions

Depth (Feet)	Comments
0.0	Top of the 4-Inch Steel Casing
2.2	Ground Surface
25.9	Bottom of the 4-Inch Steel Casing
27.2 - 32.4	flow into & down the borehole from fractures near or above the water level
32.4	Water Level
32.4 - 33.9	flow down the borehole at 0.24 gpm
33.9 - 36.6	flow into & down the borehole
36.6 - 42.3	flow down the borehole at ~1.5 gpm
42.3 - 42.7	possible minor flow into or out of the borehole based on the fluid cond data
42.7 - 48.4	flow down the borehole at ~1.5 gpm
48.4 - 48.7	flow out of the borehole
48.7 - 61.7	flow up the borehole at 0.03 gpm
61.7 - 64.9	minor flow into & up the borehole
64.9 - 66.6	no flow detected
66.6	Bottom of the Borehole (based on the geophysical logging)

Arcadis U.S., Inc.
One Lincoln Center, 110 West Fayette Street, Suite 300
Syracuse
New York 13202
Phone: 315 446 9120
Fax: 315 449 0017
www.arcadis.com

Arcadis. Improving quality of life.

US Army Corps of Engineers ®
New York District

Colby Company
Engineering

GEOTECHNICAL REPORTS

GEOTECHNICAL ENGINEERING REPORT
ENERGY RESILIENCE AND CONSERVATION INVESTMENT PROGRAM (ERCIP)
WELL FIELD EXPANSION PROJECT
UNITED STATES ARMY GARRISON - FORT DRUM, NEW YORK

Prepared for:

Colby Co. Engineering
47A York Street
Portland, Maine

Prepared by:

Ransom Consulting, LLC
Pease International Tradeport
112 Corporate Drive
Portsmouth, New Hampshire
603.436.1490

Project 181.05025.005
November 27, 2023

Brian R. Pettingill, P.G.
Vice President

Jay P. Johonnett P.E.
Consulting Geotechnical Engineer

EXECUTIVE SUMMARY

Ransom Consulting, LLC (Ransom) has prepared this Geotechnical Engineering Report for Colby Co. Engineering (Colby) for the proposed Energy Resilience and Conservation Investment Program (ERCIP) Well Field Expansion Project at Fort Drum, New York (the Site). This geotechnical report has been prepared in general accordance with the Scope of Work for ERCIP Well Field Expansion Project prepared by the United States Army Corps of Engineers, New York District for Contract W912DS19D0012, dated April 2022, "Geotechnical Survey" section, as well as our executed Purchase Order (P.O.) agreement with Colby (P.O. 408.007,001-5), dated January 30, 2023. This geotechnical engineering evaluation was performed to obtain site-specific subsurface soil information in support of design and construction of the water main for the proposed wellfield expansion project.

The proposed wellfield expansion project (Site) is located along the northwest periphery of the Wheeler-Sack Army Airfield at Fort Drum, New York. We understand that the proposed well field expansion project includes design and installation of approximately 22,500 linear feet of 18-inch HDPE water supply piping and access roads to new well houses along the route. The well field is located in the area of the intersection of Pleasant Street and Elm Lane, northwest of the airfield. The proposed water main is planned to be installed underground following the route of Elm Lane southeast to the intersection of Main Tank Trail, continuing southwest along Main Tank Trail to the water treatment plant.

The test borings were advanced to depths of approximately 12 to 14 feet below grade. Subsurface explorations generally encountered surficial layers of topsoil, underlain by either fine sand or silt. Generally, borings conducted in areas adjacent to the airfield encountered sand, and borings conducted in the area of the well field encountered silt.

Water-saturated soils, inferred to be representative of groundwater, were not encountered in the test borings conducted. Groundwater levels at the Site will fluctuate due to season, temperature, precipitation, nearby underground utilities, and construction activity. Therefore, water levels at other times may differ from the observations made during this evaluation.

The naturally occurring sand and silt soils will likely be suitable for reuse as backfill in the water main trench. The sand soils will also likely be suitable for use as pipe bedding material. Gravel will likely need to be imported for base course materials in areas where the trench is located below road and driveway pavements.

Refusal, the depth at which the drilling equipment was not able to penetrate the deeper geologic formations, was encountered at test borings B4, B5, and B7 at a depth of 12 feet below grade. The bedrock surface is irregular, and it may be encountered at shallower depths along the path of the proposed water main. Excavation of one to two feet of bedrock could likely be excavated using mechanical and/or hydraulic methods, such as a hoe ram, without the need for blasting. If bedrock/boulder removal requires blasting, the techniques, and methods in the latest edition of the New York State Department of Transportation *Standard Specifications* should be followed. Blasting should also be performed in accordance with all local blasting ordinances. We recommend conducting additional test probes to evaluate the depth to bedrock along the proposed route. The additional probes should be located at offsets on either side of borings B4, B5, and B7 to evaluate the depth to bedrock between locations of prior shallow refusals. In addition, we recommend probes at locations midway between borings B1 through B4. The probes should be conducted by advancing the drilling equipment to the refusal depth or 15 feet, whichever is shallower. Soil sampling is not needed.

The soils encountered in the boring program are considered to be frost susceptible (frost group S2 and F4 in accordance with UFC 3-260-02 *Pavement Design for Airfields)*. The anticipated frost penetration is six feet below paved areas in accordance with Figure 20-5 of UFC 3-260-02, based on a design freezing index of 1,500-degree Fahrenheit days for Fort Drum, New York. Utilities planned with burial depths shallower than six feet should be designed with additional methods of frost protection.

In the event that changes in the design or location of the water main are made, the conclusions and recommendations contained in this report should not be considered valid unless they have been reviewed and modified or verified in writing by Ransom.

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 SITE AND PROJECT DESCRIPTIONS 2
2.1 Proposed Development 2

3.0 SUBSURFACE INVESTIGATION 3
3.1 Subsurface Explorations 3
3.2 Laboratory Testing 3

4.0 SUBSURFACE CONDITIONS 4
4.1 Subsurface Soils 4
4.1.1 Topsoil 4
4.1.2 Sand 4
4.1.3 Silt 4
4.2 Drilling Refusal/Bedrock 4
4.3 Groundwater 4

5.0 ENGINEERING EVALUATIONS 6

6.0 DESIGN RECOMMENDATIONS 7
6.1 Bedrock 7
6.2 Groundwater 7
6.3 Frost and Freezing Protection 7

7.0 EARTHWORK AND CONSTRUCTION RECOMMENDATIONS 8
7.1 Temporary Excavations 8
7.2 Dewatering and Runoff Control 8
7.3 Bedrock Excavation 8
7.4 Excavation and Backfilling 9
7.5 Reuse of Site Soils 9
7.6 Construction Monitoring 9

8.0 ADDITIONAL EXPLORATIONS 11

9.0 CLOSING COMMENTS 12

FIGURES:

Figure 1: Site Location Map
Figure 2: Subsurface Exploration Location Plan

APPENDICES:

Appendix A: Exploration Logs
Appendix B: Laboratory Test Report

RANSOM

1.0 INTRODUCTION

Ransom Consulting, LLC (Ransom) has prepared this Geotechnical Engineering Report for Colby Co. Engineering (Colby) for the proposed Energy Resilience and Conservation Investment Program (ERCIP) Well Field Expansion Project water main at Fort Drum, New York (the Site). This geotechnical report has been prepared in general accordance with the Scope of Work for ERCIP Well Field Expansion Project prepared by the United States Army Corps of Engineers, New York District for Contract W912DS19D0012, dated April 2022, "Geotechnical Survey" section, as well as our executed Purchase Order (P.O.) agreement with Colby (P.O. 408.007,001-5), dated January 30, 2023. The general location of the Site can be seen on Figure 1.

This geotechnical engineering evaluation was performed to obtain site-specific subsurface soil information in support of design and construction of the proposed wellfield expansion project water main. As completed, Ransom's scope of services included the following items:

1. Subcontracting and coordinating with a drilling contractor. Driller responsibilities included contacting the Dig Safely utility clearance system as required by New York law.

2. Providing technical monitoring for the subsurface explorations, collecting soil samples, and preparing exploration logs.

3. Submitting selected soil samples for laboratory geotechnical soil testing.

4. Evaluating the field and laboratory data with respect to the proposed development and preparing this report of our findings, evaluations, and recommendations for the proposed design and construction.

2.0 SITE AND PROJECT DESCRIPTIONS

The proposed wellfield expansion project (Site) is located along the northwest periphery of the Wheeler-Sack Army Airfield at Fort Drum, New York. Based on the Black River, New York United States Geological Survey (USGS) 7.5-minute Quadrangle, topography in the area of the Site generally slopes down gently away from the airfield to the north at an elevation of around 680 feet above Mean Sea Level (MSL) to 550 feet above MSL at the northern extent of the proposed wellfield expansion area. A Site Location Map and Subsurface Exploration Plan are provided as Figures 1 and 2, respectively.

2.1 Proposed Development

We understand that the proposed well field expansion project includes design and installation of approximately 22,500 linear feet of 18-inch HDPE water supply piping and access roads to new well houses along the route. The well field is located in the area of the intersection of Pleasant Street and Elm Lane, north of the airfield. The proposed water main is planned to be installed underground following the route of Elm Lane southeast to the intersection of Main Tank Trail, continuing southwest along Main Tank Trail to the water treatment plant. The approximate area of the proposed well field and water main route are depicted on Figure 2.

3.0 SUBSURFACE INVESTIGATION

The geotechnical subsurface exploration program was conducted for the Site from September 5-7, 2023, and consisted of 10 test borings (designated B1 through B10), as shown on Figure 2. The explorations were not surveyed; their locations should be considered approximate.

3.1 Subsurface Explorations

The test borings were performed by Atlantic Testing Laboratories of Watertown, New York, with a track-mounted drill rig using a combination of hollow-stem auger and washed rotary drilling techniques. Split barrel sampling with standard penetration testing was conducted using an automatic drive hammer.

A Ransom representative monitored subsurface exploration activities, prepared field boring logs, and measured the depths to groundwater saturated soils when encountered. Soil samples were placed in sealed containers and returned to Ransom's office for further evaluation and laboratory testing. Soil samples were visually classified using modified Burmister Soil Classification System descriptors. Exploration logs are included in Appendix A.

3.2 Laboratory Testing

The geotechnical soil index testing was performed on select samples by Civil Connection of Canterbury, New Hampshire. The samples were submitted for one or more of the following geotechnical laboratory tests performed in general accordance with the applicable ASTM procedures:

1. Grain size by ASTM D6913; and
2. Hydrometer analysis by ASTM D7928.

The results of the laboratory analytical tests are presented in the laboratory report included in Appendix B.

4.0 SUBSURFACE CONDITIONS

Subsurface conditions at the Site were characterized by advancing test borings into the unconsolidated overburden soil formations at accessible locations at the Site. Figure 2 illustrates the proposed Site features and approximate test boring locations.

4.1 Subsurface Soils

The test borings were advanced to depths of approximately 12 to 14 feet below grade. Subsurface explorations generally encountered surficial layers of topsoil, underlain by either fine sand or silt. Generally, borings conducted in areas adjacent to the airfield encountered sand, and borings conducted in the area of the well field encountered silt. The general characteristics of the subsurface layers are described below.

4.1.1 Topsoil

A thin layer of topsoil was encountered at the ground surface at each boring location. The topsoil generally consisted of dark brown silty sand with organics. The topsoil ranged in thickness from approximately one to four inches.

4.1.2 Sand

A fine to medium-grained sand deposit was encountered beneath the topsoil in borings B1 through B5 of the soil borings. This unit generally consisted of light brown fine to medium sand with varying amounts of silt. The sand was generally observed to be in a loose to very dense condition, with density generally increasing with depth. Visual classification and laboratory grain-size distribution tests indicate that this soil is classified as silty sand (SM) in general accordance with the United Soil Classification System (USCS).

4.1.3 Silt

A silt deposit was encountered beneath the topsoil in borings B6 through B10 and also in boring B4 beneath the sand unit. The silt unit generally consisted of light brown silt with some clay. The silt was observed to be in a stiff to hard condition at borings B6 through B8. The silt at borings B9 and B10 was generally observed to be in a soft to medium stiff condition. A layer of sand and gravel was observed beneath the silt at boring B10. Visual classification and laboratory grain-size distribution tests indicate that this soil is classified as silt (ML) in general accordance with the USCS.

4.2 Drilling Refusal/Bedrock

Refusal, the depth at which the drilling equipment was not able to penetrate the deeper geologic formations, was encountered at test borings B4, B5, and B7 at a depth of 12 feet below grade.

4.3 Groundwater

Water-saturated soils, inferred to be representative of groundwater, were not encountered in the test borings conducted. Groundwater levels at the Site will fluctuate due to season, temperature, precipitation,

nearby underground utilities, and construction activity. Therefore, water levels at other times may differ from the observations made during this evaluation.

5.0 ENGINEERING EVALUATIONS

The subsurface explorations generally encountered surficial layers of topsoil overlying sand and/or silt. The controlling geotechnical features for the construction of the proposed well field expansion water main are:

1. Reuse of Site Soils. The naturally occurring sand and silt soils will likely be suitable for reuse as backfill in the water main trench. The sand soils will also likely be suitable for use as pipe bedding material. Gravel will likely need to be imported for base course materials in areas where the trench is located below road and driveway pavements.

2. Bedrock. Drilling refusal was encountered in borings B4, B5, and B7 at a depth of 12 feet below grade which we infer to be the competent bedrock surface. The bedrock surface is irregular, and it may be encountered at shallower depths along the path of the proposed water main.

Geotechnical engineering evaluations for this project are based on the subsurface conditions interpreted from widely spaced subsurface explorations along the water main path, laboratory testing, and the project design information currently available. Should differing information become known prior to or during construction, the following evaluations and recommendations should be reviewed by Ransom and modifications to these evaluations may be necessary.

6.0 DESIGN RECOMMENDATIONS

Based on the subsurface explorations and our geotechnical evaluations, Ransom presents the following recommendations for the proposed well field expansion water main at Fort Drum, New York.

6.1 Bedrock

Drilling refusal was encountered in borings B4, B5, and B7 at a depth of 12 feet below grade which we infer to be the competent bedrock surface. The bedrock surface is irregular and bedrock and/or large boulders could be encountered at shallower depths along the path of the proposed water main. Additional test probes could be conducted to evaluate the depth to bedrock along the proposed route. The depth to bedrock should be considered when designing the water main to minimize the amount of bedrock removal that could be required where possible.

Where bedrock is encountered above design pipe elevations, undercutting of the bedrock should be performed in accordance with the pipe manufacturer's recommendations and a minimum of 6 inches below the proposed pipe invert.

Excavation of one to two feet of bedrock could likely be accomplished using mechanical and/or hydraulic methods, such as hoe rams, without the need for blasting. Removal of greater bedrock thicknesses could require blasting.

6.2 Groundwater

Groundwater, believed to be representative of the stabilized groundwater table, was not observed during subsurface explorations advanced to a maximum depth of 14 feet below ground surface. We understand that several stream crossings will be required. The elevations of existing culverts or bridge structures should be considered when designing the water main.

6.3 Frost and Freezing Protection

The soils encountered in the boring program are considered to be frost susceptible (frost group S2 and F4 in accordance with UFC 3-260-02 *Pavement Design for Airfields)*. The anticipated frost penetration is six feet below paved areas in accordance with Figure 20-5 of UFC 3-260-02, based on a design freezing index of 1,500-degree Fahrenheit days for Fort Drum, New York. Utilities planned with burial depths shallower than six feet should be designed with additional methods of frost protection.

7.0 EARTHWORK AND CONSTRUCTION RECOMMENDATIONS

Based on the subsurface explorations and our geotechnical evaluations, Ransom presents the following recommendations for the construction of the proposed well field expansion water main at Fort Drum, New York.

7.1 Temporary Excavations

We have assumed that the utility excavations will be through cut-and-cover methods using trench boxes to provide temporary support to the deepest stretches of open trenches. It has been our experience that the ground surface around trench boxes could settle, leading to subsidence of adjacent roadways, sidewalks, and the ground without adequate engineering design. Lateral excavation support should be designed by a New York licensed Professional Engineer. The design should be submitted to Ransom as a shop drawing for review.

All temporary excavations should be performed according to Occupational Safety and Health Administration (OSHA) Standards (29 CFR 1926 Subpart P). The contractor's competent person will be responsible for monitoring the height, slope, and depths of the excavations in accordance with these regulations.

7.2 Dewatering and Runoff Control

Groundwater, believed to be representative of the stabilized groundwater table, was not observed during subsurface explorations advanced to a maximum depth of 14 feet below ground surface. Groundwater levels at the Site will fluctuate due to seasonal effects, temperature, precipitation, nearby underground utilities, and construction activity. Therefore, water levels at other times may differ from the observations and measurements made during drilling. Construction dewatering should be provided where water is encountered so as to allow construction to be accomplished "in the dry."

It is our opinion that groundwater from these types of soils and anticipated excavation depths could potentially be controlled through pumping from open sumps. Should free-draining soils be encountered, pumping from sumps might not provide sufficient groundwater control.

Surface water runoff should be directed away from excavations to reduce dewatering efforts and to protect subgrades from becoming soft and unstable. The contractor should anticipate the need for controlling runoff during wet periods.

The contractor should be aware that the presence of groundwater can destabilize trench walls. This potential should be taken into account in determinations of the stability of the trenches, as well as the trench heights and lateral support methods.

7.3 Bedrock Excavation

Excavation of one to two feet of bedrock could likely be excavated using mechanical and/or hydraulic methods, such as a hoe ram, without the need for blasting. If bedrock/boulder removal requires blasting, the techniques, and methods in the latest edition of the New York State Department of Transportation *Standard Specifications* should be followed. Blasting should also be performed in accordance with all local blasting ordinances.

7.4 Excavation and Backfilling

Excavation within fine grained soils (naturally occurring silt soils) should be accomplished using a smooth-edged bucket to minimize disturbance to the underlying subgrade soils; disturbance from toothed buckets could increase settlement of the backfilled soils after construction. Disturbed soils should be removed or compacted prior to placing pipe bedding materials. Boulders and loose bedrock should be removed prior to placing pipe bedding.

The soils that will be excavated from the utility trench could require control of the moisture content before being approved for use as backfill. Where subgrades become saturated, unstable, and/or difficult to compact, crushed stone should be placed and compacted in lieu of structural fill. Crushed stone, when used, should be wrapped in a geotextile filter fabric, such as Mirafi 140N or equal.

All backfill soils should be placed in 12-inch maximum loose lifts and should be compacted to a minimum of 95 percent of the material's maximum dry density, as determined by ASTM D1557 (modified Proctor test) and verified with field density testing (ASTM D6938 or equivalent method). Lift thickness should be a maximum of 6-inch loose lifts when compacted with hand-guided equipment. Compaction to less than 95 percent could result in settlement of the backfills within the trench, which could damage the overlying pavement.

Bedding placed below utilities should be in accordance with the utility and manufacturer requirements. In general, utilities may be supported directly on a minimum 6-inch-thick layer of compacted fill, crushed stone, or other suitable pipe bedding materials.

7.5 Reuse of Site Soils

Excavations will encounter sand, silt, and potentially bedrock in areas. These materials should generally be suitable for backfills within the trenches. The sand soils will also likely be suitable for use as pipe bedding material. If crushed stone is used for backfilling, a geotextile separator fabric (Mirafi 140N, for example) should be placed between the crushed stone and the in-place soils. Gravel will likely need to be imported for aggregate base and subbase course materials in paved roadway areas.

Representative samples of all proposed fills should be submitted for testing during construction to compare their gradation characteristics to the requirements of the project specifications, and to establish their optimum water contents and maximum dry densities (modified Proctor testing, ASTM D1557). The geotechnical engineer must approve use and reuse of on-site or borrow soils for fill materials. Use of fills assumes that the moisture content of the material will be strictly controlled in order to allow for proper placement and compaction.

7.6 Construction Monitoring

Ransom should be provided the opportunity to review the final design and specifications to ensure our recommendations presented herein have been properly interpreted and applied. Ransom recommends that all fill, backfill, and compaction be inspected and tested by a qualified firm to make sure the proper materials are placed and adequately compacted. Ransom should review all soil inspection and testing reports. Ransom should be retained to provide construction observation and documentation for the following aspects of site development:

1. Observe soil subgrade conditions as they are exposed and confirm that the exposed conditions are consistent with those in this report;

2. Document the preparation of foundation bearing surfaces and other subgrades;

3. Determine the need for additional cut, backfill, or stabilization of subgrades; and

4. Confirm that the soils used as fills and backfills conform to the project specifications.

8.0 ADDITIONAL EXPLORATIONS

Drilling refusal was encountered in borings B4, B5, and B7 at a depth of 12 feet below grade which we infer to be the competent bedrock surface. The bedrock surface is irregular and bedrock and/or large boulders could be encountered at shallower depths along the path of the proposed water main. We recommend conducting additional test probes to evaluate the depth to bedrock along the proposed route. The additional probes should be located at offsets on either side of borings B4, B5, and B7 to evaluate the depth to bedrock between locations of prior shallow refusals. In addition, we recommend probes at locations midway between borings B1 through B4. The probes should be conducted by advancing the drilling equipment to the refusal depth or 15 feet, whichever is shallower. Soil sampling is not needed.

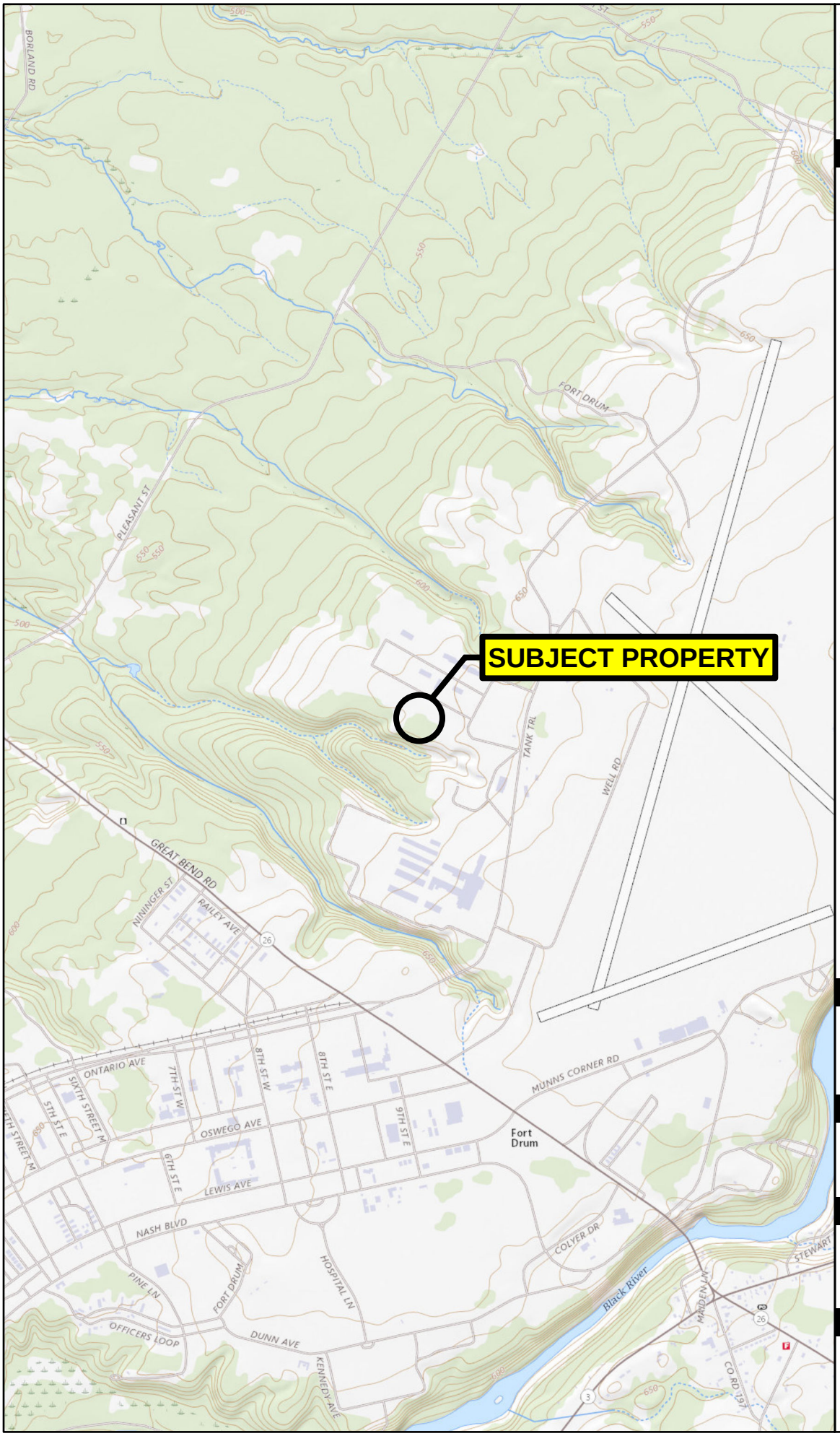
9.0 CLOSING COMMENTS

This report has been prepared to assist the project team in the design and construction of the proposed water main for the well field expansion at Fort Drum. In the event that changes in the design or location of the proposed utility path are planned, the conclusions and recommendations contained in this report should not be considered valid unless they have been reviewed and modified or verified in writing by Ransom. Ransom should be provided the opportunity to review the final design plans and project specifications in order to confirm that the recommendations made in this report were interpreted and implemented as intended.

Our recommendations are based in part upon data obtained from widely spaced test explorations. We recommend conducting additional explorations to further evaluate the potential for bedrock conflicts along the planned water main path. The nature and extent of variations between explorations will not become evident until construction. If significant variations then appear, it may be necessary to reevaluate and revise the recommendations of this report.

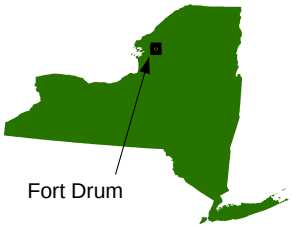
The findings, recommendations, specifications, and professional opinions contained within this project geotechnical report have been prepared in accordance with generally accepted professional geotechnical engineering practice. No other warranties are implied or expressed.

The findings, recommendations, specifications, and professional opinions contained within this project geotechnical data report have been prepared in accordance with generally accepted professional geotechnical engineering practices. No other warranties are implied or expressed.



RANSOM Consulting, LLC

Regional Locator Map



Notes

1. Data Source: Copyright: © 2013 National Geographic Society, i-cubed
2. USGS Quad Names: Deferiet, NY
3. Latitude: 44°3'26"N
   Longitude: 75°44'7"W

Scale and Orientation

0 1,000 2,000

1 inch = 2,000 feet

Prepared For

Colby Co. Engineering
47A York Street
Portland, Maine

Subject Property Address

Ft. Drum Well Field Expansion
Fort Drum, New York

181.05025 | Nov 2023

Figure 1

Site Location Map

RANSOM Consulting, LLC

Legend & Notes

Geotechnical Boring

Notes

1. Site Plan based on ©ESRI. World Imagery.
2. Some features are approximate in location and scale
3. This plan has been prepared for Developers Collaborative, Inc. All other uses are not authorized unless written permission is obtained from Ransom Consulting, LLC.

Scale & Orientation

0 1,000 2,000

1 inch = 2,000 feet

Prepared For

Colby Co. Engineering
47A York Street
Portland, Maine

Subject Property Address

Ft. Drum Well Field Expansion
Fort Drum, New York

181.05025 | Nov 2023

Figure 2
Subsurface Exploration Location Plan

X:\Ransom_NewEngland\NewYork\FortDrum_NY\FtDrumWellField\WF_FtDrumNY.aprx; WF_FtDrumNY-F2_SP

APPENDIX A

Exploration Logs

Geotechnical Engineering Report
Energy Resilience and Conservation Investment Program (ERCIP)
Well Field Expansion Project
United States Army Garrison - Fort Drum, New York

BORING LOG
B1

Project Number: 181.05025	Drilling Company: Atlantic Testing Laborato	Total Depth: 14 Feet
Project: Proposed Well Field	Drilling Method: Drive & Wash	Datum: NA
Site Location: Fort Drum, NY	Drilling Equipment: Track-Mounted CME 55	Start/Finish Date: 9/7/2023
	Boring Diameter: 6 Inches	Logged by: PJB
Client: Colby Co. Engineering	Surface Elevation (ft): NA	Reviewed by: JPJ
Water Levels:	During Drilling: NE End of Boring: NE	Date: 9/7/2023

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	Soil Profile	SAMPLE*	SAMPLE NUMBER	PENETRATION / RECOVERY	BLOWS (PER 6")	SPT-N VALUE	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 2" TOPSOIL over light brown medium- to fine-grained SAND.	SM		S1	24/14	1-3-4-4	7	NM	1	NA
								2	
S2 (2-4') Light brown medium- to fine-grained SAND.	SM		S2	24/18	1-2-1-3	3	NM	3	
								4	
S3 (4-6') Light brown medium- to fine-grained SAND.	SM		S3	24/12	15-15-18-20	33	NM	5	
								6	
								7	
Drive and wash to 10 feet bgs.	NA	NA	NA	NA	NA	NA	NA	8	
								9	
								10	
S5 (10-12') Light brown medium- to fine-grained SAND.	SM		S5	24/8	36-50(5")	>50	NM	11	
								12	
S6 (12-14') No recovery.	NA		S6	24/0	50(2")	>50	NM	13	
								14	
End of boring at 14'.								15	
								16	
								17	
								18	
								19	
								20	
								21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
								30	
								31	
								32	
								33	
								34	
								35	
								36	
								37	
								38	
								39	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered; WOH=weight of hammer
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG
B2

Project Number: 181.05025	Drilling Company: Atlantic Testing Laborato	Total Depth: 12 Feet
Project: Proposed Well Field	Drilling Method: Drive & Wash	Datum: NA
Site Location: Fort Drum, NY	Drilling Equipment: Track-Mounted CME 55	Start/Finish Date: 9/7/2023
	Boring Diameter: 6 Inches	Logged by: PJB
Client: Colby Co. Engineering	Surface Elevation (ft): NA	Reviewed by: JPJ
Water Levels:	During Drilling: NE End of Boring: NE	Date: 9/7/2023

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	Soil Profile	SAMPLE*	SAMPLE NUMBER	PENETRATION / RECOVERY	BLOWS (PER 6")	SPT-N VALUE	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 4" TOPSOIL over light brown medium- to fine-grained SAND.	SM		S1	24/20	4-6-8-10	14	NM	1	NA
								2	
S2 (2-4') Light brown medium- to fine-grained SAND.	SM		S2	24/16	9-10-12-12	22	NM	3	
								4	
S3 (4-6') Light brown medium- to fine-grained SAND.	SM		S3	24/12	5-8-10-10	18	NM	5	
								6	
								7	
Drive and wash to 10 feet bgs.	NA	NA	NA	NA	NA	NA	NA	8	
								9	
								10	
S5 (10-12') Light brown medium- to fine-grained SAND with some silt.	SM		S5	24/16	15-19-23-28	42	NM	11	
								12	
Boring terminated at 12' due to collapse.								13	
								14	
								15	
								16	
								17	
								18	
								19	
								20	
								21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
								30	
								31	
								32	
								33	
								34	
								35	
								36	
								37	
								38	
								39	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered; WOH=weight of hammer
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG
B3

Project Number: 181.05025	Drilling Company: Atlantic Testing Laborato	Total Depth: 14 Feet
Project: Proposed Well Field	Drilling Method: Drive & Wash	Datum: NA
Site Location: Fort Drum, NY	Drilling Equipment: Track-Mounted CME 55	Start/Finish Date: 9/7/2023
	Boring Diameter: 6 Inches	Logged by: PJB
Client: Colby Co. Engineering	Surface Elevation (ft): NA	Reviewed by: JPJ
Water Levels:	During Drilling: NM End of Boring: NM	Date: 9/7/2023

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	Soil Profile	SAMPLE*	SAMPLE NUMBER	PENETRATION / RECOVERY	BLOWS (PER 6")	SPT-N VALUE	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 2" TOPSOIL over light brown medium- to fine-grained SAND.	SM		S1	24/20	1-3-4-3	7	NM	1	NA
								2	
S2 (2-4') Light brown medium- to fine-grained SAND.	SM		S2	24/14	5-7-5-8	12	NM	3	
								4	
S3 (4-6') Light brown medium- to fine-grained SAND.	SM		S3	24/10	2-3-3-4	6	NM	5	
								6	
								7	
Drive and wash to 10 feet bgs.	NA	NA	NA	NA	NA	NA	NA	8	
								9	
								10	
S5 (10-12') Light brown medium- to fine-grained SAND.	SM		S5	24/12	37-43-50(4")	>93	NM	11	
								12	
S6 (12-14') No recovery.	NA		S6	24/0	50(2")	>50	NM	13	
								14	
End of boring at 14'.								15	
								16	
								17	
								18	
								19	
								20	
								21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
								30	
								31	
								32	
								33	
								34	
								35	
								36	
								37	
								38	
								39	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered; WOH=weight of hammer
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG
B4

Project Number: 181.05025	Drilling Company: Atlantic Testing Laborato	Total Depth: 12 Feet
Project: Proposed Well Field	Drilling Method: Drive & Wash	Datum: NA
Site Location: Fort Drum, NY	Drilling Equipment: Track-Mounted CME 55	Start/Finish Date: 9/6/2023
	Boring Diameter: 6 Inches	Logged by: PJB
Client: Colby Co. Engineering	Surface Elevation (ft): NA	Reviewed by: JPJ
Water Levels:	During Drilling: NM End of Boring: NM	Date: 9/6/2023

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	Soil Profile	SAMPLE*	SAMPLE NUMBER	PENETRATION / RECOVERY	BLOWS (PER 6")	SPT-N VALUE	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 2" TOPSOIL over light brown SAND with some silt.	SM		S1	24/14	1-1-2-3	3	NM	1	NA
								2	
S2 (2-4') Light brown SAND with some silt.	SM		S2	24/18	3-4-7-9	11	NM	3	
								4	
S3 (4-6') Light brown SILT with trace fine sand.	ML		S3	24/18	12-18-27-16	45	NM	5	
								6	
								7	
Drive and wash to 10 feet bgs.	NA	NA	NA	NA	NA	NA	NA	8	
								9	
								10	
S5 (10-12') Light brown SILT with trace fine sand.	SM		S5	24/12	12-17-50(2")	>67	NM	11	
								12	
Boring terminated at 12' due to refusal.								13	
								14	
								15	
								16	
								17	
								18	
								19	
								20	
								21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
								30	
								31	
								32	
								33	
								34	
								35	
								36	
								37	
								38	
								39	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered; WOH=weight of hammer
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG
B5

Project Number: 181.05025	Drilling Company: Atlantic Testing Laborato	Total Depth: 12 Feet
Project: Proposed Well Field	Drilling Method: Drive & Wash	Datum: NA
Site Location: Fort Drum, NY	Drilling Equipment: Track-Mounted CME 55	Start/Finish Date: 9/6/2023
	Boring Diameter: 6 Inches	Logged by: PJB
Client: Colby Co. Engineering	Surface Elevation (ft): NA	Reviewed by: JPJ
Water Levels:	During Drilling: NM End of Boring: NM	Date: 9/6/2023

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	Soil Profile	SAMPLE*	SAMPLE NUMBER	PENETRATION / RECOVERY	BLOWS (PER 6")	SPT-N VALUE	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 3" TOPSOIL over light brown SAND with trace silt.	SM		S1	24/18	2-4-3-5	7	NM	1	NA
								2	
S2 (2-4') Light brown SILT with some fine sand.	SM		S2	24/18	10-13-11-13	24	NM	3	
								4	
S3 (4-6') Light brown medium- to fine-grained SAND with trace silt.	SM		S3	24/14	8-8-8-11	16	NM	5	
								6	
								7	
Drive and wash to 10 feet bgs.	NA	NA	NA	NA	NA	NA	NA	8	
								9	
								10	
S5 (10-12') Grayish-brown medium to fine-grained SAND with some silt.	SM		S5	24/6	50 (4")	>50	NM	11	
								12	
Boring terminated at 12' due to refusal.								13	
								14	
								15	
								16	
								17	
								18	
								19	
								20	
								21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
								30	
								31	
								32	
								33	
								34	
								35	
								36	
								37	
								38	
								39	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered; WOH=weight of hammer
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG
B6

Project Number: 181.05025	Drilling Company: Atlantic Testing Laborato	Total Depth: 14 Feet
Project: Proposed Well Field	Drilling Method: Drive & Wash	Datum: NA
Site Location: Fort Drum, NY	Drilling Equipment: Track-Mounted CME 55	Start/Finish Date: 9/6/2023
	Boring Diameter: 6 Inches	Logged by: PJB
Client: Colby Co. Engineering	Surface Elevation (ft): NA	Reviewed by: JPJ
Water Levels:	During Drilling: NM End of Boring: NM	Date: 9/6/2023

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	Soil Profile	SAMPLE*	SAMPLE NUMBER	PENETRATION / RECOVERY	BLOWS (PER 6")	SPT-N VALUE	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 1" TOPSOIL over light brown SILT with some clay.	ML		S1	24/18	1-2-2-4	4	NM	1	NA
								2	
S2 (2-4') Light brown SILT with some clay.	ML		S2	24/16	5-8-15-21	23	NM	3	
								4	
S3 (4-6') Light brown SILT with some clay.	ML		S3	24/20	10-13-14-11	27	NM	5	
								6	
								7	
Drive and wash to 10 feet bgs.	NA	NA	NA	NA	NA	NA	NA	8	
								9	
								10	
S5 (10-12') Light brown SILT with some clay.	ML		S5	24/20	16-20-18-23	38	NM	11	
								12	
S6 (12-14') 12" Light brown CLAY with some silt; over light brown SILT with some clay.	ML		S6	24/24	26-50(3")	>50	NM	13	
								14	
End of boring at 14'.								15	
								16	
								17	
								18	
								19	
								20	
								21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
								30	
								31	
								32	
								33	
								34	
								35	
								36	
								37	
								38	
								39	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered; WOH=weight of hammer
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG
B7

Project Number: 181.05025	Drilling Company: Atlantic Testing Laborato	Total Depth: 12 Feet
Project: Proposed Well Field	Drilling Method: Drive & Wash	Datum: NA
Site Location: Fort Drum, NY	Drilling Equipment: Track-Mounted CME 55	Start/Finish Date: 9/6/2023
	Boring Diameter: 6 Inches	Logged by: PJB
Client: Colby Co. Engineering	Surface Elevation (ft): NA	Reviewed by: JPJ

Water Levels: During Drilling: NM End of Boring: NM Date: 9/6/2023

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	Soil Profile	SAMPLE*	SAMPLE NUMBER	PENETRATION / RECOVERY	BLOWS (PER 6")	SPT-N VALUE	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 2" TOPSOIL over light brown SILT with some clay and trace organics, moist.	ML		S1	24/12	1-2-5-8	7	NM	1	NA
								2	
S2 (2-4') Light brown SILT with some clay and trace organics, moist.	ML		S2	24/20	12-21-28-31	49	NM	3	
								4	
S3 (4-6') Light brown SILT with some clay.	ML		S3	24/14	35-50(3")	>50	NM	5	
								6	
								7	
Drive and wash to 10 feet bgs.	NA	NA	NA	NA	NA	NA	NA	8	
								9	
								10	
S5 (10-12') No recovery.	NA		S5	24/0	40-50-67-54	117	NM	11	
								12	
Boring terminated at 12' due to refusal.								13	
								14	
								15	
								16	
								17	
								18	
								19	
								20	
								21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
								30	
								31	
								32	
								33	
								34	
								35	
								36	
								37	
								38	
								39	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered; WOH=weight of hammer
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG
B8

Project Number: 181.05025	Drilling Company: Atlantic Testing Laborato	Total Depth: 14 Feet
Project: Proposed Well Field	Drilling Method: Drive & Wash	Datum: NA
Site Location: Fort Drum, NY	Drilling Equipment: Track-Mounted CME 55	Start/Finish Date: 9/6/2023
	Boring Diameter: 6 Inches	Logged by: PJB
Client: Colby Co. Engineering	Surface Elevation (ft): NA	Reviewed by: JPJ
Water Levels:	During Drilling: NM End of Boring: NM	Date: 9/6/2023

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	Soil Profile	SAMPLE*	SAMPLE NUMBER	PENETRATION / RECOVERY	BLOWS (PER 6")	SPT-N VALUE	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 2" TOPSOIL over light brown SILT with some clay and trace organics, moist.	ML		S1	24/16	5-3-3-5	6	NM	1	NA
								2	
S2 (2-4') Light brown SILT with some clay and trace organics, moist.	ML		S2	24/20	10-8-8-16	16	NM	3	
								4	
S3 (4-6') Light brown SILT with some clay.	ML		S3	24/14	15-15-16-18	31	NM	5	
								6	
								7	
Drive and wash to 10 feet bgs.	NA	NA	NA	NA	NA	NA	NA	8	
								9	
								10	
S5 (10-12') Light brown SILT with some clay.	ML		S5	24/18	10-9-8-7	17	NM	11	
								12	
S6 (12-14') Light brown SILT with some clay.	ML		S6	24/14	5-15-21-14	36	NM	13	
End of boring at 14'.								14	
								15	
								16	
								17	
								18	
								19	
								20	
								21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
								30	
								31	
								32	
								33	
								34	
								35	
								36	
								37	
								38	
								39	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered; WOH=weight of hammer
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG
B9

Project Number: 181.05025	Drilling Company: Atlantic Testing Laborato	Total Depth: 14 Feet
Project: Proposed Well Field	Drilling Method: Drive & Wash	Datum: NA
Site Location: Fort Drum, NY	Drilling Equipment: Track-Mounted CME 55	Start/Finish Date: 9/6/2023
	Boring Diameter: 6 Inches	Logged by: PJB
Client: Colby Co. Engineering	Surface Elevation (ft): NA	Reviewed by: JPJ
Water Levels:	During Drilling: NM End of Boring: NM	Date: 9/6/2023

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	Soil Profile	SAMPLE*	SAMPLE NUMBER	PENETRATION / RECOVERY	BLOWS (PER 6")	SPT-N VALUE	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 3" TOPSOIL over Light brown GRAVEL with some silt and sand.	GM		S1	24/10	2-5-5-5	10	NM	1	NA
								2	
S2 (2-4') Grayish brown SILT with some clay and trace organics.	ML		S2	24/12	3-3-4-5	7	NM	3	
								4	
S3 (4-6') Grayish brown SILT with some clay.	ML		S3	24/20	4-4-3-5	7	NM	5	
								6	
								7	
Drive and wash to 10 feet bgs.	NA	NA	NA	NA	NA	NA	NA	8	
								9	
								10	
S5 (10-12') Grayish brown SILT with some clay.	ML		S5	24/16	2-2-2-2	4	NM	11	
								12	
S6 (12-14') Grayish brown SILT with some clay.	ML		S6	24/16	3-3-6-7	9	NM	13	
								14	
End of boring at 14'.								15	
								16	
								17	
								18	
								19	
								20	
								21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
								30	
								31	
								32	
								33	
								34	
								35	
								36	
								37	
								38	
								39	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered; WOH=weight of hammer
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG
B10

Project Number: 181.05025	Drilling Company: Atlantic Testing Laborato	Total Depth: 14 Feet
Project: Proposed Well Field	Drilling Method: Drive & Wash	Datum: NA
Site Location: Fort Drum, NY	Drilling Equipment: Track-Mounted CME 55	Start/Finish Date: 9/5/2023 - 9/6/2023
	Boring Diameter: 6 Inches	Logged by: PJB
Client: Colby Co. Engineering	Surface Elevation (ft): NA	Reviewed by: JPJ
Water Levels:	During Drilling: NM End of Boring: NM	Date: 9/6/2023

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	Soil Profile	SAMPLE*	SAMPLE NUMBER	PENETRATION / RECOVERY	BLOWS (PER 6")	SPT-N VALUE	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 2" TOPSOIL over Light brown SILT with trace sand and gravel.	SM		S1	24/13	1-3-3-4	6	NM	1	NA
								2	
S2 (2-4') Light brown SILT with some sand and gravel.	SM		S2	24/12	3-3-4-3	7	NM	3	
								4	
S3 (4-6') No recovery.	NA		S3	24/0	1 (24")	<1	NM	5	
								6	
								7	
Drive and wash to 10 feet bgs.	NA	NA	NA	NA	NA	NA	NA	8	
								9	
								10	
S5 (10-12') Light brown SAND and GRAVEL with some silt and clay.	GM		S5	24/8	38-15-4-4	19	NM	11	
								12	
S6 (12-14') Grayish brown SAND with some gravel and trace silt.	GM		S6	24/22	5-H-H-1	<2	NM	13	
								14	
End of boring at 14'.								15	
								16	
								17	
								18	
								19	
								20	
								21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
								30	
								31	
								32	
								33	
								34	
								35	
								36	
								37	
								38	
								39	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered; WOH=weight of hammer
*Sample designated with black fill submitted for laboratory analysis.

APPENDIX B

Laboratory Test Results

Geotechnical Engineering Report
Energy Resilience and Conservation Investment Program (ERCIP)
Well Field Expansion Project
United States Army Garrison - Fort Drum, New York

RANSOM

Project 181.05025.005

Civil Connection, LLC

Providing Engineering, Inspection/Testing, & Consulting Services

LETTER OF TRANSMITTAL

TO: Ransom Consulting – Jay Johonnett

DATE: 11/9/2023

PROJECT: Fort Drum, NY Well Field Expansion - # 181.05025.005 (Task 03)

CC PROJECT NO.: 23-504

Attached are the following for your use:

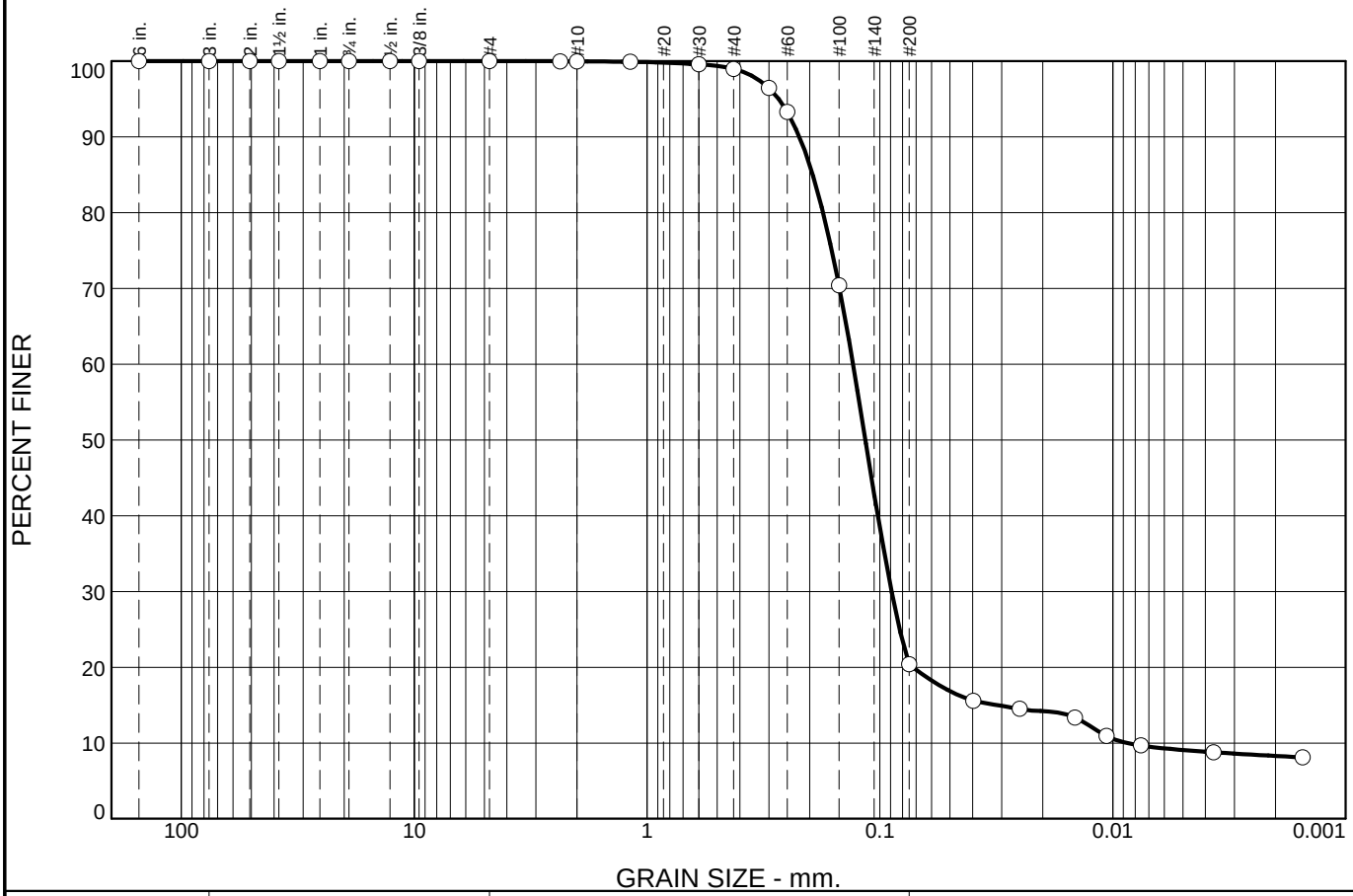
COPIES	DATE	LAB NUMBER	DESCRIPTION
			Concrete Report - Cylinders
			Concrete Inspection Report
			Reinforcing Steel Inspection Report
			Field Density Report
5		L-345-23 thru L-349-23	Particle Size Distribution Report & Hydrometer Report
			Laboratory Soil Compaction Test Report
			Other

CC: Ransom Consulting – Patrick Brown

Reviewed By: Richard E. Bushnell, P.E.

Main Office: 38 Edwards Drive, Gilmanton IW, NH 03837
Laboratory Facility: 6 Oxbow Pond Rd, Unit 1, Canterbury, NH 03304
p (855) 393-9842
www.civilconnection.net

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.1	78.5	11.3	9.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
6"	100.0		
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	99.9		
#30	99.6		
#40	98.9		
#50	96.4		
#60	93.3		
#100	70.4		
#200	20.4		
0.0397 mm.	15.5		
0.0251 mm.	14.5		
0.0145 mm.	13.4		
0.0106 mm.	10.9		
0.0076 mm.	9.7		
0.0037 mm.	8.8		
0.0015 mm.	8.1		

* (no specification provided)

Soil Description

fine SAND, some coarse to fine Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2220 D_{85}= 0.1946 D_{60}= 0.1306
D_{50}= 0.1155 D_{30}= 0.0891 D_{15}= 0.0313
D_{10}= 0.0087 C_u= 15.02 C_c= 6.99

Classification

USCS= AASHTO=

Remarks

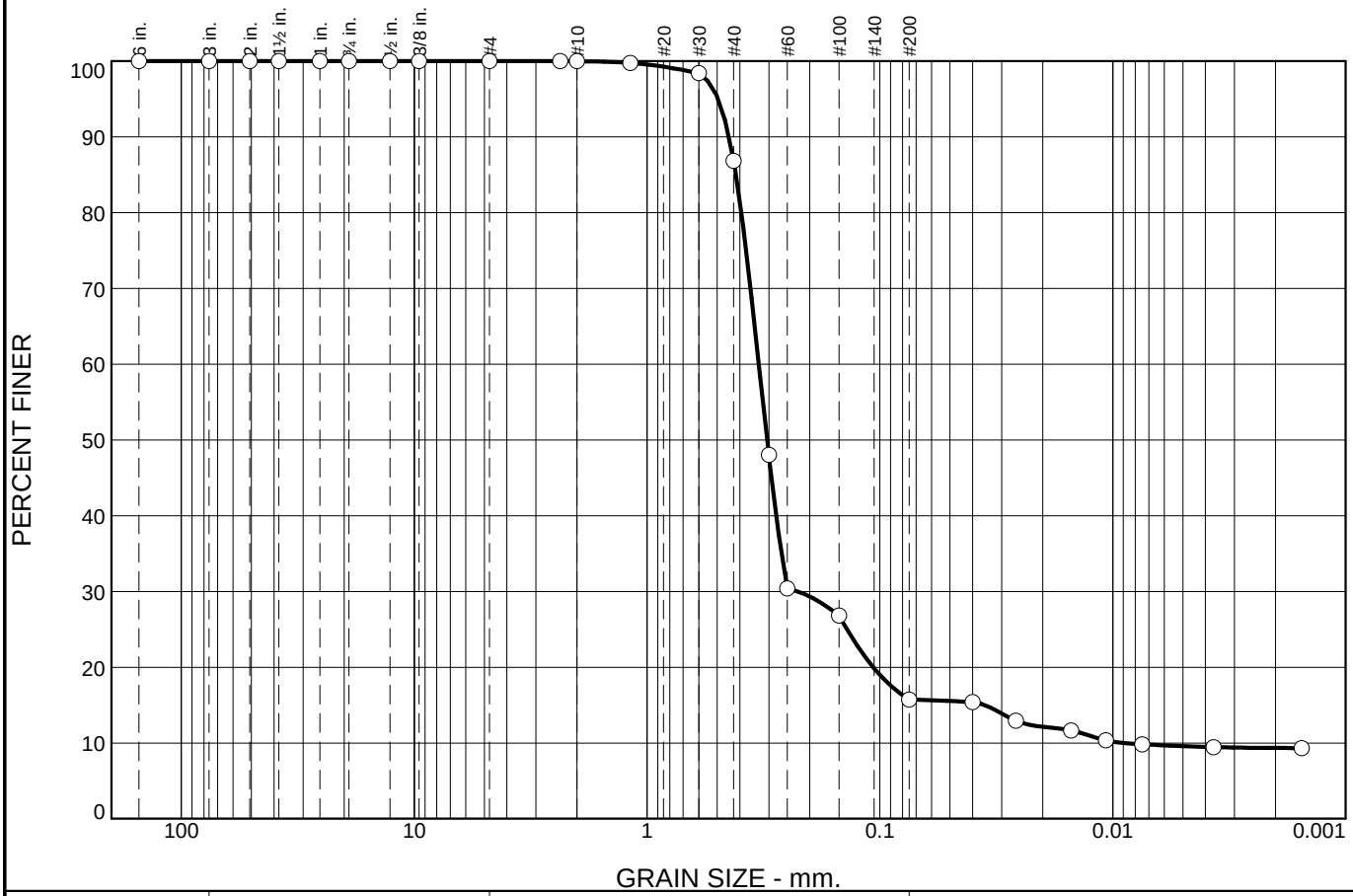
Location: B-1 / S2
Sample Number: L-345-23 **Depth:** 2'-4' **Date:** 11/7/2023

Civil Connection, LLC

Canterbury, New Hampshire

Client: Ransom Consulting, Inc.
Project: Fort Drum - Well Field Expansion (181.05025.005 Task 03)
Fort Drum, NY.
Project No: 23-504 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	13.2	71.0	6.2	9.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
6"	100.0		
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	99.8		
#30	98.4		
#40	86.8		
#50	48.0		
#60	30.4		
#100	26.8		
#200	15.8		
0.0399 mm.	15.4		
0.0260 mm.	12.9		
0.0151 mm.	11.6		
0.0107 mm.	10.4		
0.0075 mm.	9.8		
0.0037 mm.	9.5		
0.0015 mm.	9.3		

* (no specification provided)

Soil Description

med to fine SAND, little coarse to fine Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4450 D_{85}= 0.4156 D_{60}= 0.3311
D_{50}= 0.3050 D_{30}= 0.2256 D_{15}= 0.0355
D_{10}= 0.0091 C_u= 36.45 C_c= 16.92

Classification

USCS= AASHTO=

Remarks

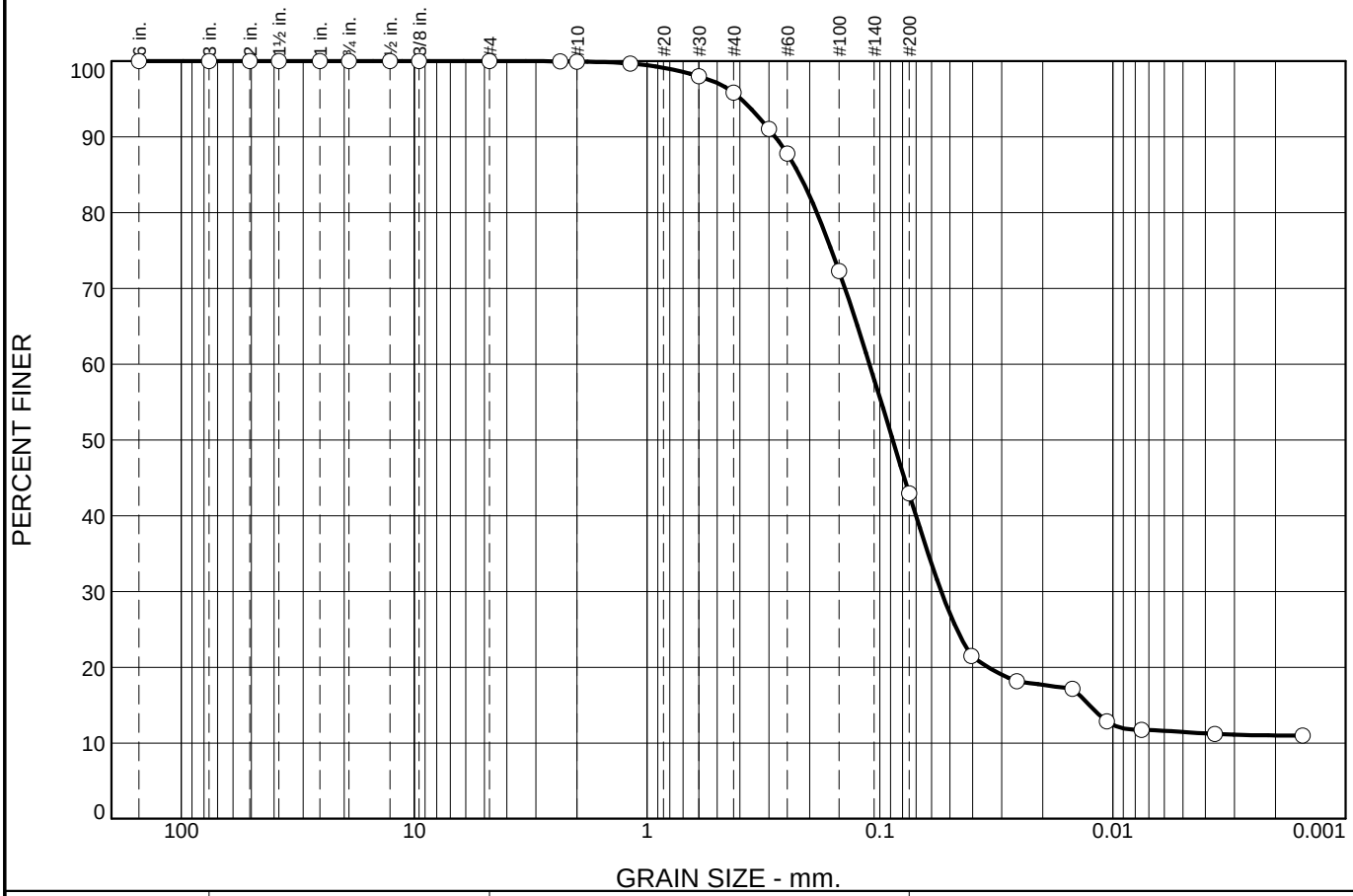
Location: B-2 / S2
Sample Number: L-346-23 **Depth:** 2'-4' **Date:** 11/7/2023

Civil Connection, LLC

Canterbury, New Hampshire

Client: Ransom Consulting, Inc.
Project: Fort Drum - Well Field Expansion (181.05025.005 Task 03)
Fort Drum, NY.
Project No: 23-504 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	4.1	52.9	31.4	11.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
6"	100.0		
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	100.0		
#10	99.9		
#16	99.7		
#30	98.0		
#40	95.8		
#50	91.0		
#60	87.8		
#100	72.3		
#200	42.9		
0.0405 mm.	21.5		
0.0258 mm.	18.1		
0.0149 mm.	17.1		
0.0106 mm.	12.9		
0.0075 mm.	11.7		
0.0036 mm.	11.2		
0.0015 mm.	11.0		

* (no specification provided)

Soil Description

med to fine SAND, and coarse to fine Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2819 D_{85}= 0.2219 D_{60}= 0.1109
D_{50}= 0.0881 D_{30}= 0.0546 D_{15}= 0.0126
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

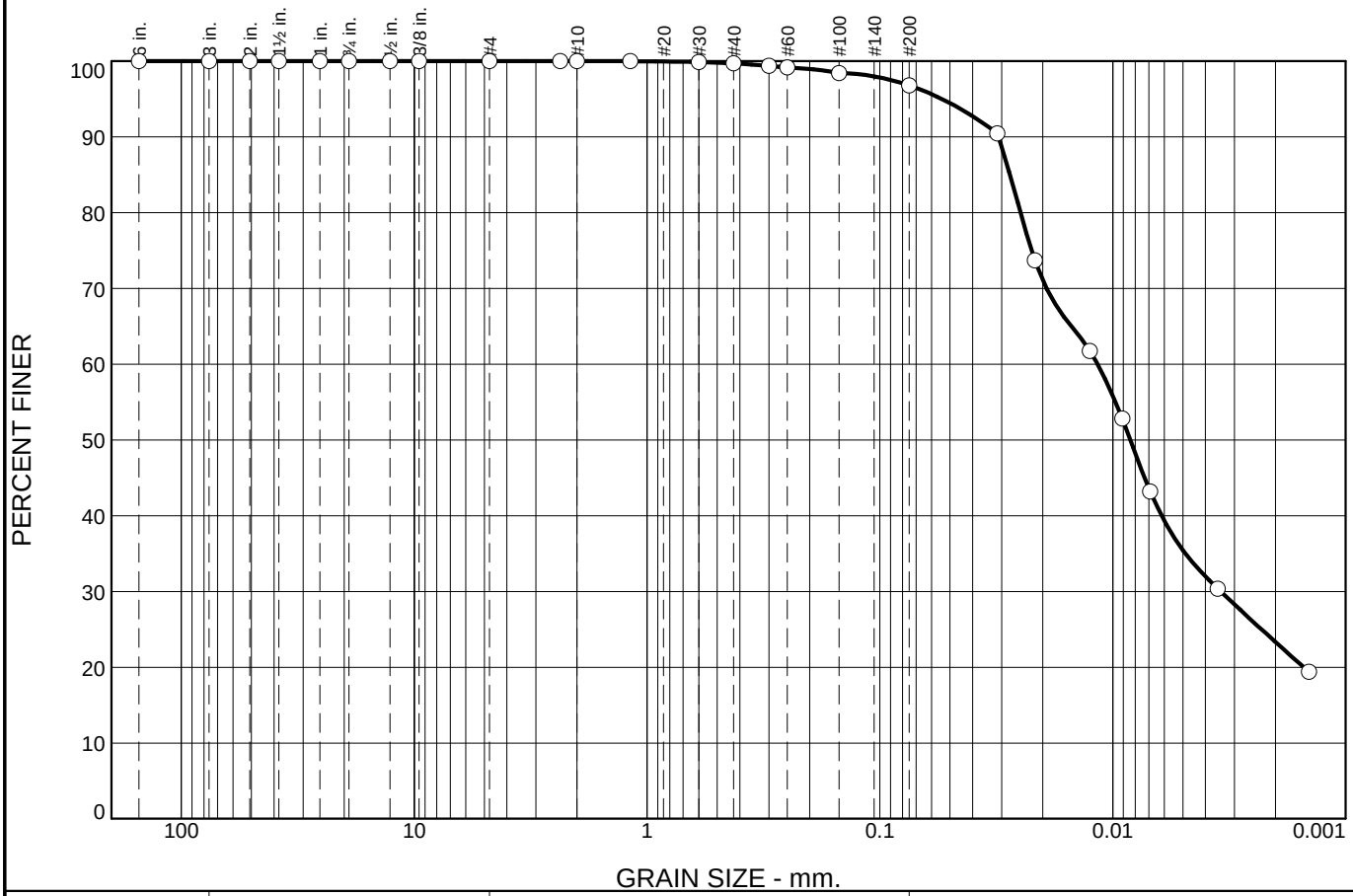
Location: B-4 / S2
Sample Number: L-347-23 **Depth:** 2'-4' **Date:** 11/7/2023

Civil Connection, LLC

Canterbury, New Hampshire

Client: Ransom Consulting, Inc.
Project: Fort Drum - Well Field Expansion (181.05025.005 Task 03)
Fort Drum, NY.
Project No: 23-504 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	2.9	61.4	35.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
6"	100.0		
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	100.0		
#30	99.9		
#40	99.7		
#50	99.4		
#60	99.1		
#100	98.4		
#200	96.8		
0.0314 mm.	90.5		
0.0216 mm.	73.7		
0.0125 mm.	61.7		
0.0091 mm.	52.8		
0.0069 mm.	43.2		
0.0035 mm.	30.4		
0.0014 mm.	19.4		

* (no specification provided)

Soil Description

coarse to fine SILT, trace med to fine Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.0310 D_{85}= 0.0276 D_{60}= 0.0116
D_{50}= 0.0084 D_{30}= 0.0034 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

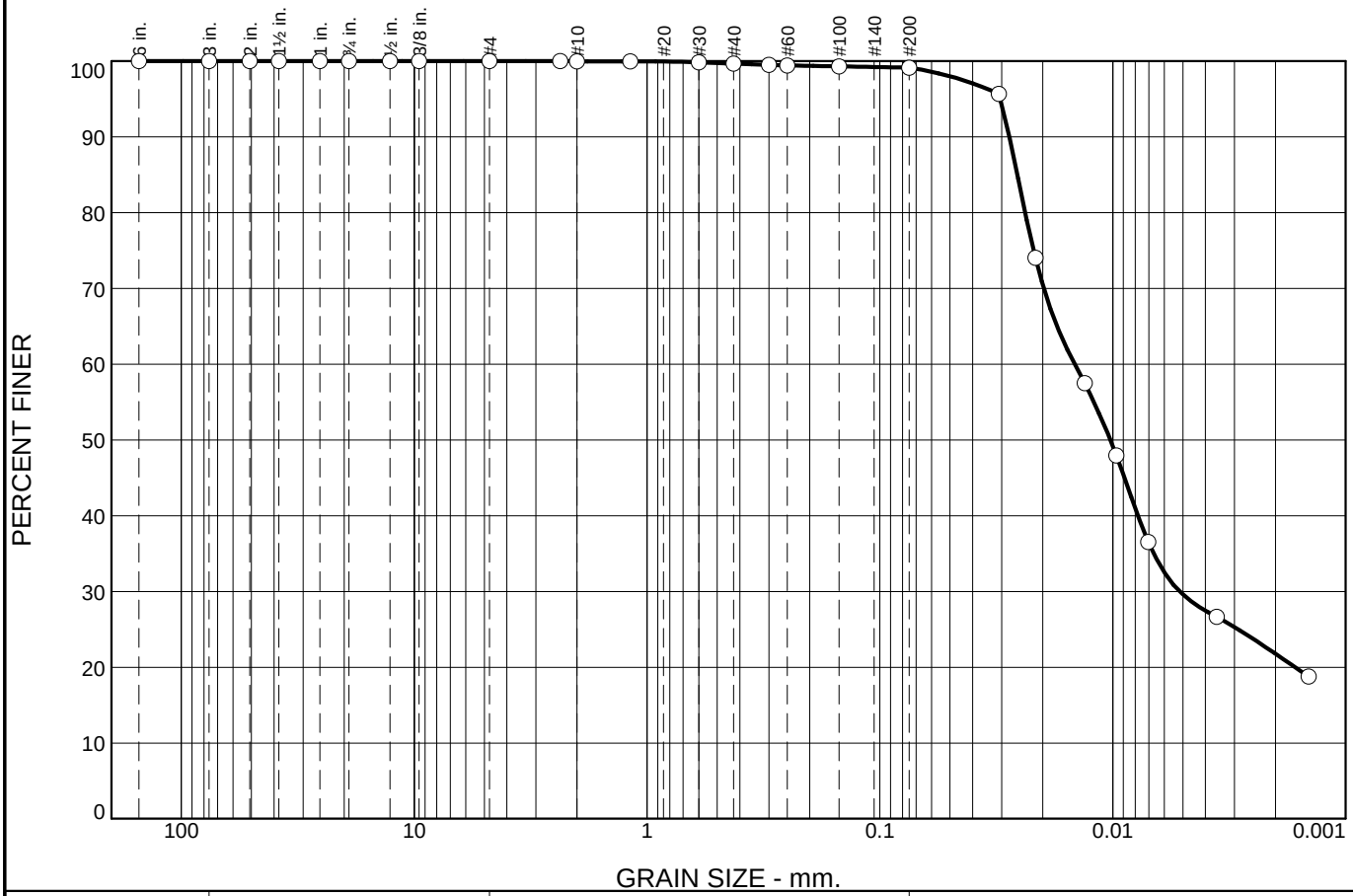
Location: B-4 / S3
Sample Number: L-348-23 **Depth:** 4'-6' **Date:** 11/8/2023

Civil Connection, LLC

Canterbury, New Hampshire

Client: Ransom Consulting, Inc.
Project: Fort Drum - Well Field Expansion (181.05025.005 Task 03)
Fort Drum, NY.
Project No: 23-504 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	0.6	69.5	29.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
6"	100.0		
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	100.0		
#30	99.8		
#40	99.7		
#50	99.5		
#60	99.4		
#100	99.3		
#200	99.1		
0.0309 mm.	95.7		
0.0215 mm.	74.0		
0.0132 mm.	57.5		
0.0097 mm.	47.9		
0.0070 mm.	36.5		
0.0036 mm.	26.7		
0.0014 mm.	18.8		

* (no specification provided)

Soil Description

coarse to fine SILT

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.0278 D_{85}= 0.0257 D_{60}= 0.0146
D_{50}= 0.0102 D_{30}= 0.0052 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Location: B-6 / S3
Sample Number: L-349-23 **Depth:** 4'-6' **Date:** 11/8/2023

Civil Connection, LLC

Canterbury, New Hampshire

Client: Ransom Consulting, Inc.
Project: Fort Drum - Well Field Expansion (181.05025.005 Task 03)
Fort Drum, NY.
Project No: 23-504 **Figure**

Geotechnical Engineering Report

Energy Resilience and Conservation Investment Program (ERCIP)
Well Field Expansion Project
United States Army Garrison
Fort Drum, New York

Prepared for:

Arcadis U.S., Inc.
One Lincoln Center
110 W. Fayette Street
Syracuse, New York

July 31, 2025 (Revised September 18, 2025)

Pinchin File: 181.05025.101

© 2025 Pinchin, LLC

Issued to:	**Arcadis U.S., Inc.**
Client Contact:	**Suzie Bower**
Issued on:	**July 31, 2025 (Revised September 18, 2025)**
Pinchin File:	**181.05025.101**
Issuing Office:	**Portsmouth, NH**
Primary Pinchin Contact:	**Brian R. Pettingill, P.G., Vice President**
	brian.pettingill@pinchin.com

Project Manager: Brian R. Pettingill, P.G.
Vice President/Technical Director

Reviewer: Jay P. Johonnett, P.E.
Consulting Geotechnical Engineer

© 2025 Pinchin, LLC

EXECUTIVE SUMMARY

Pinchin, LLC (Pinchin) has prepared this Geotechnical Engineering Report for Arcadis U.S., Inc. (Arcadis) for the proposed Energy Resilience and Conservation Investment Program (ERCIP) Well Field Expansion Project at Fort Drum, New York (the "Site"). This geotechnical report has been prepared in general accordance with Pinchin's Geotechnical Engineering Evaluation Proposed Scope of Work and Cost Estimate, dated August 8, 2024 (project 181.05025.101), and subcontract number US3460025084, executed July 3, 2025. The general location of the Site can be seen on Figure 1. Pinchin previously conducted a geotechnical evaluation for the proposed well field expansion pipeline for Colby Co. Engineering (Colby), dated October 18, 2023. Pinchin understands that there have been several changes to the proposed pipelines since that time, necessitating this subsequent geotechnical investigation. This geotechnical engineering evaluation was performed to obtain site-specific subsurface soil information in support of design and construction of the proposed water main and well field expansion project.

The proposed well field expansion project (the "Site") is located along the northwest periphery of the Wheeler-Sack Army Airfield at Fort Drum, New York. We understand that the proposed well field expansion project includes design and installation of approximately 22,500 linear feet of 18-inch HDPE water supply piping and access roads to new well houses along the route. The well field is located in the area of the intersection of Pleasant Street and Elm Lane, northwest of the airfield. The proposed water main is planned to be installed underground following the route of Elm Lane southeast to the intersection of Main Tank Trail, continuing southwest along Main Tank Trail to the water treatment plant.

The geotechnical subsurface exploration program was conducted for the Site on June 4, 2025, June 5, 2025, and June 19, 2025, and consisted of the advancement of 13 test borings (designated B-T1 through B-T5, B4-1, B5-1, B7-1, B-W1, B-W2, and B-W3R, B-W4R and B-W5), as shown on Figure 2. The test borings were advanced to depths of approximately 4.5 to 15 feet below grade. Subsurface explorations generally encountered surficial layers of topsoil, underlain by either fine to medium sand or silt. The sand was generally observed to be in a medium dense to very dense condition, and the silt was observed to be in a stiff to hard condition. Borings conducted in areas adjacent to the airfield generally encountered sand, and borings conducted in the area of the well field generally encountered silt. Subsurface conditions were observed to be generally consistent with conditions documented during the September 2023 subsurface investigation reported to Colby Company Engineering (Colby) in October 2023. A thin layer (1 to 4-inches thick) of organics was observed in borings B-T1 and B-T2 at depths of approximately 2.25 and 4 feet below grade, respectively. The organic soil is described as black fine-grained soil and was observed to be very soft.

© 2025 Pinchin, LLC

Water-saturated soils, inferred to be representative of groundwater, were encountered in approximately half of the test borings. The depth to groundwater was observed to range from approximately 4.5 to 10 feet below grade, corresponding to approximate elevations of 529.27 to 662.50 feet above mean sea level. Groundwater levels at the Site will fluctuate due to season, temperature, precipitation, nearby underground utilities, and construction activity. Therefore, water levels at other times may differ from the observations made during this evaluation.

Soil conditions are suitable for supporting conventional shallow foundation systems and slabs on grade. The naturally occurring silt and sand soils are considered the uppermost suitable bearing surface for proposed foundations. Topsoil and/or organics should be removed completely from below proposed structures and foundation bearing zones. Foundations should be designed using a maximum allowable bearing pressure of 3,000 pounds per square foot (psf) for foundations bearing on the native sand and silt soils.

The naturally occurring sand soils will likely be suitable for reuse as backfill in the water main trench. The sand soils will also likely be suitable for use as pipe bedding material. Gravel will likely need to be imported for base course materials in areas where the trench is located below road and driveway pavements. The silt soils are highly sensitive to moisture and will be very difficult to compact if exposed to excess moisture. Therefore, we do not recommend using the silt soils as backfill for trenches or structures.

Refusal, the depth at which the drilling equipment was not able to penetrate the deeper geologic formations, was encountered at prior test borings B4, B5, and B7 at a depth of 12 feet below grade and at current test borings B-T4 and B-W3R at depths of 14.4 and 4.6 feet below grade, respectively. The bedrock surface is irregular and may be encountered at shallower depths. Excavation of one to two feet of bedrock, if encountered, could likely be excavated using mechanical and/or hydraulic methods, such as a hoe ram, without the need for blasting. If bedrock/boulder removal requires blasting, the techniques and methods in the latest edition of the New York State Department of Transportation (NYSDOT) Standard Specifications should be followed. Blasting should also be performed in accordance with all local blasting ordinances.

The soils encountered in the boring program are considered to be frost susceptible (frost group S2 and F4 in accordance with UFC 3-260-02 Pavement Design for Airfields). The anticipated frost penetration is six feet below paved areas in accordance with Figure 20-5 of UFC 3-260-02, based on a design freezing index of 1,500-degree Fahrenheit days for Fort Drum, New York. Utilities and foundations planned with burial depths shallower than six feet should be designed with additional methods of frost protection.

© 2025 Pinchin, LLC

For the purposes of seismic design, the soil profile constitutes a “stiff soil” profile, and we assign a seismic site class of “D” to the Site based on the conditions encountered to a depth up to 15 feet. It is our opinion that the Site soils are not susceptible to liquefaction during seismic events.

In order to evaluate whether contaminants may exist in soil that may be displaced during construction of the proposed project and require proper management and off-site disposal, Pinchin collected one soil sample each from borings B-T3, B-T4, B4-1, B-W5 and B-W4R for laboratory analysis. Based on the findings, Pinchin concludes that no elevated concentrations of contaminants were identified in the analyzed soil samples. Excess soil generated during the proposed construction and not able to be reused on-site will likely require additional soil characterization testing in accordance with the proposed landfill or selected receiving facility.

In the event that changes in the design or location of the water main and well field are made, the conclusions and recommendations contained in this report should not be considered valid unless they have been reviewed and modified or verified in writing by Pinchin.

This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.

© 2025 Pinchin, LLC

TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 SITE AND PROJECT DESCRIPTIONS 1
2.1 Proposed Development 2
3.0 SUBSURFACE INVESTIGATION 2
3.1 Subsurface Explorations 2
3.2 Laboratory Testing 2
4.0 SUBSURFACE CONDITIONS 3
4.1 Subsurface Soils 4
4.2 Drilling Refusal/Bedrock 5
4.3 Groundwater 5
4.4 Geotechnical Laboratory Testing Results 5
4.5 Environmental Soil Testing Results 7
5.0 ENGINEERING EVALUATIONS 9
6.0 DESIGN RECOMMENDATIONS 10
6.1 Foundations 10
6.2 Seismic Considerations 11
6.3 Bedrock 11
6.4 Groundwater and Drainage Issues 11
6.5 Frost and Freezing Protection 13
7.0 EARTHWORK AND CONSTRUCTION RECOMMENDATIONS 14
7.1 Temporary Excavations 14
7.2 Dewatering and Runoff Control 14
7.3 Bedrock Excavation 15
7.4 Excavation and Backfilling 15
7.5 Reuse of Site Soils 16
7.6 Construction Monitoring 17
8.0 CLOSING COMMENTS 17

TABLES

Table 1 Environmental Soil Sample Analytical Results

FIGURES

FIGURE 1 Site Location Map
FIGURE 2 Subsurface Exploration Plan

APPENDICES

APPENDIX A Exploration Logs
APPENDIX B Laboratory Test Results

© 2025 Pinchin, LLC

1.0 INTRODUCTION

Pinchin, LLC (Pinchin) has prepared this Geotechnical Engineering Report for Arcadis U.S., Inc. (Arcadis) for the proposed Energy Resilience and Conservation Investment Program (ERCIP) Well Field Expansion Project at Fort Drum, New York (the "Site"). This geotechnical report has been prepared in general accordance with Pinchin's Geotechnical Engineering Evaluation Proposed Scope of Work and Cost Estimate, dated August 8, 2025 (project 181.05025.101), and subcontract number US3460025084, executed July 3, 2025. The general location of the Site can be seen on Figure 1.

Pinchin previously conducted a geotechnical evaluation for the proposed well field expansion pipeline for Colby Co. Engineering (Colby), dated October 18, 2023. Pinchin understands that there have been several changes to the proposed pipelines since that time, necessitating this subsequent geotechnical investigation. This geotechnical engineering evaluation was performed to obtain additional site-specific subsurface soil information in support of design and construction of the proposed well field expansion project including the proposed water main and wellhouses. As completed, Pinchin's scope of services included the following items:

1. Subcontracting and coordinating with a drilling contractor. Driller responsibilities included contacting the Dig Safely utility clearance system as required by New York law.
2. Providing technical monitoring for the subsurface explorations, collecting soil samples, and preparing exploration logs.
3. Submitting selected soil samples for laboratory chemical and geotechnical soil testing.
4. Evaluating the field and laboratory data with respect to the proposed development and preparing this report of our findings, evaluations, and recommendations for the proposed design and construction.

2.0 SITE AND PROJECT DESCRIPTIONS

The proposed well field expansion project (the "Site") is located along the northwest periphery of the Wheeler-Sack Army Airfield at Fort Drum, New York. Based on the Black River, New York United States Geological Survey (USGS) 7.5-minute Quadrangle, topography in the area of the Site generally slopes down gently away from the airfield at an elevation of around 680 feet above Mean Sea Level (MSL) to 550 feet above MSL at the northern extent of the proposed well field expansion area. A Site Location Map and Subsurface Exploration Plan are provided as Figures 1 and 2, respectively.

© 2025 Pinchin, LLC

2.1 Proposed Development

We understand that the proposed well field expansion project includes design and installation of approximately 22,500 linear feet of 18-inch HDPE water supply piping and access roads to new well houses along the route. The well field is located in the area of the intersection of Pleasant Street and Elm Lane, northwest of the airfield. The proposed water main is planned to be installed underground following the route of Elm Lane southeast to the intersection of Main Tank Trail, continuing southwest along Main Tank Trail to the water treatment plant. The approximate area of the proposed well field and water main route are depicted on Figure 2.

3.0 SUBSURFACE INVESTIGATION

The geotechnical subsurface exploration program was conducted for the Site on June 4, 5 and 19, 2025, and consisted of 13 test borings (designated B-T1 through B-T5, B4-1, B5-1, B7-1, B-W1, B-W2, B-W3R, B-W4R, and B-W5), as shown on Figure 2. The explorations were surveyed by others; their horizontal coordinates and elevations can be found on the boring logs in Appendix A and on Figure 2.

3.1 Subsurface Explorations

The test borings were advanced by Parratt-Wolff of East Syracuse, New York, with a track-mounted drill rig using hollow-stem auger drilling techniques. Split barrel sampling with standard penetration testing was conducted using an automatic drive hammer.

A Pinchin representative monitored subsurface exploration activities, prepared field boring logs, and measured the depths to groundwater saturated soils and/or bedrock when encountered. Soil samples were placed in sealed containers and returned to Pinchin's office for further evaluation. Soil samples were visually classified using modified Burmister Soil Classification System descriptors. Exploration logs are included in Appendix A.

3.2 Laboratory Testing

3.2.1 Geotechnical Laboratory Testing

The geotechnical soil index and chemical testing was performed on select samples by GeoTesting Express of Acton, Massachusetts and Testing Engineers International, Inc. of Salt Lake City, Utah. The samples were submitted for one or more of the following geotechnical laboratory tests performed in general accordance with applicable ASTM and AWWA procedures:

1. Moisture Content by ASTM D2216;
2. Gradation/Sieve Analysis by ASTM D6913;

© 2025 Pinchin, LLC

3. Organic Content by ASTM D2947;
4. Modified Proctor Test by ASTM D1557;
5. California Bearing Ratio (CBR) by ASTM D1883;
6. pH Analysis by AWWA 4500H;
7. Water Soluble Sulfate (SO4) by ASTM C1580;
8. Sulfides by AWWA 4500-S D;
9. Chlorides by ASTM D512;
10. Redox by AWWA 2540; and
11. Resistivity by ASTM G57.

The results of the geotechnical laboratory analytical tests are presented below in Section 4.4 and/or in the laboratory reports included in Appendix B.

3.2.2 Environmental Laboratory Testing

Laboratory testing for environmental parameters was conducted on select shallow soil samples by Pace Analytical Services LLC of Westborough, Massachusetts for possible waste characterization purposes. The samples were submitted for the following environmental laboratory tests performed in general accordance with applicable United States Environmental Protection Agency (U.S. EPA) procedures:

1. Volatile organic compounds (VOCs) by U.S. EPA Method 8260D;
2. Semi-volatile organic compounds (SVOCs) by U.S. EPA Method 8270E;
3. Polychlorinated biphenyls (PCBs) by U.S. EPA Method 8082A;
4. Pesticides by U.S. EPA Method 8081B; and
5. Resource Conservation and Recovery Act (RCRA) metals by U.S. EPA Method 3050B/7471B.

The results of the laboratory analytical tests are presented in the attached Table 1 and the laboratory reports included in Appendix B.

4.0 SUBSURFACE CONDITIONS

Subsurface conditions at the Site were characterized by advancing test borings into the unconsolidated overburden soil formations at accessible locations at the Site. Figure 2 illustrates the proposed Site features and approximate test boring locations.

© 2025 Pinchin, LLC

4.1 Subsurface Soils

The test borings were advanced to depths of approximately 4.5 to 15 feet below grade. Subsurface explorations generally encountered surficial layers of topsoil, underlain by either fine to medium sand or silt. Borings conducted in areas adjacent to the airfield generally encountered sand, and borings conducted in the area of the well field generally encountered silt. Subsurface conditions were observed to be generally consistent with conditions documented during the September 2023 subsurface investigation reported to Colby in October 2023. The general characteristics of the subsurface layers are described below.

4.1.1 Topsoil

A layer of topsoil was encountered at the ground surface at each boring location. The topsoil generally consisted of dark brown silty sand with organics. The topsoil ranged in thickness from approximately 2 to 14 inches.

4.1.2 Organics

A thin layer (1 to 4-inches thick) of organics was observed in borings B-T1 and B-T2 at depths of approximately 2.25 and 4 feet below grade, respectively. The organic soil is described as black fine-grained soil and was observed to be very soft.

4.1.3 Sand

A fine to medium-grained sand deposit was encountered beneath the topsoil in borings B-T1 through B-T5, B4-1, and B-W3R. This unit generally consisted of brown to reddish orange fine to medium sand with varying amounts of silt. The sand was generally observed to be in a medium dense to very dense condition, with density generally increasing with depth. Visual classification and laboratory grain-size distribution tests indicate that this soil is classified as silty sand (SM) or poorly graded sand (SP) in general accordance with the United Soil Classification System (USCS). Surficial geologic maps indicate this sand unit is a lake deposit present throughout the general upland area of the airfield.

4.1.4 Silt

A silt deposit was encountered beneath the topsoil in borings B5-1, B7-1, B-W1, B-W2, B-W4R, B-W5R and beneath the sand at B4-1. The silt unit generally consisted of gray to brown silt with some clay. The silt was observed to be in a stiff to hard condition. Visual classification and laboratory grain-size distribution tests indicate that this soil is classified as silt (ML) in general accordance with the USCS. Surficial geologic maps indicate this silt unit is a lake deposit present generally in the lower lying areas northwest of the airfield, in the well field area.

© 2025 Pinchin, LLC

4.2 Drilling Refusal/Bedrock

Refusal, the depth at which the drilling equipment was not able to penetrate the deeper geologic formations, was encountered at prior test borings B4, B5, and B7 at a depth of 12 feet below grade and at current test borings B-T4 and B-W3R at depths of 14.4 and 4.6 feet below grade, respectively. Refusal was not encountered in the other soil borings at the Site to a maximum depth of 15 feet below grade.

4.3 Groundwater

Water-saturated soils, inferred to be representative of groundwater, were encountered in approximately half of the test borings. The depth to groundwater was observed to range from approximately 4.5 to 10 feet below grade. Groundwater levels at the Site will fluctuate due to season, temperature, precipitation, nearby underground utilities, and construction activity. Therefore, water levels at other times may differ from the observations made during this evaluation.

4.4 Geotechnical Laboratory Testing Results

The results of the geotechnical laboratory testing of select soil samples can be found in the analytical data sheets appended as Attachment B and are summarized in the Tables 4-1 and 4-2 below.

© 2025 Pinchin, LLC

Table 4-1: Laboratory Test Results – Soil Description/Content and Electrical Resistivity and Conductivity

Boring/ Sample ID	Sample Depth (feet)	Description	Moisture Content (%)	Ash Content (%)	Organic Matter (%)	Electrical Resistivity (ohm-cm)	Electrical Conductivity $(ohm\text{-}cm)^{-1}$
B5-1	4-6	Brown Clay	24.1	NA	NA	NA	NA
B-T1	2-4	Light Brown Sand	3.6	NA	NA	NA	NA
B-T4	2-4	Light Reddish Brown Sand	3.5	NA	NA	NA	NA
B-W1	3-15	Olive Brown Silt	23	99.1	0.9	6,025	1.66E-04
B-W2	3-15	Dark Brown Silty Clay	24	99.1	0.9	3,708	2.70E-04
B-W3R	0-3	Dark Brown Sand	28	95.6	4.4	20,393	4.90E-05
B-W4R	3-15	Dark Brown Silt	23	98.8	1.2	5,562	1.80E-04
B-W5	3-15	Olive Brown Silt	24	99.6	0.4	5,191	1.93E-04

Notes:
ohm-cm = ohms per centimeter
NA = Not analyzed

© 2025 Pinchin, LLC

Table 4-2: Laboratory Test Results – Chloride, Sulfates/Sulfides, pH, REDOX and Gradation

Boring/ Sample ID	Sample Depth (feet)	Chloride (mg/kg)	Sulfates (mg/kg)	Sulfide (µg/kg)	pH	Reduction Oxidation Potential (REDOX)	Gradation/Sieve Analysis
B-W1	3-15	<10	20	1,140	6.04	165.0 @ 26.2° C	NA
B-W2	3-15	<10	20	70	6.07	145.9 @ 25.2 ºC	NA
B-W2-S3	4-6	NA	NA	NA	NA	NA	Silty Soils: 0.0% gravel 0.8% sand 99.2 silt/clay
B-W3R	0-3	<10	120	80	6.00	191.6 @ 25.0 ºC	NA
B-W4R	3-15	<10	20	4,200	6.03	177.0 @ 24.7 ºC	NA
B-W5	3-15	<10	20	2,140	5.99	144.6 @ 24.2 ºC	NA
B-W5-S2	2-4	NA	NA	NA	NA	NA	Silty Soils: 0.0% gravel 1.8 % sand 98.2 silt/clay
B5-1	4-6	NA	NA	NA	NA	NA	Silty Soils: 0.1% gravel 7.5% sand 92.4 silt/clay
B-T1-S2	2-4	NA	NA	NA	NA	NA	Fine Sands: 2.8% gravel 96.1% sand 1.1% silt/clay
B-T4-S2	2-4	NA	NA	NA	NA	NA	Fine Sands: 0.0% gravel 98.7% sand 1.3% silt/clay

Notes:
mg/kg = milligram per kilogram
µg/kg = micrograms per kilogram
°C = degrees Celsius
NA = Not analyzed

The results of other geotechnical laboratory testing, including California bearing ratios and compaction testing, can be found in the lab reports presented in Attachment B.

4.5 Environmental Soil Testing Results

In order to evaluate whether contaminants may exist in soil that may be displaced during construction of the proposed project and require proper management and off-site disposal, Pinchin collected one soil sample each from borings B-T3, B-T4, B4-1, B-W5 and B-W4R for laboratory analysis of the parameters

© 2025 Pinchin, LLC

specified in Section 3.2.2. The results are presented in Table 1 appended to this document and are summarized below.

4.5.1 VOCs

VOCs were not detected in the analyzed soil samples at concentrations exceeding laboratory reporting limits except for three compounds detected at low concentrations in soil from two soil borings. Soil sample SS-4-1, collected from 13 to 15 feet within boring B4-1, contained benzene at a concentration of 0.16 micrograms per kilogram (µg/kg) and acetone at a concentration of 7.6 µg/kg. Additionally, soil sample SS-W4R, collected from 4 to 6 feet within boring B-W4R, contained bromomethane at a concentration of 0.73 µg/kg. These concentrations did not exceed their respective New York State Department of Environmental Conservation (NYSDEC) Soil Cleanup Objectives (SCOs).

4.5.2 SVOCs

SVOCs were not detected in the analyzed soil samples at concentrations exceeding laboratory reporting limits.

4.5.3 PCBs

PCBs were not detected in the analyzed soil samples at concentrations exceeding laboratory reporting limits.

4.5.4 Pesticides

Pesticides were not detected in the analyzed soil samples at concentrations exceeding laboratory reporting limits.

4.5.5 RCRA Metals

Arsenic, barium, total chromium and lead were detected above laboratory reporting limits in each of the analyzed soil samples, ranging from 0.579 to 107 milligrams per kilogram (mg/kg). Silver was also detected above laboratory reporting limits in the soil sample from boring B-W4R at a concentration of 0.286 mg/kg. No other metals were detected above laboratory reporting limits in the analyzed soil samples. The detected concentrations of metals did not exceed their respective NYSDEC SCOs except for chromium.

Total chromium was detected in each of the analyzed soil samples at concentrations ranging from 1.10 to 17.3 mg/kg. The NYSDEC SCOs for chromium are broken down into hexavalent and trivalent chromium. Hexavalent chromium is a rare and more toxic compound, while trivalent chromium is more common and often identified as a naturally occurring metal in soils. The detected concentrations of total chromium

© 2025 Pinchin, LLC

were below the trivalent chromium SCOs; however, some of the detected concentrations of total chromium exceeded the hexavalent SCOs. The total chromium concentrations in each of the analyzed soil samples exceeded the Unrestricted, Residential, Restricted Residential, and Protection of Ecological Resources SCOs for hexavalent chromium. Additionally, total chromium concentrations in two soil samples from borings B-W5 and B-W4R exceeded its Commercial and Industrial SCOs. As no known source of hexavalent chromium exists at the Site, and since no elevated concentrations of other metals were detected at the Site, Pinchin believes that the total chromium concentrations likely represent trivalent chromium, and therefore, no further investigation is warranted.

Based on the findings of the soil sampling and laboratory analysis, Pinchin concludes that no elevated concentrations of contaminants were identified in the analyzed soil samples. Excess soil generated during the proposed construction will likely require additional soil characterization testing in accordance with the proposed landfill or selected receiving facility.

5.0 ENGINEERING EVALUATIONS

The subsurface explorations generally encountered surficial layers of topsoil overlying sand and/or silt. The controlling geotechnical features for the construction of the proposed well field expansion and water main are:

1. Reuse of Site Soils. The naturally occurring sand soils will likely be suitable for reuse as backfill in the water main trench. The sand soils will also likely be suitable for use as pipe bedding material. Gravel will likely need to be imported for base course materials in areas where the trench is located below road and driveway pavements. The silt soils are highly sensitive to moisture and will be very difficult to compact if exposed to excess moisture. Therefore, we do not recommend using the silt soils as backfill for trenches or structures.
2. Bedrock. Drilling refusal was encountered in borings B4, B5, and B7 in the September 2023 investigation at a depth of 12 feet below grade. Drilling refusal was encountered at test borings B-T4 and B-W3R in June 2025 at depths of 14.4 and 4.6 feet below grade, respectively. We infer the drilling refusals to be the result of encountering the bedrock surface. The bedrock surface is irregular and may be encountered at shallower depths in areas of the proposed construction.
3. Organic Materials. A thin layer of organics was observed in borings B-T1 and B-T2 at depths of approximately 2.25 and 4 feet below grade, respectively. Organic materials are considered unsuitable for supporting the proposed construction and should be removed and replaced with granular fill materials. The organic materials were observed in a localized area at borings B-T1 and B-T2.

© 2025 Pinchin, LLC

4. Foundation Bearing Soils. The naturally occurring silt and sand soils are considered the uppermost suitable bearing surface for proposed foundations. Topsoil and/or organics should be removed from below proposed structures and foundation bearing zones. Foundations should be designed using a maximum allowable bearing pressure of 3,000 psf for foundations bearing on the native sand and silt soils.

Geotechnical engineering evaluations for this project are based on the subsurface conditions interpreted from widely spaced subsurface explorations, laboratory testing, and the project design information currently available. Should differing information become known prior to or during construction, the following evaluations and recommendations should be reviewed by Pinchin and modifications to these evaluations may be necessary.

6.0 DESIGN RECOMMENDATIONS

Based on the subsurface explorations and our geotechnical evaluations, Pinchin presents the following recommendations for the proposed well field expansion and water main at Fort Drum, New York.

6.1 Foundations

The naturally occurring silt and sand soils are considered the uppermost suitable bearing surface for proposed foundations. Topsoil and/or organics should be removed from below proposed structures and foundation bearing zones. With proper Site preparation, proposed foundations could bear directly on native soils, or compacted structural fill placed above the native soils or bedrock. When subgrade soils consist of fine-grained materials, such as silt, we recommend a minimum of 6 inches of crushed stone be provided immediately below foundations to protect the underlying subgrade soils.

Foundation elements should be proportioned using a maximum allowable contact pressure of 3,000 psf. Spread footings should be at least 2 feet wide and continuous footings should be at least 1.5 feet wide. Post-construction total settlement is anticipated to be no more than approximately 1 inch.

Lateral loads may be resisted by friction between the bottoms of footings and supporting subgrades, and by passive earth pressure against the sides of the foundation. A friction coefficient of 0.40 for silt subgrades or 0.55 for crushed stone or structural fill subgrades, and an equivalent fluid unit weight of 200 pounds per cubic foot (pcf) against the sides of footings should be used.

Exterior footings should be placed a minimum of 6 feet below the lowest proposed adjacent ground surface exposed to freezing. Interior footings should be placed a minimum of 3 feet below the top of proposed ground floor slabs. If exposure to freezing is anticipated during or after construction, interior footings should be lowered to bear 6 feet below the top of the ground floor slab or protected from frost.

© 2025 Pinchin, LLC

6.2 Seismic Considerations

For the purposes of seismic design, the soil profile constitutes a “stiff soil” profile, and we assign a seismic site class of “D” to the Site based on the conditions encountered to a depth up to 15 feet. It is our opinion that the Site soils are not susceptible to liquefaction during seismic events.

6.3 Bedrock

Drilling refusal was encountered in borings B4, B5, and B7 in the September 2023 investigation at a depth of 12 feet below grade. Drilling refusal was encountered at test borings B-T4 and B-W3R in June 2025 at depths of 14.4 and 4.6 feet below grade, respectively. We infer the drilling refusals to be the result of encountering the bedrock surface. The bedrock surface is irregular and bedrock and/or large boulders could be encountered at shallower depths in the proposed construction areas. The depth to bedrock should be considered when designing the water main and structures to minimize the amount of bedrock removal that could be required where possible.

Where bedrock is encountered above design elevations, undercutting of the bedrock should be performed in accordance with the pipe manufacturer’s recommendations and to a minimum depth of 6 inches below proposed pipe inverts and foundations.

Excavation of one to two feet of bedrock could likely be accomplished using mechanical and/or hydraulic methods, such as hoe rams, without the need for blasting. Removal of greater bedrock thicknesses could require blasting.

6.4 Groundwater and Drainage Issues

Water-saturated soils, inferred to be representative of groundwater, were encountered in approximately half of the test borings. The depth to groundwater was observed to range from approximately 4.5 to 10 feet below grade. In general, groundwater was encountered at depths greater than 8 feet below grade along the proposed pipeline, and at depths near 4 to 5 feet below grade in the proposed well field area. We understand that several stream crossings will be required. The elevations of existing culverts or bridge structures should be considered when designing the water main.

Based on the groundwater depths observed, the project general contractor should be prepared to perform dewatering during excavation and installation of building foundations and potentially subsurface utilities (i.e., water main and other supporting utilities).

Due to the nature and presumed size of the well pumphouse buildings, it is our opinion that under-slab drainage systems and vapor barriers are not necessary for geotechnical considerations. Due to the fine-grained nature of the native silt soils and their inferred low permeability, we recommend that the proposed well pumphouse buildings be constructed with perimeter foundation drainage systems.

© 2025 Pinchin, LLC

The perimeter drainage systems should consist of 4-inch-diameter, rigid polyvinyl chloride (PVC) SDR35 pipe with perforations of ¼ to ½ inch (openings should be oriented downward). The drain lines should be surrounded by a minimum of 6 inches of ¾-inch crushed stone wrapped in a nonwoven geotextile filter fabric (Mirafi 140N or approved equivalent). The foundation drains should be placed adjacent to the exterior sides of the spread footings at a minimum depth of 4 feet below adjacent exterior grades to protect against frost.

Where possible, the foundation drains should be pitched down at a minimum slope of 0.5 percent in the direction of flow. Cleanouts should be provided at every other 90-degree bend in order to provide for future flushing of the system as needed.

The foundation drains should be gravity drained to daylight or to a suitable system outlet. The final outlet of the drainage systems should be designed by the project Civil Engineer in consideration of all applicable municipal, state, and federal regulations.

If possible, an impervious cover, such as asphalt pavement, should be maintained at the exterior ground surface adjacent to proposed future foundation elements to reduce infiltration of surface runoff to foundation elevations. Surrounding Site grades should be sloped away from the proposed foundations in order to reduce the moisture available for forming frost and ice. Roof downspout drains should not be connected to the foundation drain system. Roof downspouts should be separately tight-lined to their discharge outlets.

Table 6-1 below presents groundwater depths and elevations at specific boring locations.

© 2025 Pinchin, LLC

Table 6-1: Groundwater Depths and Elevations

Boring ID	Date	Ground Elevation (feet)	Approximate Groundwater Depth Below Ground Surface (feet)	Approximate Groundwater Elevation (feet)
B-T1	6/4/2025	662.4962	9.0	653.50
B-T2	6/4/2025	649.9452	NE to 15.0	NE to 634.95
B-T3	6/4/2025	655.9042	NE to 15.0	NE to 640.90
B-T4	6/4/2025	644.2198	NE to 14.5	NE to 629.72
B-T5	6/4/2025	601.6586	10.0	591.66
B4-1	6/5/2025	566.9609	8.0	558.96
B5-1	6/5/2025	552.4567	NE to 15.0	NE to 537.46
B7-1	6/5/2025	530.4030	NE to 8.0	NE to 522.40
B-W1	6/19/2025	529.2704	NE to 15.0	NE to 514.27
B-W2	6/5/2025	534.7479	4.75	530.00
B-W3R	6/5/2025	539.3526	4.5	534.85
B-W4R	6/5/2025	548.6515	NE to 15.0	NE to 533.65
B-W5	6/5/2025	533.3511	4.8	528.55

Notes:
NE = Not encountered

6.5 Frost and Freezing Protection

The soils encountered in the boring program are considered to be frost susceptible (frost group S2 and F4 in accordance with UFC 3-260-02 Pavement Design for Airfields). The anticipated frost penetration is six feet below paved areas in accordance with Figure 20-5 of UFC 3-260-02, based on a design freezing

© 2025 Pinchin, LLC

index of 1,500-degree Fahrenheit days for Fort Drum, New York. Utilities and foundations planned with burial depths shallower than six feet should be designed with additional methods of frost protection.

7.0 EARTHWORK AND CONSTRUCTION RECOMMENDATIONS

Based on the subsurface explorations and our geotechnical evaluations, Pinchin presents the following recommendations for the construction of the proposed well field expansion and water main project at Fort Drum, New York.

7.1 Temporary Excavations

We have assumed that the utility excavations will be through cut-and-cover methods using trench boxes to provide temporary support to the deepest stretches of open trenches. It has been our experience that the ground surface around trench boxes could settle, leading to subsidence of adjacent roadways, sidewalks, and the ground without adequate engineering design. Lateral excavation support should be designed by a New York licensed Professional Engineer. The design should be submitted to Pinchin as a shop drawing for review.

All temporary excavations should be performed according to Occupational Safety and Health Administration (OSHA) Standards (29 CFR 1926 Subpart P). The contractor's competent person will be responsible for monitoring the height, slope, and depths of the excavations in accordance with these regulations.

7.2 Dewatering and Runoff Control

Groundwater was generally encountered in soil borings at depths greater than 8 feet below grade along the proposed pipeline, and at depths near 4 to 5 feet below grade in the proposed well field area. Dewatering will likely be required in excavations in the wellfield area. Groundwater levels at the Site will fluctuate due to seasonal effects, temperature, precipitation, nearby underground utilities, and construction activity. Therefore, water levels at other times may differ from the observations and measurements made during drilling. Construction dewatering should be provided where water is encountered so as to allow construction to be accomplished "in the dry."

It is our opinion that groundwater from these types of soils and anticipated excavation depths could be controlled through pumping from open sumps. Should free-draining soils be encountered, pumping from sumps might not provide sufficient groundwater control.

Surface water runoff should be directed away from excavations to reduce dewatering efforts and to protect subgrades from becoming soft and unstable. The contractor should anticipate the need for controlling runoff during wet periods.

© 2025 Pinchin, LLC

The contractor should be aware that the presence of groundwater can destabilize trench walls. This potential should be taken into account when evaluating the stability of the trenches, as well as the trench heights and lateral support methods.

7.3 Bedrock Excavation

Excavation of one to two feet of bedrock could likely be excavated using mechanical and/or hydraulic methods, such as a hoe ram, without the need for blasting. If bedrock/boulder removal requires blasting, the techniques and methods in the latest edition of the New York State Department of Transportation Standard Specifications should be followed. Blasting should also be performed in accordance with all local blasting ordinances.

7.4 Excavation and Backfilling

Excavation within fine grained soils (naturally occurring silt soils) should be accomplished using a smooth-edged bucket to minimize disturbance to the underlying subgrade soils; disturbance from toothed buckets could increase settlement of the backfilled soils after construction. Disturbed soils should be removed or compacted prior to placing pipe bedding materials. Boulders and loose bedrock should be removed prior to placing pipe bedding.

Engineered fills may be required to achieve the final design grades in several areas of the proposed Site development. Table 7-1 below presents the gradation specifications for soils used in engineered fills at the Site. Reference is made to materials, described in the NYSDOT *Standard Specifications*, as possible alternatives.

Table 7-1: Soil Gradation Specifications for Engineered Fills

Type	Sieve Size	% Passing
Structural Fill, NYSDOT Spec 304, Type 3	4" (100 mm)	100
	1/4" (6.3 mm)	30-75
	No. 40 (425 µm)	5-40
	No. 200 (75 µm)	0-10
Common Fill	8"	100
	No. 200 (75 µm)	0-15 when placed within 3 feet of finished grade in paved areas

© 2025 Pinchin, LLC

The different fill types should be used as follows:

1. Structural Fill should be used for engineered fills below structure footprints and in foundation bearing zones.
2. Common Fill should be used for engineered fills below roadway, parking, and other non-structural areas.

Where subgrades become saturated, unstable, and/or difficult to compact, crushed stone should be placed and compacted in lieu of structural fill. Crushed stone, when used, should be wrapped in a geotextile filter fabric, such as Mirafi 140N or equal.

All backfill soils should be placed in 12-inch maximum loose lifts and should be compacted to a minimum of 95 percent of the material's maximum dry density, as determined by ASTM D1557 (modified Proctor test) and verified with field density testing (ASTM D6938 or equivalent method). Lift thickness should be a maximum of 6-inch loose lifts when compacted with hand-guided equipment. Compaction to less than 95 percent could result in settlement of the backfills within the trench, which could damage the pavement.

Bedding placed below utilities should be in accordance with the utility and manufacturer requirements. In general, utilities may be supported directly on a minimum 6-inch-thick layer of compacted fill, crushed stone, or other suitable pipe bedding materials.

7.5 Reuse of Site Soils

Excavations will encounter sand, silt, and potentially bedrock in areas. The naturally occurring sand soils will likely be suitable for reuse as backfill in the water main trench. The sand soils will also likely be suitable for use as pipe bedding material. Gravel will likely need to be imported for base course materials in areas where the trench is located below road and driveway pavements and for backfilling wellhouse foundations. The silt soils are highly sensitive to moisture and will be very difficult to compact if exposed to excess moisture. Therefore, we do not recommend using the silt soils as backfill for trenches or structures. If crushed stone is used for backfilling, a geotextile separator fabric (Mirafi 140N, for example) should be placed between the crushed stone and the in-place soils. Gravel will likely need to be imported for aggregate base and subbase course materials in paved roadway areas.

Representative samples of all proposed fills should be submitted for testing during construction to compare their gradation characteristics to the requirements of the project specifications, and to establish their optimum water contents and maximum dry densities (modified Proctor testing, ASTM D1557). The geotechnical engineer must approve use and reuse of on-site or borrow soils for fill materials. Use of fills assumes that the moisture content of the material will be strictly controlled in order to allow for proper placement and compaction.

© 2025 Pinchin, LLC

7.6 Construction Monitoring

Pinchin should be provided the opportunity to review the final design and specifications to ensure our recommendations presented herein have been properly interpreted and applied. Pinchin recommends that all fill, backfill, and compaction be inspected and tested by a qualified firm to make sure the proper materials are placed and adequately compacted. Pinchin should review all soil inspection and testing reports. Pinchin should be retained to provide construction observation and documentation for the following aspects of site development:

1. Observe soil subgrade conditions as they are exposed and confirm that the exposed conditions are consistent with those in this report;
2. Document the preparation of foundation bearing surfaces and other subgrades;
3. Determine the need for additional cut, backfill, or stabilization of subgrades; and
4. Confirm that the soils used as fills and backfills conform to the project specifications.

8.0 CLOSING COMMENTS

This report has been prepared to assist the project team in the design and construction of the proposed water main and well field expansion project at Fort Drum. In the event that changes in the design or location of the proposed utilities or structures are planned, the conclusions and recommendations contained in this report should not be considered valid unless they have been reviewed and modified or verified in writing by Pinchin. Pinchin should be provided the opportunity to review the final design plans and project specifications in order to confirm that the recommendations made in this report were interpreted and implemented as intended.

Our recommendations are based in part upon data obtained from widely spaced test explorations. The nature and extent of variations between explorations will not become evident until construction. If significant variations then appear, it may be necessary to reevaluate and revise the recommendations of this report.

The findings, recommendations, specifications, and professional opinions contained within this project geotechnical report have been prepared in accordance with generally accepted professional geotechnical engineering practices. No other warranties are implied or expressed.

© 2025 Pinchin, LLC

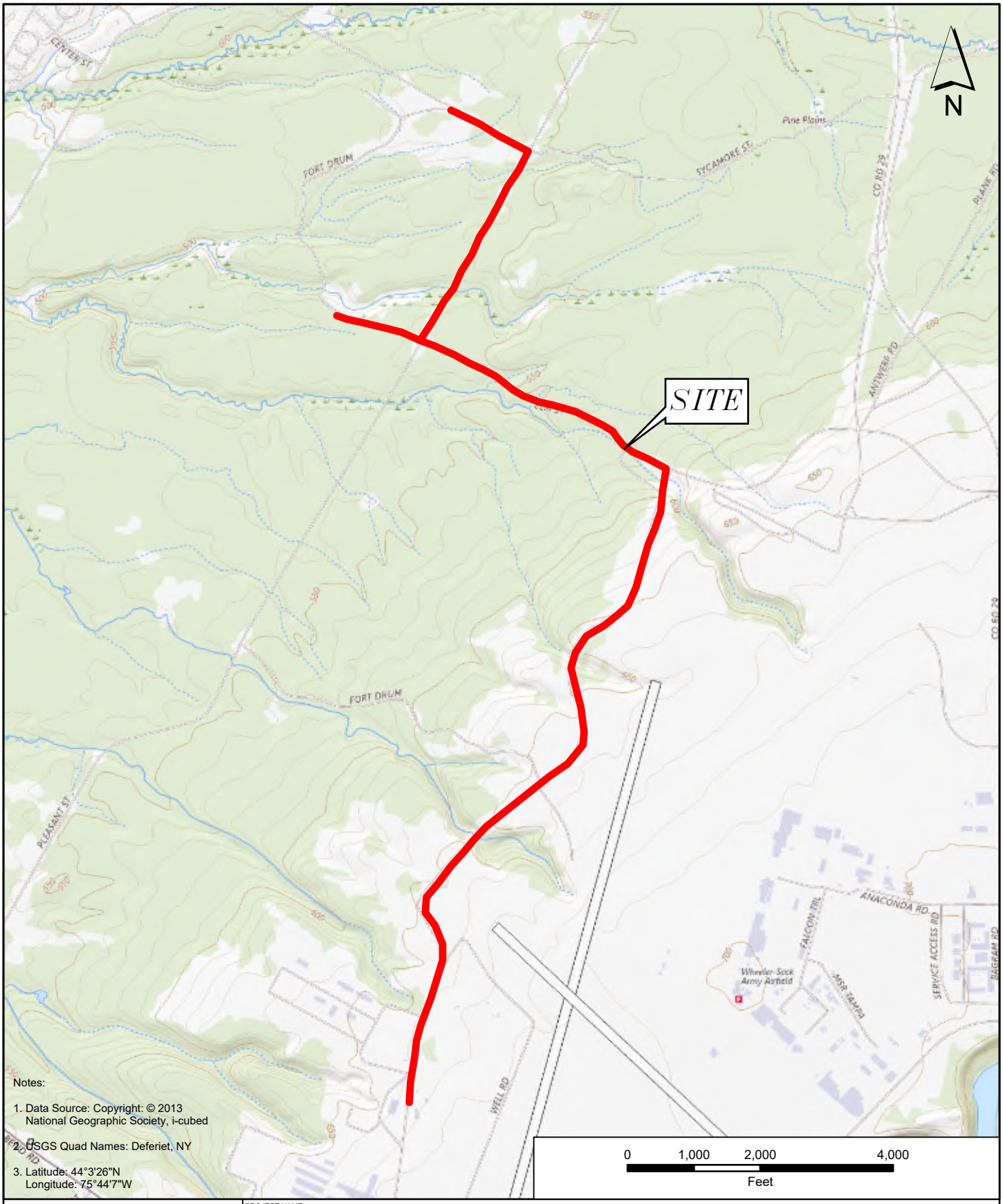
TABLE 1: **Environmental Soil Sample Analytical Results**

Energy Resilience and Conservation Investment Program (ERCIP)
United States Army Garrison - Fort Drum
Fort Drum, New York

Boring Identification	**B-T3**	**B-T4**	**B4-1**	**B-W5**	**B-W4R**	**NYSDEC Soil Cleanup Objectives**						
Sample Identification	**SS-T3**	**SS-T4**	**SS-4-1**	**SS-W5**	**SS-W4R**							
Sample Date	**6/4/2025**	**6/4/2025**	**6/5/2025**	**6/5/2025**	**6/5/2025**	**Unrestricted**	**Residential**	**Restricted Residential**	**Commercial**	**Industrial**	**Protection of Ecological Resources**	**Protection of Groundwater**
Sample Depth (feet)	**6-8**	**6-8**	**13-15**	**13-15**	**4-6**							
Volatile Organic Compounds (VOCs)	Concentrations in micrograms per kilogram (µg/kg)											
Benzene	BRL (0.58)	BRL (0.58)	0.16 J	BRL (0.52)	BRL (0.52)	60	1,200	3,700	20,000	20,000	70,000	60
Acetone	BRL (12)	BRL (12)	7.6 J	BRL (10)	BRL (10)	30	100,000	100,000	500,000	1,000,000	2,200	30
Bromomethane	BRL (2.3)	BRL (2.3)	BRL (1.9)	BRL (2.1)	0.73 J	NS	NS	NS	NS	NS	NS	NS
All Other VOCs	BRL (VBC)	BRL (VBC)	BRL (VBC)	BRL (VBC)	BRL (VBC)	VBC	VBC	VBC	VBC	VBC	VBC	VBC
Semi-Volatile Organic Compounds (SVOCs)	Concentrations in µg/kg											
All SVOCs	BRL (VBC)	BRL (VBC)	BRL (VBC)	BRL (VBC)	BRL (VBC)	VBC	VBC	VBC	VBC	VBC	VBC	VBC
Polychlorinated Biphenyls (PCBs)	Concentrations in mg/kg											
All PCBs	BRL (48.7)	BRL (49.0)	BRL (54.6)	BRL (62.5)	BRL (58.2)	VBC	VBC	VBC	VBC	VBC	VBC	VBC
Pesticides	Concentrations in µg/kg											
All Pesticides	BRL (VBC)	BRL (VBC)	BRL (VBC)	BRL (VBC)	BRL (VBC)	VBC	VBC	VBC	VBC	VBC	VBC	VBC
RCRA Metals	Concentrations in milligrams per kilogram (mg/kg)											
Arsenic	0.78 J	0.579 J	2.73	2.63	3.38	13	16	16	16	16	13	16
Barium	5.89	5.96	78.5	107	90.0	350	350	400	400	10,000	433	820
Total Chromium	*1.10*	*2.34*	*10.8*	*17.3*	*13.3*	1 /30*	1 / 30*	1 / 110*	11 / 1,500*	11 / 2,000*	1 / 41*	19
Lead	0.767 J	0.713 J	5.20	6.60	6.18	63	400	400	1,000	3,900	63	450
Silver	BRL (0.399)	BRL (0.408)	BRL (0.433)	BRL (0.516)	0.286 J	2	22	110	1,500	2,000	2	8.3
All Other Metals	BRL (VBC)	BRL (VBC)	BRL (VBC)	BRL (VBC)	BRL (VBC)	VBC	VBC	VBC	VBC	VBC	VBC	VBC

NOTES:

1. The samples collected by Pinchin, LLC on June 5 or 6, 2025 were analyzed by Pace Analytical Services, Inc. of Westborough, Massachusetts.
2. BRL ( ) = below reporting limit indicated in parentheses; NA = not analyzed; NS = no standard promulgated; J = estimated concentration; VBC = varies by compound.
4. R DEC = Residential Direct Exposure Criteria; I/C DEC = Industrial/Commercial Direct Exposure Criteria; GB PMC = GB Pollutant Mobility Criteria.
5. New York State Department of Environmental Conservation (NYSDEC) Soil Cleanup Objectives (SCOs) taken from 6 NYCRR Part 375-6.
7. * = The chromium Soil Cleanup Objectives are broken down into hexavalant / trivalent. Total chromium concentrations presented in *italics* exceed the hexavalent Soil Cleanup Objective.



Notes:

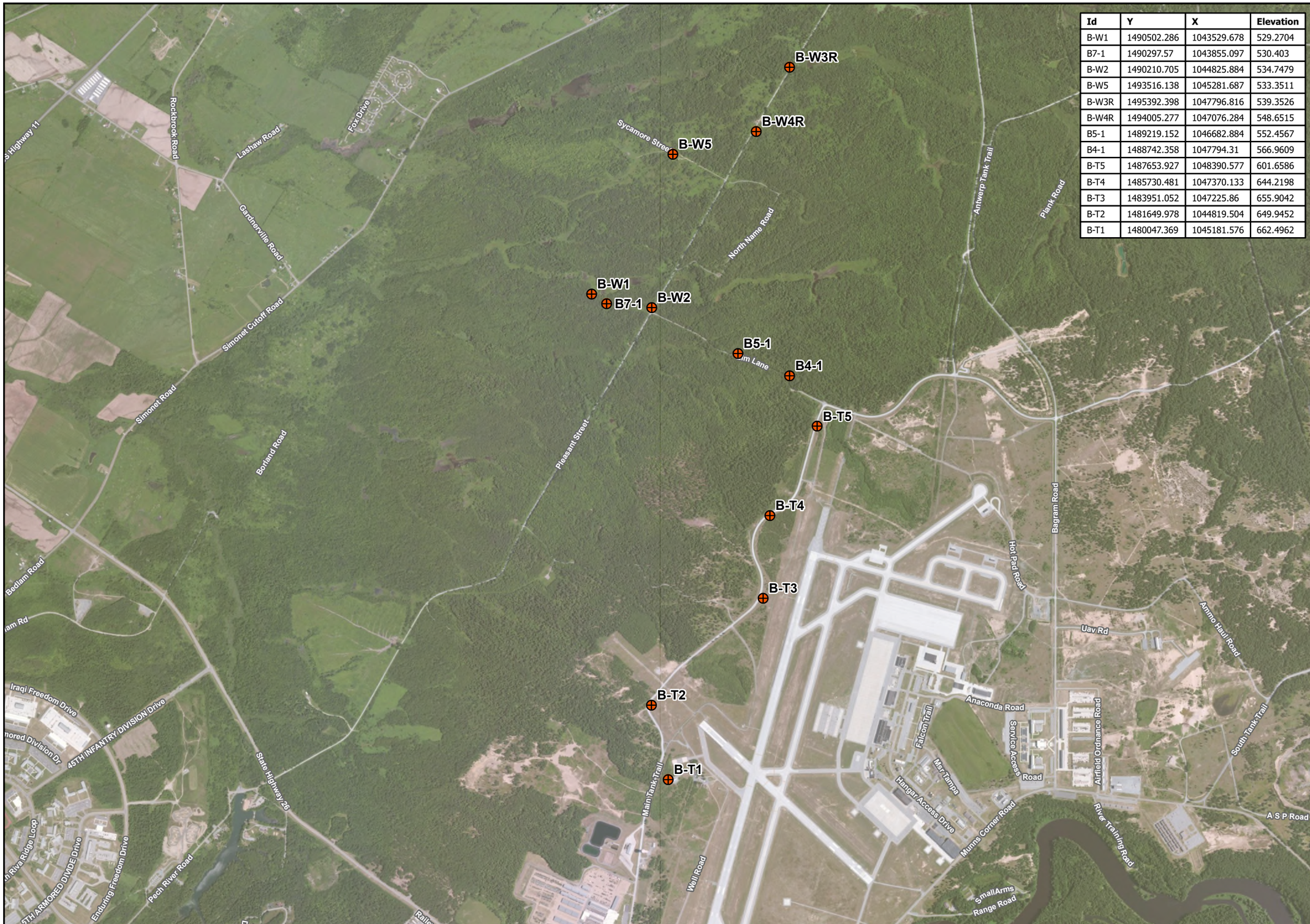
1. Data Source: Copyright: © 2013 National Geographic Society, i-cubed
2. USGS Quad Names: Deferiet, NY
3. Latitude: 44°3'26"N
   Longitude: 75°44'7"W

PINCHIN

PROJECT NAME:	FT. DRUM WELL FIELD EXPANSION
CLIENT NAME:	ARCADIS U.S., INC. ONE LINCOLN CENTER 110 W. FAYETTE STREET SYRACUSE, NEW YORK
PROJECT LOCATION:	FORT DRUM, NEW YORK
FIGURE NAME:	SITE LOCATION MAP
FIGURE NUMBER:	1

PROJECT NUMBER:	SCALE:	DRAWN BY:	REVIEWED BY:	DATE:
181.05025	AS SHOWN	PM	BP	SEPT 2025

X:\Pinchin_NewEngland\NewYork\FortDrum_NY\FtDrumWellField\WF_FtDrumNY.aprx 7/30/2025



Id	Y	X	Elevation
B-W1	1490502.286	1043529.678	529.2704
B7-1	1490297.57	1043855.097	530.403
B-W2	1490210.705	1044825.884	534.7479
B-W5	1493516.138	1045281.687	533.3511
B-W3R	1495392.398	1047796.816	539.3526
B-W4R	1494005.277	1047076.284	548.6515
B5-1	1489219.152	1046682.884	552.4567
B4-1	1488742.358	1047794.31	566.9609
B-T5	1487653.927	1048390.577	601.6586
B-T4	1485730.481	1047370.133	644.2198
B-T3	1483951.052	1047225.86	655.9042
B-T2	1481649.978	1044819.504	649.9452
B-T1	1480047.369	1045181.576	662.4962

0 1,000 2,000

1" = 2,000 Feet

N

Legend

Soil Boring

Notes:

1. Site Plan based on ESRI Imagery.
2. Some features are approximate in location and scale
3. This plan has been prepared for Arcadis U.S., Inc. All other uses are not authorized unless written permission is obtained from Pinchin, LLC.
4. Boring Locations surveyed by Arcadis U.S., Inc.

PINCHIN

PROJECT NAME:
FT. DRUM
WELL FIELD EXPANSION

CLIENT NAME:
ARCADIS U.S., INC.
ONE LINCOLN CENTER
110 W. FAYETTE STREET
SYRACUSE, NEW YORK

PROJECT LOCATION
FORT DRUM, NEW YORK

FIGURE NAME:
SUBSURFACE
EXPLORATION PLAN

PROJECT NUMBER:	SCALE:
181.05025	1" = 2,000'
DRAWN BY: PM	REVIEWED BY: BP
DATE: SEPT 2025	FIGURE NUMBER: 2

X:\Pinchin_NewEngland\NewYork\FortDrum_NY\FtDrumWellField\WF_FtDrumNY.aprx; WF_FtDrumNY-F2_SubsurfaceExplorationPlan; 9/5/2025

APPENDIX A

Exploration Logs

BORING LOG

B-T1

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 15 Feet
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/4/25
Site Location: Fort Drum, New York	Northing: 1480047.369; Easting: 1045181.576	Date Completed: 6/4/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 662.4962 Feet	Groundwater Observed: 9 Feet	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 6" Dark brown organic TOPSOIL, ROOTS, and fine to medium SAND, some silt, over 18" brown, fine to medium SAND, moist.		S1	1-3-3-4	24/12	<1	1	
						2	
S2 (2-4') 3" Brown, fine to medium SAND, over 1" black organic layer, over 8" brown, fine to medium SAND, some silt and fine to medium sand, moist.		S2	3-4-6-10	24/12	<1	3	
						4	
S3 (4-6') Brown, fine to medium SAND, some silt and fine to medium sand (poorly graded).		S3	4-9-12-20	24/15	<1	5	
						6	
S4 (6-8') Dark brown/yellowish orange, fine to medium SAND, moist.		S4	20-26-30-37	24/16	<1	7	
						8	
S5 (8-10') Dark brown/yellowish orange, fine to medium SAND, trace medium sand and silt, wet at ~9'.		S5	15-21-33-35	24/18	<1	9	
						10	
						11	
						12	
						13	
S6 (13-15') 9' Dark brown/yellowish orange, fine to medium SAND, trace medium sand and silt, over 7" silty SAND, wet.		S6	20-14-16-17	24/16	<1	14	
						15	
End of boring 15'.						16	
						17	
						18	
						19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B-T2

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 15 Feet
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/4/25
Site Location: Fort Drum, New York	Northing: 1481649.978; Easting: 1044819.504	Date Completed: 6/4/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 649.9452 Feet	Groundwater Observed: NA	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 7" Dark brown/black organic TOPSOIL and ROOTS, over 11" fine to medium SAND, trace silt.		S1	1-3-3-4	24/18	<1	1	
						2	
S2 (2-4') Light brown, silty SAND, small black streak of possible organics from 0-4", moist.		S2	3-3-3-4	24/16	<1	3	
						4	
S3 (4-6') 4" Black, organic SOIL and fine to medium SAND, some silt, over 20" black to light brown, silty SAND, moist.		S3	2-1-2-5	24/20	<1	5	
						6	
S4 (6-8') Light brown, fine to medium SAND, trace silt (poorly graded sand), moist.		S4	2-6-9-10	24/12	<1	7	
						8	
S5 (8-10') 16" Fine to medium SAND, trace silt and fine gravel, over 8" light brown, fine SAND, some silt, moist.		S5	6-12-14-20	24/24	<1	9	
						10	
						11	
						12	
						13	
S6 (13-15') Light brown, fine SAND, some silt, moist.		S6	6-12-13-21	24/20	<1	14	
						15	
End of boring 15'.						16	
						17	
						18	
						19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B-T3

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 15 Feet
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/4/25
Site Location: Fort Drum, New York	Northing: 1483951.052; Easting: 1047225.86	Date Completed: 6/4/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 655.9042 Feet	Groundwater Observed: N/A	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 14" Organic TOPSOIL and gray/dark brown, fine to medium SAND, trace silt, over 2" fragmented black to light gray, shale-like pieces, over 8" fine to medium SAND, trace silt (poorly graded sand).		S1	1-4-8-9	24/24	<1	1	
						2	
S2 (2-4') Light brown, medium to fine SAND, moist.		S2	7-9-9-9	24/13	<1	3	
						4	
S3 (4-6') Light brown, medium to fine SAND, moist.		S3	5-11-11-16	24/17	<1	5	
						6	
S4 (6-8') Light brown, medium to fine SAND, moist.		S4	17-15-22-25	24/20	<1	7	
						8	
S5 (8-10') Light brown, medium to fine SAND, moist.		S5	6-12-14-18	24/24	<1	9	
						10	
S6 (10-12') Light brown, medium to fine SAND, moist.		S6	18-19-20-25	24/20		11	
						12	
						13	
S6 (13-15') Light brown, medium to fine SAND, moist.		S6	8-14-17-29	24/20	<1	14	
						15	
End of boring 15'.						16	
						17	
						18	
						19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B-T4

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 14 Feet, 6 Inches
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/4/25
Site Location: Fort Drum, New York	Northing: 1485730.481; Easting: 1047370.133	Date Completed: 6/4/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 644.2198 Feet	Groundwater Observed: N/A	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 11" Black to light gray TOPSOIL and organic ROOTS, trace gravel and silty sand, over 7" light brown, fine to coarse SAND, trace fines, moist.		S1	2-4-4-6	24/18	<1	1	
						2	
S2 (2-4') Light brown, fine to medium SAND, trace fines (poorly graded sand), moist.		S2	8-9-15-15	24/19	<1	3	
						4	
S3 (4-6') Light brown, fine to medium SAND, trace fines (poorly graded sand), moist.		S3	6-13-18-25	24/17	<1	5	
						6	
S4 (6-7.4') Light brown, medium to fine SAND, trace fines (poorly graded sand), moist.		S4	24-34-50/4"	24/20	<1	7	
						8	
S5 (7.4-9.3') Light brown, medium to fine SAND, trace fines (poorly graded sand), few faint black lines crossgradient from spoon direction, moist.		S5	10-21-45-50/4"	23/23	1.2	9	
						10	
						11	
						12	
						13	
S6 (13-14.4') Light brown, medium to fine SAND, trace fines (poorly graded sand), few faint black lines crossgradient from spoon direction, moist.		S6	8-35-50/4"	16/16	<1	14	
End of boring 14.4'.						15	
						16	
						17	
						18	
						19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B-T5

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 15 Feet
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/4/25
Site Location: Fort Drum, New York	Northing: 1487653.927; Easting: 1048390.577	Date Completed: 6/4/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 601.6586 Feet	Groundwater Observed: ≈10 Feet	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 8" Organic, non-plastic CLAY, some light brown silt, some roots, over 10" black/dark brown, organic silty SAND, over 2" light brown/yellowish orange, fine SAND, trace silt (poorly graded), moist.		S1	2-2-3-5	24/20	1	1	
						2	
S2 (2-4') Light brown/yellowish orange, fine SAND, trace silt (poorly graded), moist.		S2	5-7-11-17	24/21	1.1	3	
						4	
S3 (4-6') Light brown/yellowish orange, fine SAND, trace silt (poorly graded), moist.		S3	13-20-22-36	24/21	2	5	
						6	
S4 (6-7.4') Light brown/yellowish orange, fine SAND, trace silt (poorly graded), moist.		S4	19-39-50/4"	16.8/16.8	1.2	7	
						8	
S5 (7.4-9.4') Light brown/yellowish orange, fine SAND, trace silt (poorly graded), moist, wet at ~10'.		S5	13-32-38-47	24/24	1.5	9	
						10	
						11	
						12	
						13	
S6 (13-15') Greenish/gray to brown SAND, some silt (wet).		S6	15-27-34-45	24/24	<1	14	
						15	
End of boring 15'.						16	
						17	
						18	
						19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B4-1

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 15 Feet
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/5/25
Site Location: Fort Drum, New York	Northing: 1488742.358; Easting: 1047794.31	Date Completed: 6/5/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 566.9609 Feet	Groundwater Observed: 8 Feet	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 2" Black, organic TOPSOIL, organic smell, over 3" grayish red to moderate brown, fine SAND, some silt, over 7" dark black to ash gray to moderate brown, silty SAND, some organics.		S1	1-1-1-2	24/12	<1	1	
						2	
S2 (2-4') Reddish orange, silty SAND, moist.		S2	1-2-5-7	24/17	<1	3	
						4	
S3 (4-6') 11" Reddish orange, silty SAND, over 9" light olive gray, silty SAND, moist.		S3	6-8-10-12	24/20	1.8	5	
						6	
S4 (6-8') 7.5" Light olive gray, silty SAND, over 2.5" lens of grayish/red to rust orange, silty SAND, some medium to mostly fine sand, over 5" light olive gray, moist, over 2" low plasticity SILT, wet at ~9'.		S4	10-12-16-11	24/18	2.6	7	
						8	
S5 (8-10') 6" Light olive gray SILT, over 14" light olive gray to dark gray, low to no plasticity SILT, wet.		S5	5-8-5-7	24/20	1.7	9	
						10	
						11	
						12	
						13	
S6 (13-15') Dark greenish gray to dark gray, non plastic, hard SILT.		S6	19-37-38-49	24/24	<1	14	
						15	
End of boring 15'.						16	
						17	
						18	
						19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B5-1

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 15 Feet
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/5/25
Site Location: Fort Drum, New York	Northing: 1489219.152; Easting: 1046682.884	Date Completed: 6/5/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 552.4567 Feet	Groundwater Observed: NA	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 8" Greenish gray to moderate brown SILT, some roots.		S1	1-3-8-13	24/22	<1	1	
						2	
S2 (2-4') Greenish gray to moderate brown SILT, some roots.		S2	8-8-10-10	24/22	<1	3	
						4	
S3 (4-6') Greenish gray to moderate brown SILT, some roots.		S3	8-14-14-14	24/20	<1	5	
						6	
S4 (6-8') Greenish gray to moderate brown SILT, some roots, trace sand, moist.		S4	12-22-21-21	24/22	1.2	7	
						8	
S5 (8-10') Greenish gray to moderate brown SILT, some roots, trace sand, moist.		S5	12-30-32-52	24/19	<1	9	
						10	
						11	
						12	
						13	
S6 (13-15') 11" Light brown, silty SAND, over 13" greenish gray to moderate brown SILT, some light to dark gray at bottom, moist.		S6	20-24-43-54	24/24	<1	14	
						15	
End of boring 15'.						16	
						17	
						18	
						19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B7-1

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 8 Feet
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/5/25
Site Location: Fort Drum, New York	Northing: 1490297.57; Easting: 1043855.097	Date Completed: 6/5/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 530.403 Feet	Groundwater Observed: NA	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 6" Moderate to dark brown, organic TOPSOIL, some roots, over 8" light brown, fine SAND, some silt, moist.		S1	1-1-5-7	24/14	<1	1	
						2	
S2 (2-4') Light brown SILT, moist.		S2	8-7-10-12	24/24	<1	3	
						4	
S3 (4-6') Light to dark brown/grayish SILT, moist.		S3	3-5-8-10	24/21	1.5	5	
						6	
S4 (6-8') Light to dark brown/grayish SILT, trace fine sand, some reddish color from oxidation, moist.		S4	17-15-17-17	24/20	1	7	
						8	
End of boring 8'.						9	
						10	
						11	
						12	
						13	
						14	
						15	
						16	
						17	
						18	
						19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B-W1

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 15 Feet
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/19/25
Site Location: Fort Drum, New York	Northing: 1490502.286; Easting: 1043529.678	Date Completed: 6/19/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 529.2704 Feet	Groundwater Observed: N/A	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 10" Black to dark brown, organic TOPSOIL, some roots (silt to fine sand), over 9" light brown SILT, trace fine sand, moist.		S1	1-4-6-9	24/19	<1	1	
						2	
S2 (2-4') Moderate to light brown SILT, moist.		S2	5-5-6-9	24/22	<1	3	
						4	
S3 (4-6') Light brown SILT, moist.		S3	3-5-6-6	24/23	<1	5	
						6	
S4 (6-8') Light brown SILT, moist.		S4	5-6-13-13	24/20	1.1	7	
						8	
S5 (8-10') Light brown SILT, trace fine sand, moist.		S5	2-4-10-12	24/20	<1	9	
						10	
						11	
						12	
						13	
S6 (13-15') Dark gray SILT, trace fine sand, moist.		S6	2-2-3-4	24/15	<1	14	
						15	
End of boring 15'.						16	
						17	
						18	
						19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B-W2

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 15 Feet
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/5/25
Site Location: Fort Drum, New York	Northing: 1490210.705; Easting: 1044825.884	Date Completed: 6/5/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 534.7479 Feet	Groundwater Observed: 4.75 feet	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 10" Black to dark brown, organic TOPSOIL, some roots (silt), trace fine sand, over 14" moderate brown to reddish orange SILT, moist.		S1	1-2-3-4	24/19	<1	1	
						2	
S2 (2-4') Moderate brown to reddish orange SILT, some light gray lenses.		S2	5-10-18-18	24/23	<1	3	
						4	
S3 (4-6') 3" Dark brown SILT, trace clay, moist, over 19" SILT, wet.		S3	7-8-11-15	24/22	<1	5	
						6	
S4 (6-6.9') Light olive gray to light brown SILT, little clay, wet.		S4	16-50/4"	24/8	<1	7	
						8	
S5 (8-10') Light olive gray to light brown SILT, little clay, moist.		S5	17-20-25-27	24/21	<1	9	
						10	
						11	
						12	
						13	
S6 (13-15') Light olive gray to light brown SILT, little clay, moist.		S6	NM	24/20	<1	14	
						15	
End of boring 15'.						16	
						17	
						18	
						19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B-W3R

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 4 Feet, 6 Inches
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/5/25
Site Location: Fort Drum, New York	Northing: 1495392.398; Easting: 1047796.816	Date Completed: 6/5/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 539.3526 Feet	Groundwater Observed: 4 Feet, 6 Inches	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 12" Dark brown to black, organic TOPSOIL and SILT, some clay, trace fine sand, trace roots, over 7" light brown, fine SAND, little silt, moist, over 1" partial boulder core.		S1	1-3-5-7	24/20	<1	1	
S2 (2-4') 2" of small boulder core, over 8" fine to coarse SAND, some gravel.		S2	10-8-7-6	24/10	<1	2 3	
S3 (4-6') Black, silty SAND, some bedrock fragments, wet.		S3	5-50/1.2"	8/8	<1	4	
Refusal, end of boring 4.6'.						5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B-W4R

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 15 Feet
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/5/25
Site Location: Fort Drum, New York	Northing: 1494005.277; Easting: 1047076.284	Date Completed: 6/5/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 548.6515 Feet	Groundwater Observed: NA	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 10" Organic TOPSOIL, some roots, some brown to black silt, trace coarse sand, over 5" light brown, silty SAND, some fine sand, moist.		S1	1-2-2-4	24/15	<1	1	
						2	
S2 (2-4') Light brown SILT, moist.		S2	5-9-11-20	24/22	<1	3	
						4	
S3 (4-6') Light brown SILT, moist.		S3	4-10-13-15	24/24	1.2	5	
						6	
S4 (6-8') Moderate brown SILT, moist.		S4	21-25-28-30	24/22	1	7	
						8	
S5 (8-10') Moderate brown SILT, moist.		S5	7-10-17-17	24/23	<1	9	
						10	
						11	
						12	
						13	
S6 (13-15') Moderate brown SILT, moist.		S6	4-8-11-13	24/23	<1	14	
						15	
End of boring 15'.						16	
						17	
						18	
						19	

Notes:

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

BORING LOG

B-W5

Project Number: 181.05025.101	Drilling Company: Parratt-Wolff	Total Depth: 15 Feet
Project: Proposed ERCIP Wellfield Expansion	Drilling Method: Hollow-stem auger	Start Date: 6/5/25
Site Location: Fort Drum, New York	Northing: 1493516.138; Easting: 1045281.687	Date Completed: 6/5/25
Client: Arcadis U.S., Inc.	Boring Diameter: 6.5 Inches	Logged by: RBF
Ground Surface Elevation: 533.3511 Feet	Groundwater Observed: 4.8 feet	Reviewed by: BRP

DESCRIPTION Based on USCS and Modified Burmister Soil Classification System	SAMPLE*	SAMPLE NUMBER	BLOWS (PER 6")	PENETRATION / RECOVERY	PID/FID (PPM)	DEPTH (FT.)	WELL CONSTRUCTION
S1 (0-2') 2" Black to dark gray, fine to coarse SAND, some organics, over 16" yellowish orange and greenish gray SILT.		S1	1-2-3-5	24/18	<1	1	
						2	
S2 (2-4') Yellowish orange and greenish gray SILT, moist.		S2	5-7-8-12	24/21	<1	3	
						4	
S3 (4-6') 6" Yellowish orange and greenish gray SILT, over 6" fine SAND, some silty sand, wet at ~4.8', over 10" grayish red to moderate brown SILT.		S3	3-4-9-15	24/22	<1	5	
						6	
S4 (6-8') Grayish red to moderate brown SILT, moist to wet.		S4	11-14-14-18	24/22	<1	7	
						8	
S5 (8-10') 11" Grayish red to moderate brown SILT with some clay, over 11" Grayish red to moderate brown SILT, moist		S5	4-6-9-10	24/22	<1	9	
						10	
						11	
						12	
						13	
S6 (13-15') Grayish red to moderate brown SILT, moist		S6	4-6-12-14	24/20	<1	14	
						15	
End of boring 15'.						16	
						17	
						18	
						19	

Notes: Standing water observed around 12' bgs in borehole

Well Legend:

FS	NF	B	BG	C	
Filter Sand	Native Fill	Bentonite	Bentonite Grout	Concrete	PVC Screen

NA=not applicable; NM=not measured; NE=not encountered
*Sample designated with black fill submitted for laboratory analysis.

APPENDIX B

Laboratory Test Results

Boston
New York
Atlanta
Chicago
Los Angeles
Houston
www.geotesting.com

Transmittal

TO:

River Fenton

Pinchin, LLC

400 Commercial St Suite 404

Portland, ME 04101

DATE: 8/5/2025	GTX NO: 321270
RE: Proposed ERCIP Wellfield Expansion	

COPIES	DATE	DESCRIPTION
	8/5/2025	**Jul 2025 Laboratory Test Report**

REMARKS:

SIGNED: Dave Norton

Dave Norton, Assistant Laboratory Manager

APPROVED BY: Aayushi Kale

Ayushi Kale, Laboratory Manager

Boston
New York
Atlanta
Chicago
Los Angeles
Houston
www.geotesting.com

August 5, 2025

River Fenton
Pinchin, LLC
400 Commercial St Suite 404
Portland, ME 04101

RE: Proposed ERCIP Wellfield Expansion, Fort Drum, NY (GTX-321270)

Dear River:

Enclosed are the test results you requested for the above referenced project. GeoTesting Express, LLC (GTX) received 10 samples from you between 6/19/2025 and 6/30/2025. These samples were labeled as follows:

Boring Number	Sample Number	Depth
B-5	SS-W5-S3	4-6'
B-T1	SS-T1-S2	2-4'
B-T4	SS-T4-S2	2-4'
B-W1	B-W1	3-15'
B-W2	B-W2	3-15'
B-W2	SS-W2-S3	4-6'
B-W3R	B-W3R	0-3'
B-W4R	B-W4R	3-15'
B-W5	B-W5	3-15'
B-W5	SS-W5-S2	2-4'

GTX performed the following tests on these samples:

5 ASTM D2974 - Moisture, Ash and Organic Matter
5 ASTM G 57 - Electrical Resistivity (Laboratory)
5 ASTM D1557 - Modified Proctor (Method A or B)
5 ASTM D1883 - California Bearing Ratio (1 point)
5 ASTM D2216 - Moisture Content
5 ASTM D6913 - Sieve Analysis

GTX also subcontracted TEI Testing Services, LLC of Salt Lake City, UT to perform Soluble Sulfates in Soil by ASTM C1580, Chloride analysis by ASTM D512, Sulfide & pH analysis by SM4500, and Oxidation-Reduction Potential of Soil by ASTM G200 on these samples. See the attached TEI test report for results.

Boston
New York
Atlanta
Chicago
Los Angeles
Houston
www.geotesting.com

The results presented in this report apply only to the items tested. This report shall not be reproduced except in full, without written approval from GeoTesting Express. The remainder of these samples will be retained for a period of sixty (60) days and will then be discarded unless otherwise notified by you. Please call me if you have any questions or require additional information. Thank you for allowing GeoTesting Express the opportunity of providing you with testing services. We look forward to working with you again in the future.

Respectfully yours,

Dave Norton
Assistant Laboratory Manager

Boston
New York
Atlanta
Chicago
Los Angeles
Houston
www.geotesting.com

Geotechnical Test Report **8/5/2025**

GTX-321270

Proposed ERCIP Wellfield Expansion

Fort Drum, NY

Client Project No.: 181.05025.101

Prepared for:

Pinchin, LLC

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	---	Sample Type:	---	Tested By:	ajl
Sample ID:	---	Test Date:	07/09/25	Checked By:	ank
Depth :	---	Test Id:	822092		

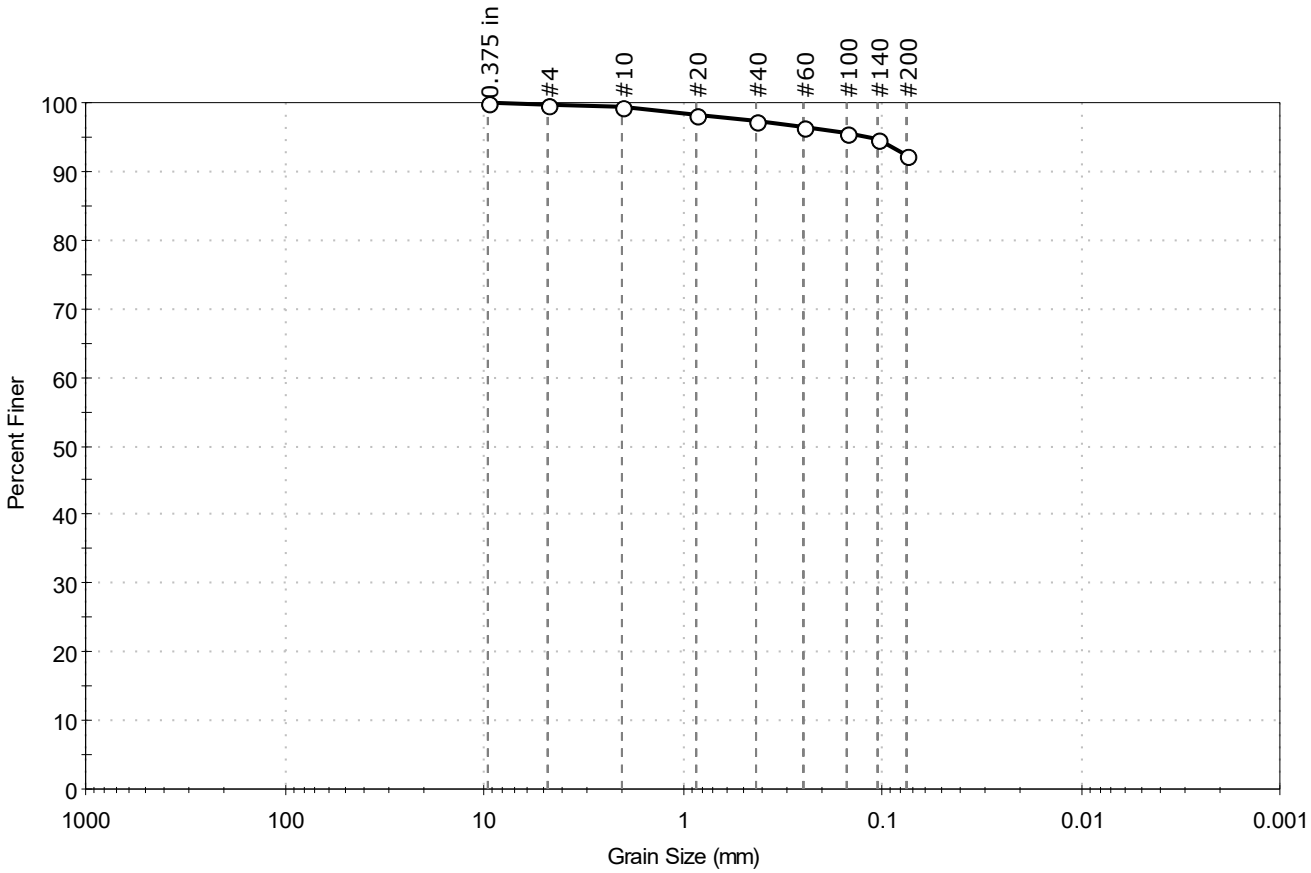
Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
B-5	SS- W5-S3	4-6'	Moist, brown clay	24.1
B-T1	SS- T1-S2	2-4'	Moist, light brown sand	3.6
B-T4	SS- T4-S2	2-4'	Moist, light reddish brown sand	3.5
B-W2	SS- W2-S3	4-6'	Moist, brown clay	22.3
B-W5	SS- W5-S2	2-4'	Moist, dark brown silt	24.7

Notes: Temperature of Drying : 110º Celsius

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	B-5	Sample Type:	Jar	Tested By:	ajl
Sample ID:	SS-W5-S3	Test Date:	07/09/25	Checked By:	ank
Depth :	4-6'	Test Id:	822098		
Test Comment:	---				
Visual Description:	Moist, brown clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.1	7.5	92.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	97		
#60	0.25	96		
#100	0.15	96		
#140	0.11	95		
#200	0.075	92		

Coefficients

D_{85} =N/A D_{30} =N/A

D_{60} =N/A D_{15} =N/A

D_{50} =N/A D_{10} =N/A

C_u =N/A C_c =N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

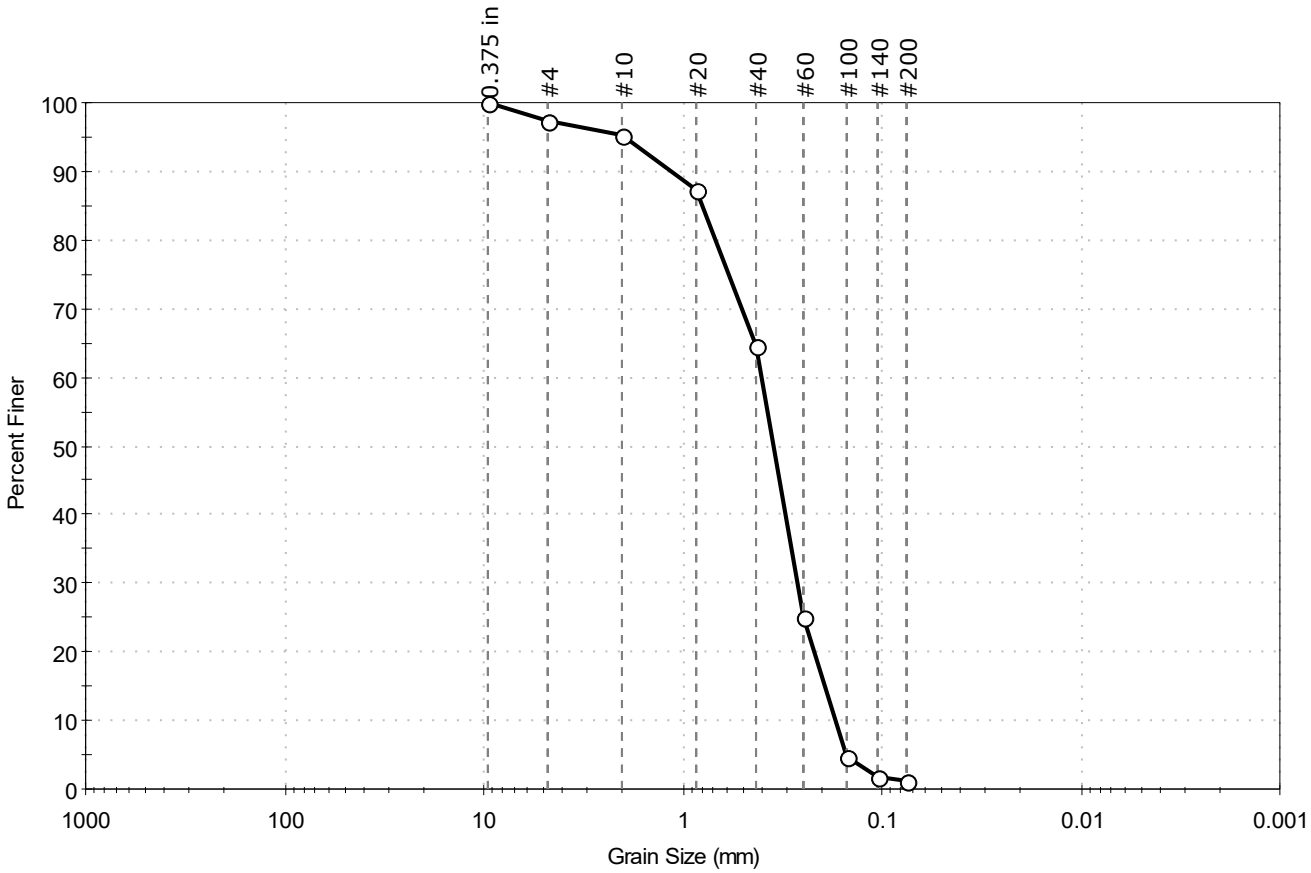
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

printed 7/9/2025 1:21:47 PM

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	B-T1	Sample Type:	Jar	Tested By:	ajl
Sample ID:	SS-T1-S2	Test Date:	07/09/25	Checked By:	ank
Depth :	2-4'	Test Id:	822094		
Test Comment:	---				
Visual Description:	Moist, light brown sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	2.8	96.1	1.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	97		
#10	2.00	95		
#20	0.85	87		
#40	0.42	65		
#60	0.25	25		
#100	0.15	5		
#140	0.11	2		
#200	0.075	1.1		

Coefficients

D_{85} = 0.7939 mm D_{30} = 0.2674 mm

D_{60} = 0.3991 mm D_{15} = 0.1941 mm

D_{50} = 0.3492 mm D_{10} = 0.1710 mm

C_u = 2.334 C_c = 1.048

Classification

ASTM Poorly graded SAND (SP)

AASHTO Fine Sand (A-3 (1))

Sample/Test Description

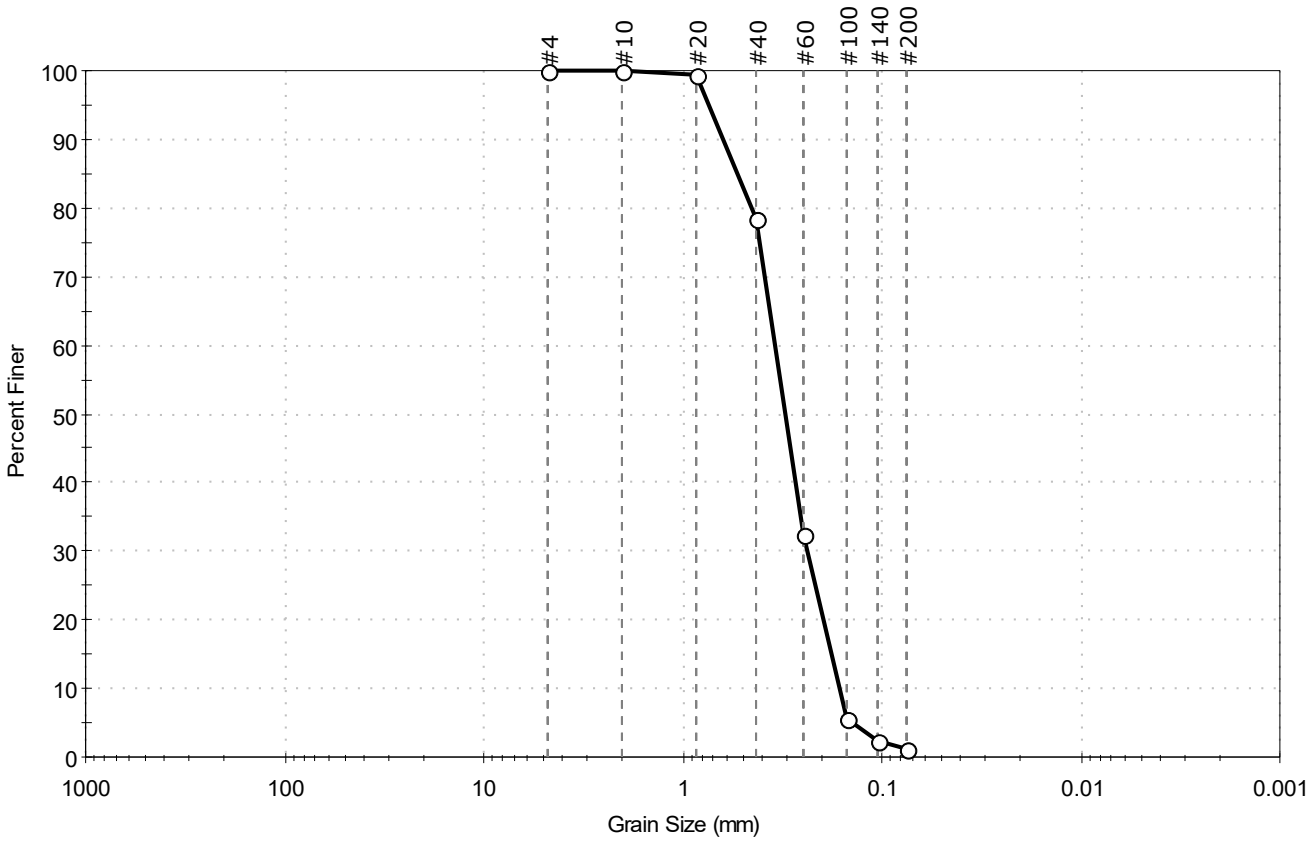
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

printed 7/9/2025 1:21:48 PM

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	B-T4	Sample Type:	Jar	Tested By:	ajl
Sample ID:	SS-T4-S2	Test Date:	07/09/25	Checked By:	ank
Depth :	2-4'	Test Id:	822095		
Test Comment:	---				
Visual Description:	Moist, light reddish brown sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.0	98.7	1.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	78		
#60	0.25	33		
#100	0.15	6		
#140	0.11	2		
#200	0.075	1.3		

Coefficients

D_{85} = 0.5277 mm D_{30} = 0.2383 mm
D_{60} = 0.3434 mm D_{15} = 0.1790 mm
D_{50} = 0.3060 mm D_{10} = 0.1627 mm
C_u = 2.111 C_c = 1.016

Classification

ASTM Poorly graded SAND (SP)

AASHTO Fine Sand (A-3 (1))

Sample/Test Description

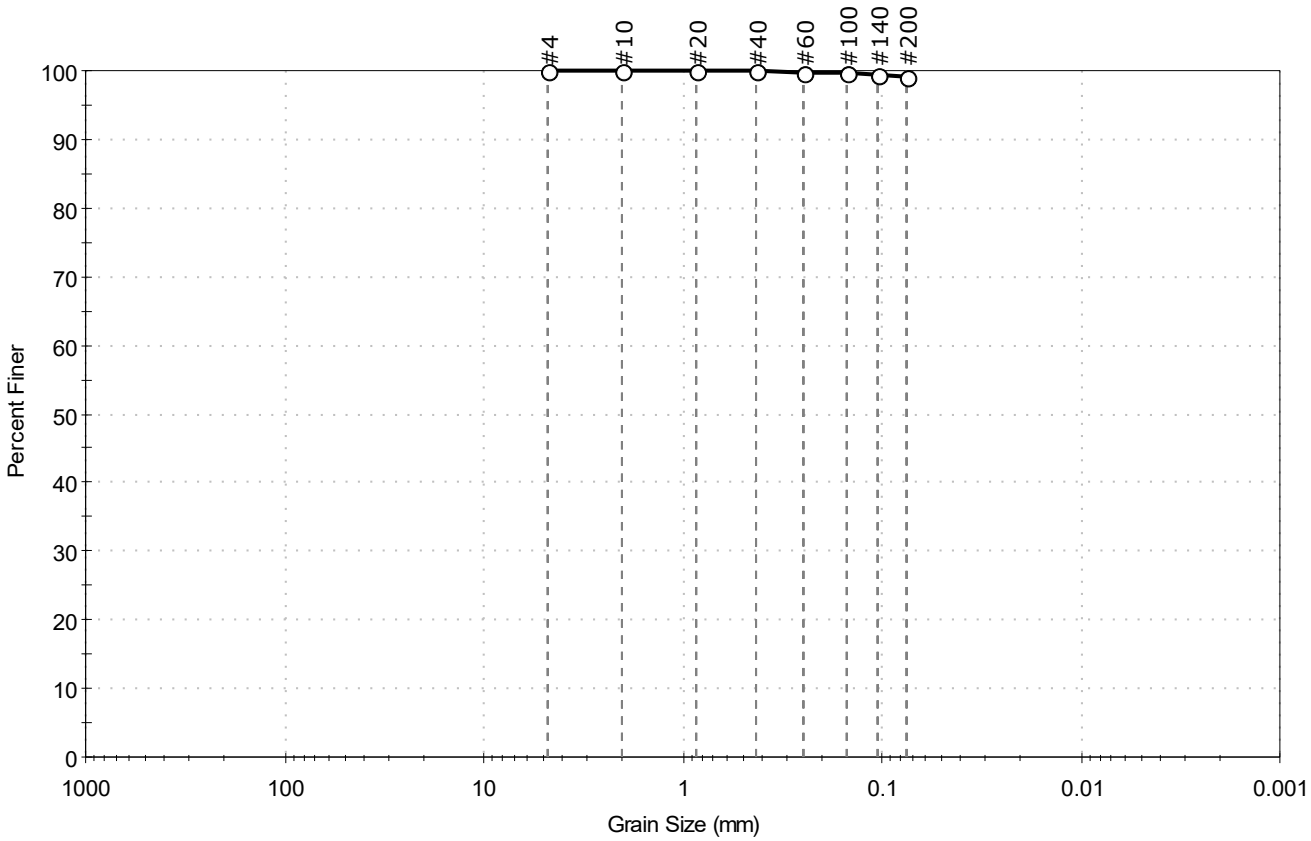
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

printed 7/9/2025 1:21:49 PM

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	B-W2	Sample Type:	Jar	Tested By:	ajl
Sample ID:	SS-W2-S3	Test Date:	07/09/25	Checked By:	ank
Depth :	4-6'	Test Id:	822096		
Test Comment:	---				
Visual Description:	Moist, brown clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	0.8	99.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#140	0.11	99		
#200	0.075	99		

Coefficients

D_{85} = N/A D_{30} = N/A
D_{60} = N/A D_{15} = N/A
D_{50} = N/A D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

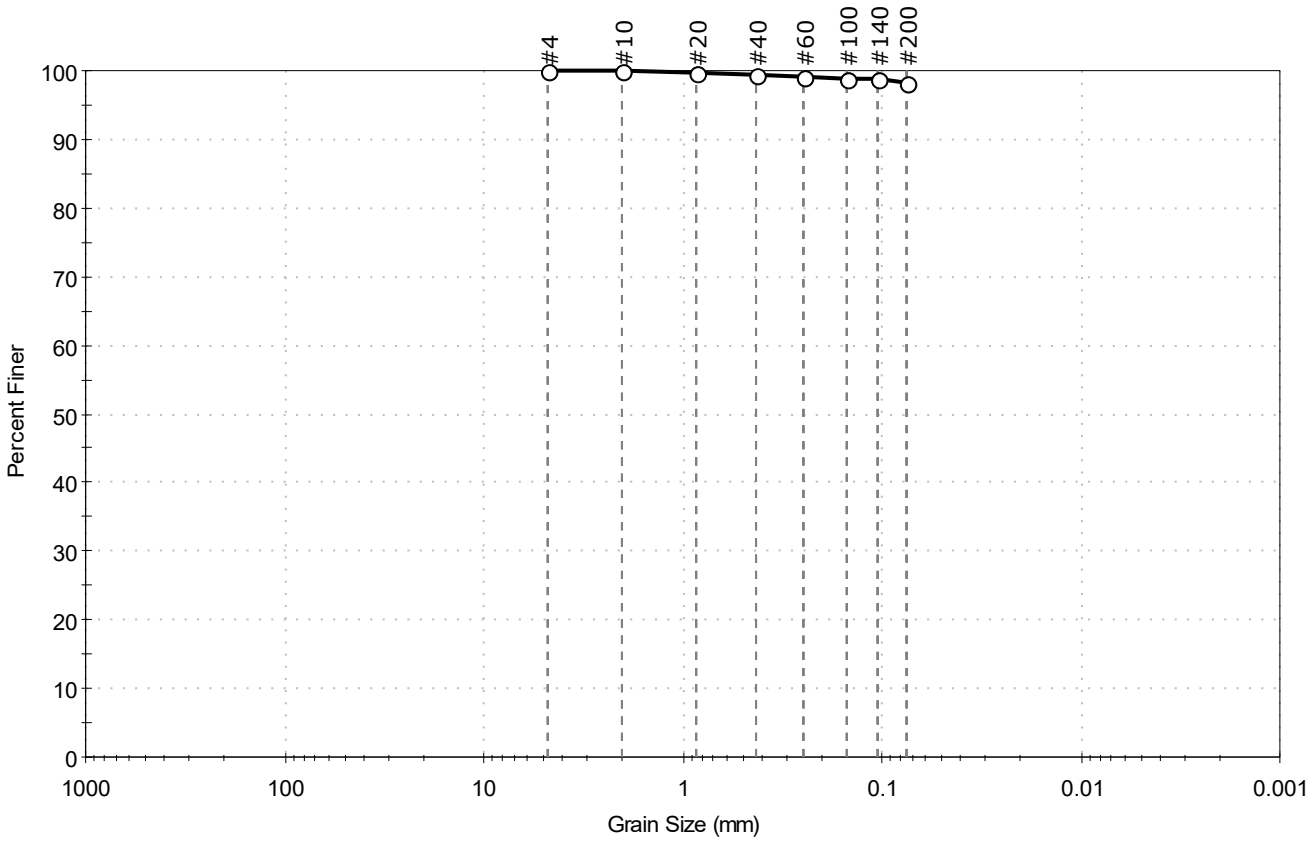
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

printed 7/9/2025 1:21:50 PM

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	B-W5	Sample Type:	Jar	Tested By:	ajl
Sample ID:	SS-W5-S2	Test Date:	07/09/25	Checked By:	ank
Depth :	2-4'	Test Id:	822097		
Test Comment:	---				
Visual Description:	Moist, dark brown silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	1.8	98.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	99		
#100	0.15	99		
#140	0.11	99		
#200	0.075	98		

Coefficients

D_{85} = N/A D_{30} = N/A
D_{60} = N/A D_{15} = N/A
D_{50} = N/A D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	---	Sample Type:	---	Tested By:	cam
Sample ID:	---	Test Date:	06/26/25	Checked By:	ank
Depth :	---	Test Id:	820522		

Moisture, Ash, and Organic Matter - ASTM D2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
B-W1	B-W1	3-15'	Moist, olive brown silt	23	99.1	.9
B-W2	B-W2	3-15'	Moist, dark brown silty clay	24	99.1	.9
B-W3R	B-W3R	0-3'	Moist, dark brown sand	28	95.6	4.4
B-W4R	B-W4R	3-15'	Moist, dark brown silt	23	98.8	1.2
B-W5	B-W5	3-15'	Moist, olive brown silt	24	99.6	.4

Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass;
dried to a constant mass at temperature of 105º C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440º C

Client:	Pinchin, LLC.
Project:	Proposed ERCIP Wellfield Expansion.
Location:	Fort Drum, NY
GTX#:	321270
Test Date:	07/03/25
Due Date:	07/03/25
Tested By:	NMK
Checked By:	ank

Laboratory Measurement of Soil Resistivity Using the Wenner Four-Electrode Method by ASTM G57 (Laboratory Measurement)

Boring ID	Sample ID	Depth, ft.	Sample Description	Electrical Resistivity, ohm-cm	Electrical Conductivity, $(ohm\text{-}cm)^{-1}$
B-WS	B-WS	3-15 ft	Moist, olive brown silt	5,191	1.93E-04
B-W2	B-W2	3-15 ft	Moist, dark brown silty clay	3,708	2.70E-04
B-W3R	B-W3R	0-3 ft	Moist, dark brown sand	20,393	4.90E-05
B-W42	B-W42	3-15 ft	Moist, dark brown silt	5,562	1.80E-04

Notes: Test Equipment: Nilsson Model 400 Soil Resistance Meter, MC Miller Soil Box
Water added to sample to create a thick slurry prior to testing (saturated condition).
Electrical Conductivity is calculated as inverse of Electrical Resistivity (per ASTM G57)
Test conducted in standard laboratory atmosphere: 68-73 F

Client:	Pinchin, LLC.
Project:	Proposed ERCIP Wellfield Expansion.
Location:	Fort Drum, NY
GTX#:	321270
Test Date:	07/07/25
Due Date:	07/07/25
Tested By:	NMK
Checked By:	ank

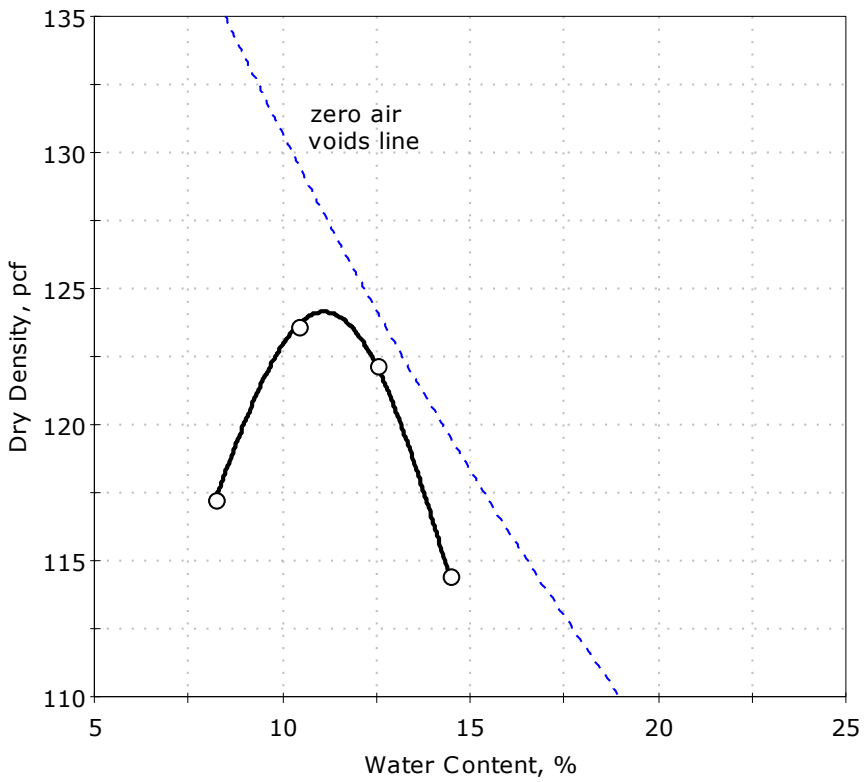
Laboratory Measurement of Soil Resistivity Using the Wenner Four-Electrode Method by ASTM G57 (Laboratory Measurement)

Boring ID	Sample ID	Depth, ft.	Sample Description	Electrical Resistivity, ohm-cm	Electrical Conductivity, $(ohm\text{-}cm)^{-1}$
B-W1	B-W1	3-15 ft	Moist, olive brown silt	6,025	1.66E-04

Notes: Test Equipment: Nilsson Model 400 Soil Resistance Meter, MC Miller Soil Box
Water added to sample to create a thick slurry prior to testing (saturated condition).
Electrical Conductivity is calculated as inverse of Electrical Resistivity (per ASTM G57)
Test conducted in standard laboratory atmosphere: 68-73 F

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	B-W1	Sample Type:	Bucket	Tested By:	cwd
Sample ID:	B-W1	Test Date:	07/11/25	Checked By:	ank
Depth :	3-15'	Test Id:	820822		
Test Comment:	---				
Visual Description:	Moist, olive brown silt				
Sample Comment:	---				

Compaction Report - ASTM D1557



Data Points	Point 1	Point 2	Point 3	Point 4
Dry density, pcf	117.3	123.6	122.2	114.4
Moisture Content, %	8.2	10.4	12.5	14.4

Method : A

Preparation : DRY

As received Moisture :23 %

Rammer : Mechanical

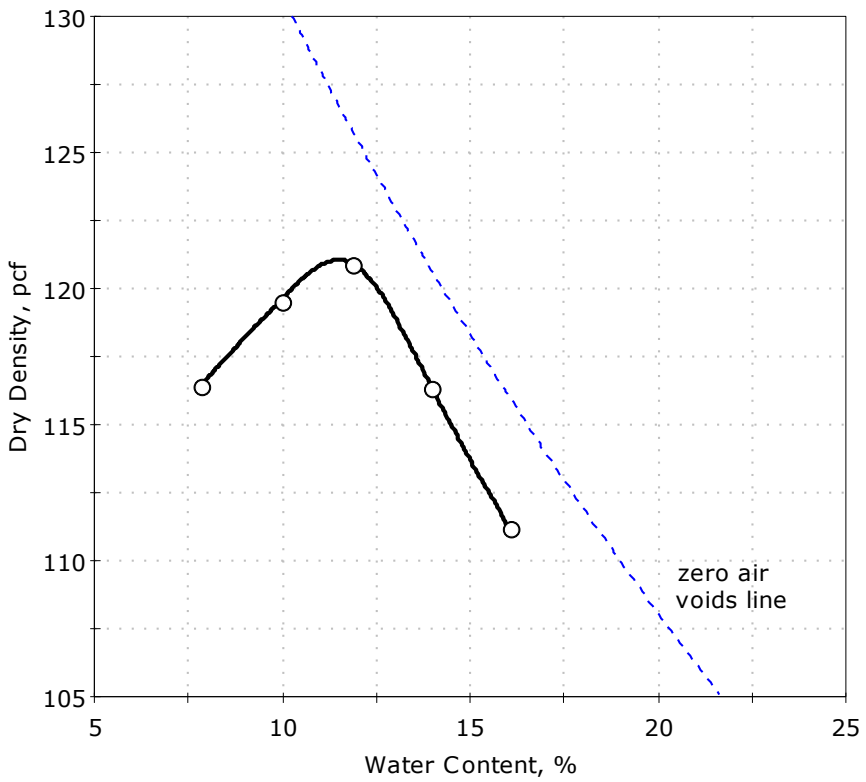
Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 124.1 pcf

Optimum Moisture= 11.1 %

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	B-W2	Sample Type:	Bucket	Tested By:	cwd
Sample ID:	B-W2	Test Date:	07/03/25	Checked By:	ank
Depth :	3-15'	Test Id:	820535		
Test Comment:	---				
Visual Description:	Moist, dark brown silty clay				
Sample Comment:	---				

Compaction Report - ASTM D1557



Data Points	Point 1	Point 2	Point 3	Point 4	Point 5
Dry density, pcf	116.4	119.5	120.9	116.4	111.2
Moisture Content, %	7.8	10.0	11.9	14.0	16.0

Method : A

Preparation : DRY

As received Moisture :24 %

Rammer : Manual

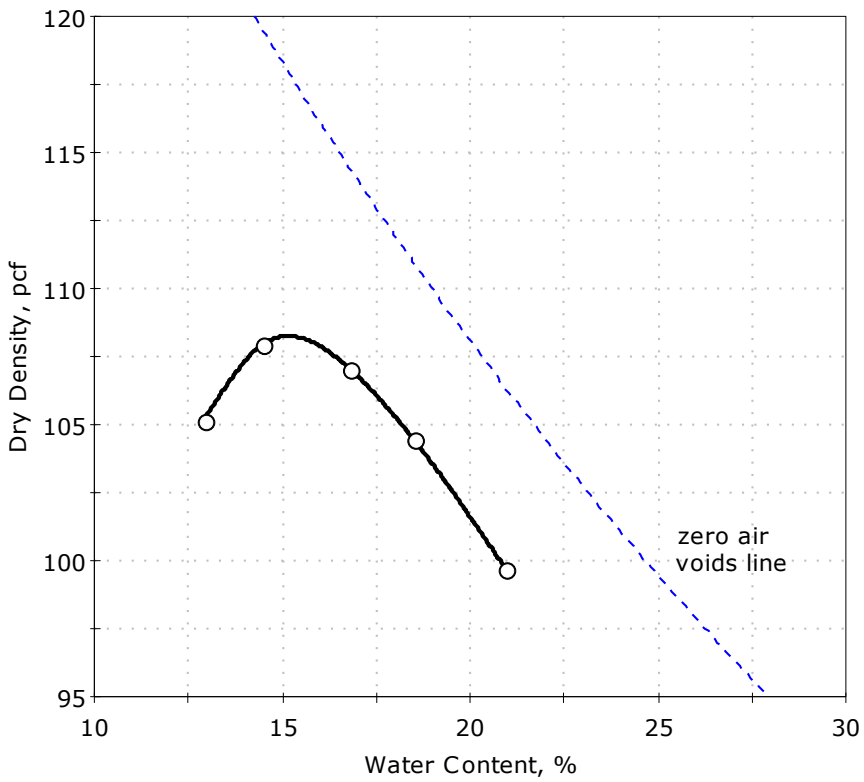
Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 121.1 pcf

Optimum Moisture= 11.5 %

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	B-W3R	Sample Type:	Bucket	Tested By:	cwd
Sample ID:	B-W3R	Test Date:	07/03/25	Checked By:	ank
Depth :	0-3'	Test Id:	820533		
Test Comment:	---				
Visual Description:	Moist, dark brown sand				
Sample Comment:	---				

Compaction Report - ASTM D1557



Data Points	Point 1	Point 2	Point 3	Point 4	Point 5
Dry density, pcf	105.2	107.9	107.0	104.4	99.7
Moisture Content, %	12.9	14.5	16.8	18.5	20.9

Method : A

Preparation : DRY

As received Moisture :28 %

Rammer : Mechanical

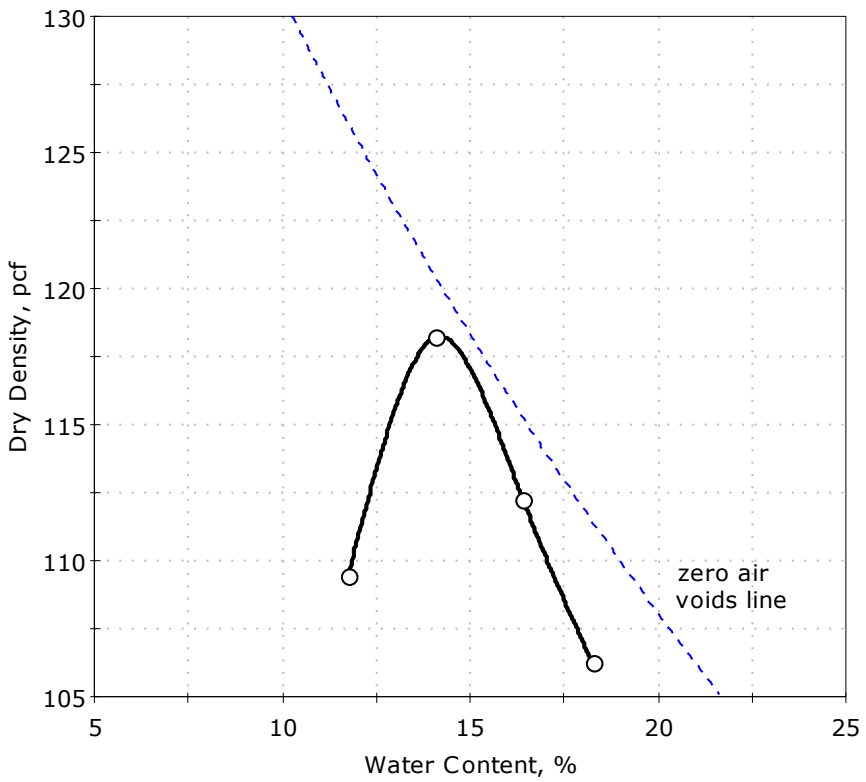
Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 108.3 pcf

Optimum Moisture= 15.2 %

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	B-W4R	Sample Type:	Bucket	Tested By:	cwd
Sample ID:	B-W4R	Test Date:	07/17/25	Checked By:	jsc
Depth :	3-15'	Test Id:	820532		
Test Comment:	---				
Visual Description:	Moist, dark brown silt				
Sample Comment:	---				

Compaction Report - ASTM D1557



Data Points	Point 1	Point 2	Point 3	Point 4
Dry density, pcf	109.4	118.2	112.3	106.3
Moisture Content, %	11.8	14.1	16.4	18.2

Method : A

Preparation : DRY

As received Moisture :23 %

Rammer : Mechanical

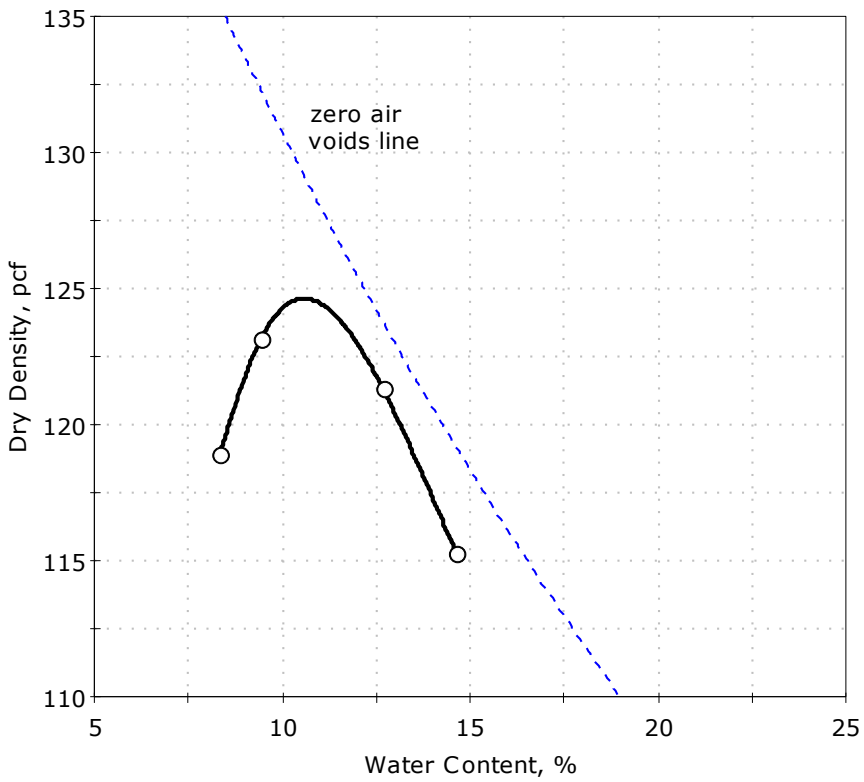
Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 118.3 pcf

Optimum Moisture= 14.2 %

Client:	Pinchin, LLC				
Project:	Proposed ERCIP Wellfield Expansion				
Location:	Fort Drum, NY			Project No:	GTX-321270
Boring ID:	B-W5	Sample Type:	Bucket	Tested By:	cwd
Sample ID:	B-W5	Test Date:	07/02/25	Checked By:	ank
Depth :	3-15'	Test Id:	820534		
Test Comment:	---				
Visual Description:	Moist, olive brown silt				
Sample Comment:	----				

Compaction Report - ASTM D1557



Data Points	Point 1	Point 2	Point 3	Point 4
Dry density, pcf	118.9	123.1	121.4	115.3
Moisture Content, %	8.3	9.4	12.7	14.6

Method : A

Preparation : DRY

As received Moisture :24 %

Rammer : Manual

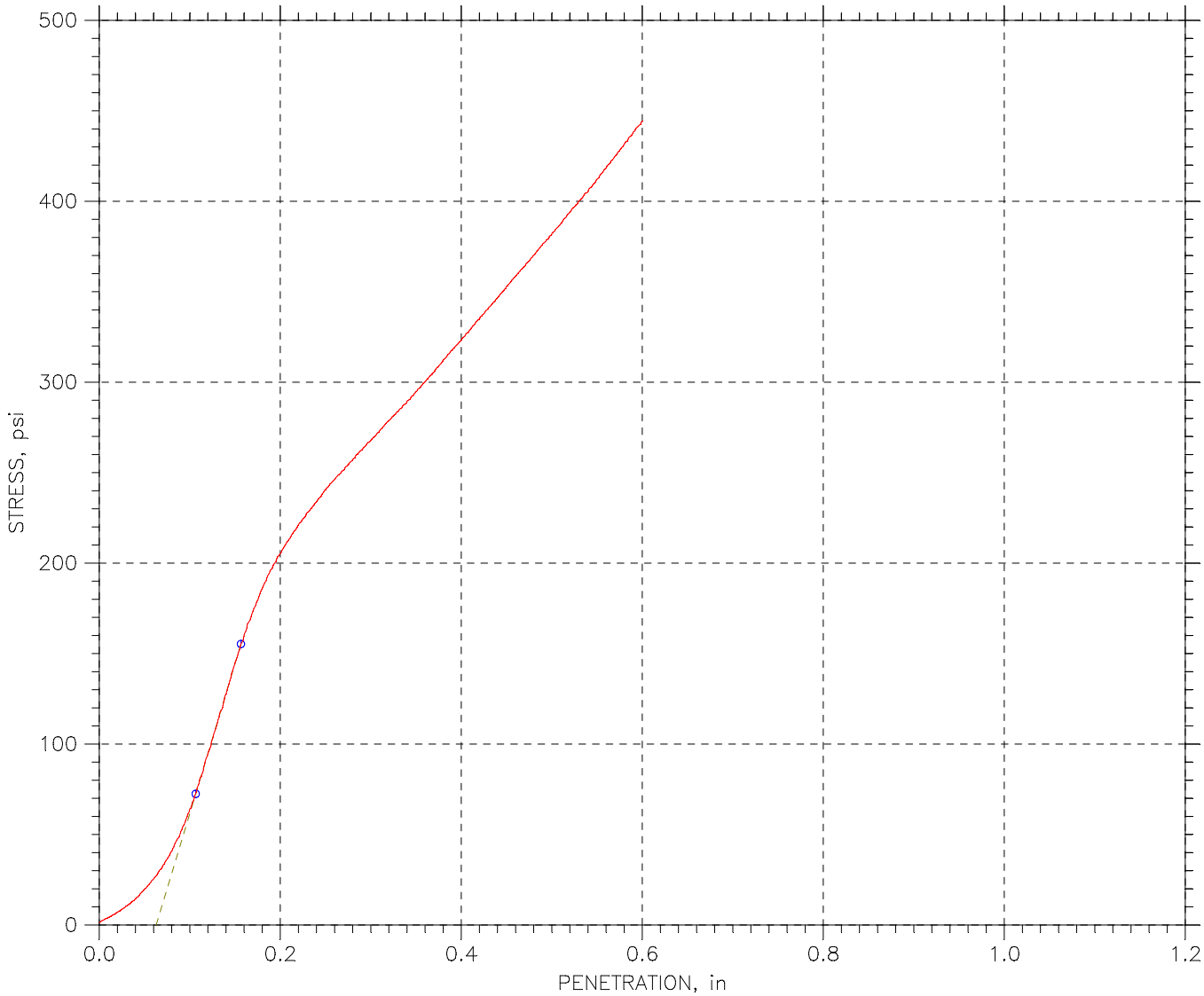
Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 124.6 pcf

Optimum Moisture= 10.6 %

CALIFORNIA BEARING RATIO TEST REPORT

ASTM D1883



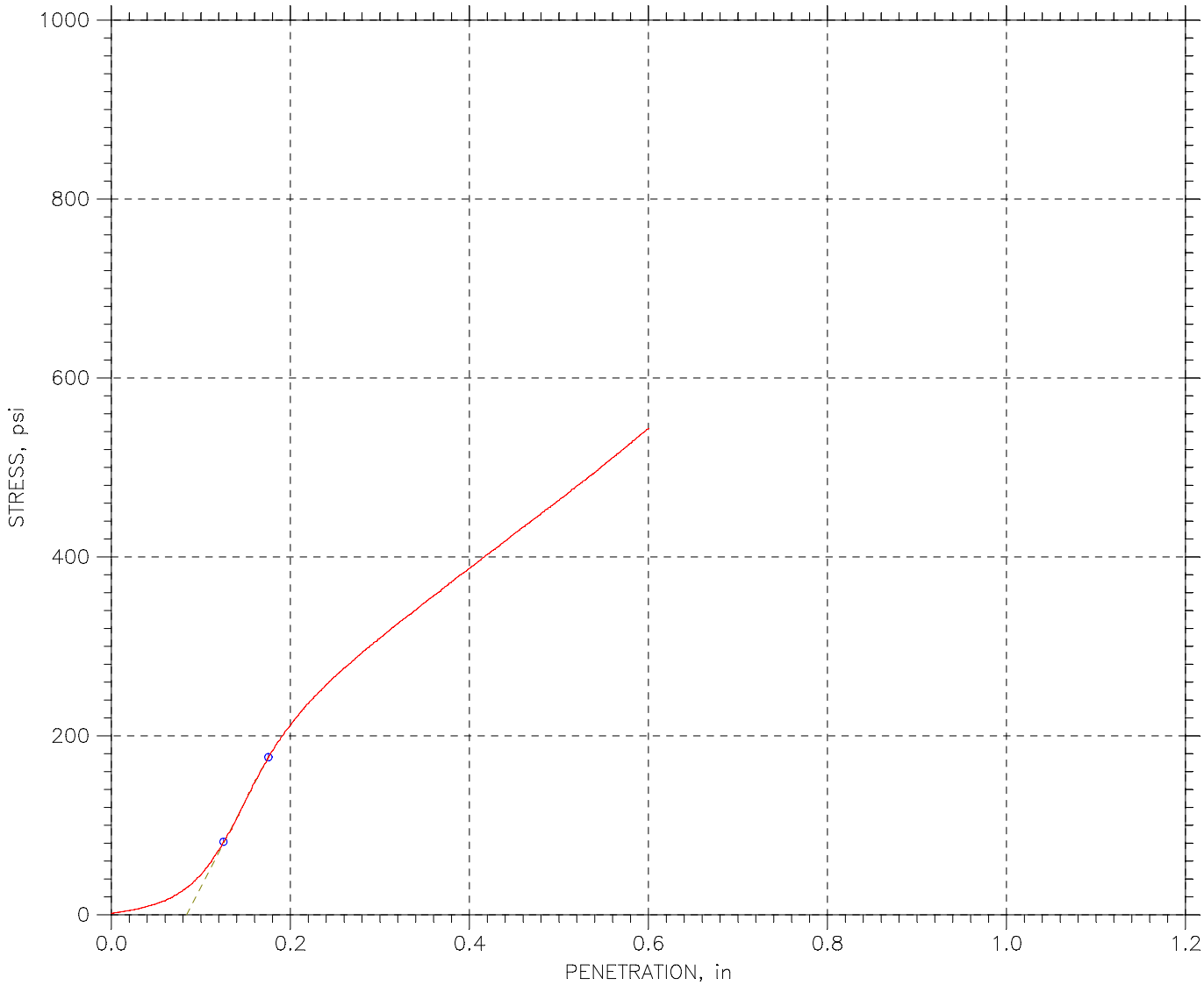
Sample Height: 4.58 in	California Bearing Ratio			
Sample Area: 28.274 in^2	at 0.1 in: 16	at 0.3 in: 16	at 0.5 in: 16	
Sample Volume: 0.07494 ft^3	at 0.2 in: 17	at 0.4 in: 16		
Sample Mass: 4455 gm				
Sample Condition: Soaked	Water Content	Before	Top	Average
Swell: 1.97 %	Tare ID	E12607	E12348	E13628
Surcharge: 4540 gm	Tare Mass, gm	8.13	8.14	8.23
Void Ratio: 0.40	Mass Tare + Wet Soil, gm	230.27	172.73	223.95
Wet Unit Weight: 131.06 pcf	Mass Tare + Dry Soil, gm	208.86	148.12	195.46
Dry Unit Weight: 118.43 pcf	Water Content, %	10.67	17.58	15.22

Project: Proposed ERCIP Wellfield	Location: Fort Drum, NY	Project No.: GTX-321270
Boring No.: B-W5	Tested By: cwd	Checked By: ank
Sample No.: B-W5	Test Date: 7/7/25	Depth: 3-15’
Test No.: cbr-1	Sample Type: remolded	Elevation: ---
Description: Moist, olive brown silt		
Remarks: Compacted with moderate effort at optimum moisture content.		

Fri, 18-JUL-2025 11:37:46

CALIFORNIA BEARING RATIO TEST REPORT

ASTM D1883



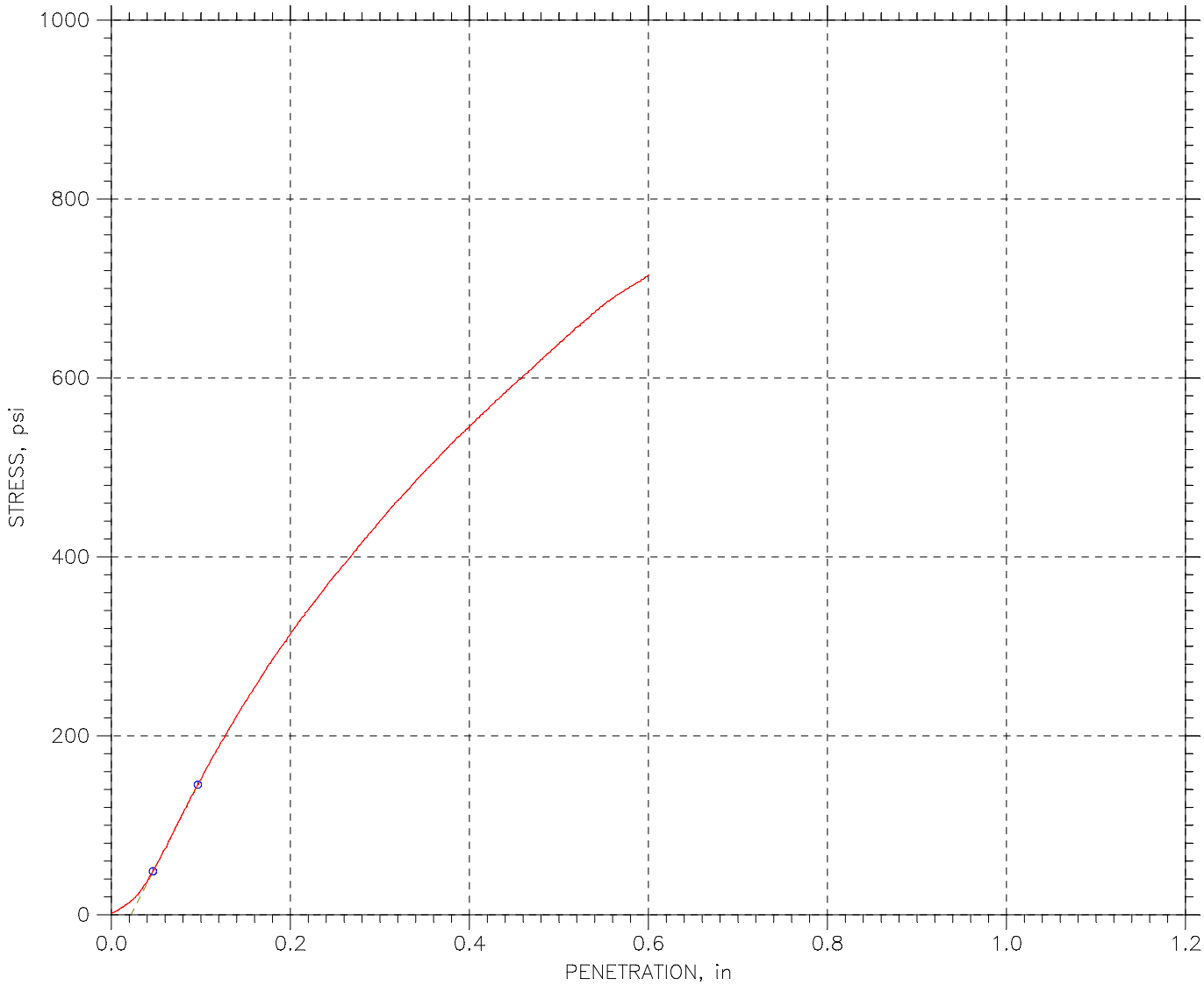
Sample Height: 4.58 in	California Bearing Ratio			
Sample Area: 28.274 in^2	at 0.1 in: 19	at 0.3 in: 20	at 0.5 in: 20	
Sample Volume: 0.07494 ft^3	at 0.2 in: 20	at 0.4 in: 20		
Sample Mass: 4433 gm				
Sample Condition: Soaked	Water Content	Before	Top	Average
Swell: 2.01 %	Tare ID	E15046	E15173	E11023
Surcharge: 4540 gm	Tare Mass, gm	8.21	8.38	8.39
Void Ratio: 0.41	Mass Tare + Wet Soil, gm	237.49	198.18	282.51
Wet Unit Weight: 130.41 pcf	Mass Tare + Dry Soil, gm	214.14	170.5	244.36
Dry Unit Weight: 117.13 pcf	Water Content, %	11.34	17.07	16.17

Project: Proposed ERCIP Wellfield	Location: Fort Drum, NY	Project No.: GTX-321270
Boring No.: B-W2	Tested By: cwd	Checked By: ank
Sample No.: B-W2	Test Date: 7/15/25	Depth: 3-15’
Test No.: cbr-2	Sample Type: remolded	Elevation: ---
Description: Moist, dark brown silty clay		
Remarks: Compacted with moderate effort at optimum moisture content.		

Fri, 18-JUL-2025 11:38:47

CALIFORNIA BEARING RATIO TEST REPORT

ASTM D1883



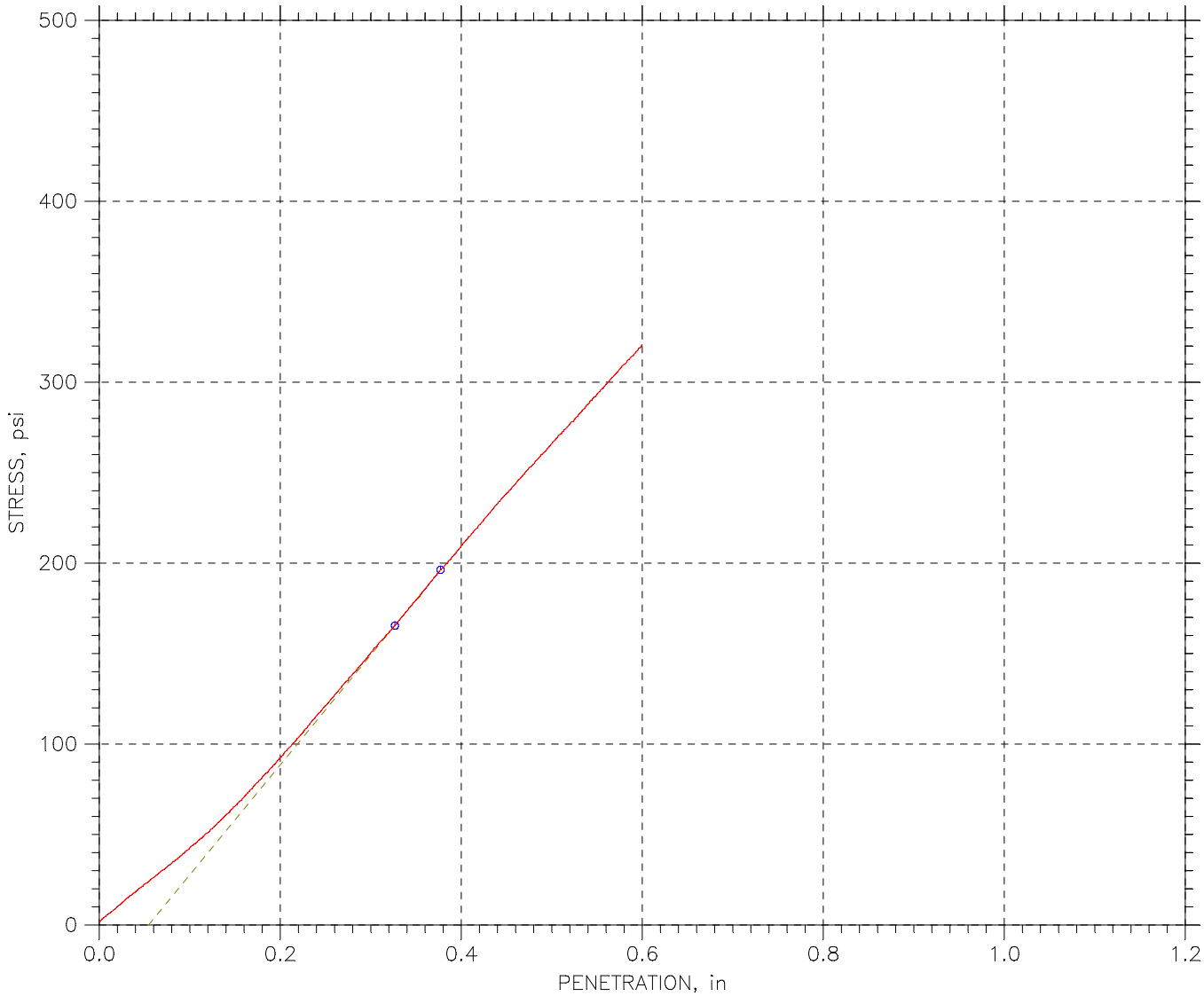
Sample Height: 4.58 in	California Bearing Ratio			
Sample Area: 28.274 in^2	at 0.1 in: 19	at 0.3 in: 24	at 0.5 in: 25	
Sample Volume: 0.07494 ft^3	at 0.2 in: 23	at 0.4 in: 25		
Sample Mass: 3969 gm				
Sample Condition: Soaked	Water Content	Before	Top	Average
Swell: 0.29 %	Tare ID	E15035	E13601	E13829
Surcharge: 4540 gm	Tare Mass, gm	8.25	8.27	8.34
Void Ratio: 0.63	Mass Tare + Wet Soil, gm	245.28	214.51	311.84
Wet Unit Weight: 116.76 pcf	Mass Tare + Dry Soil, gm	214.02	180.89	263.62
Dry Unit Weight: 101.36 pcf	Water Content, %	15.19	19.48	18.89

Project: Proposed ERCIP Wellfield	Location: Fort Drum, NY	Project No.: GTX-321270
Boring No.: B-W3R	Tested By: cwd	Checked By: ank
Sample No.: B-W3R	Test Date: 7/15/25	Depth: 0-3'
Test No.: cbr-3	Sample Type: remolded	Elevation: ---
Description: Moist, dark brown sand		
Remarks: System TX-036 - Compacted with moderate effort at optimum moisture content.		

Fri, 18-JUL-2025 11:39:12

CALIFORNIA BEARING RATIO TEST REPORT

ASTM D1883



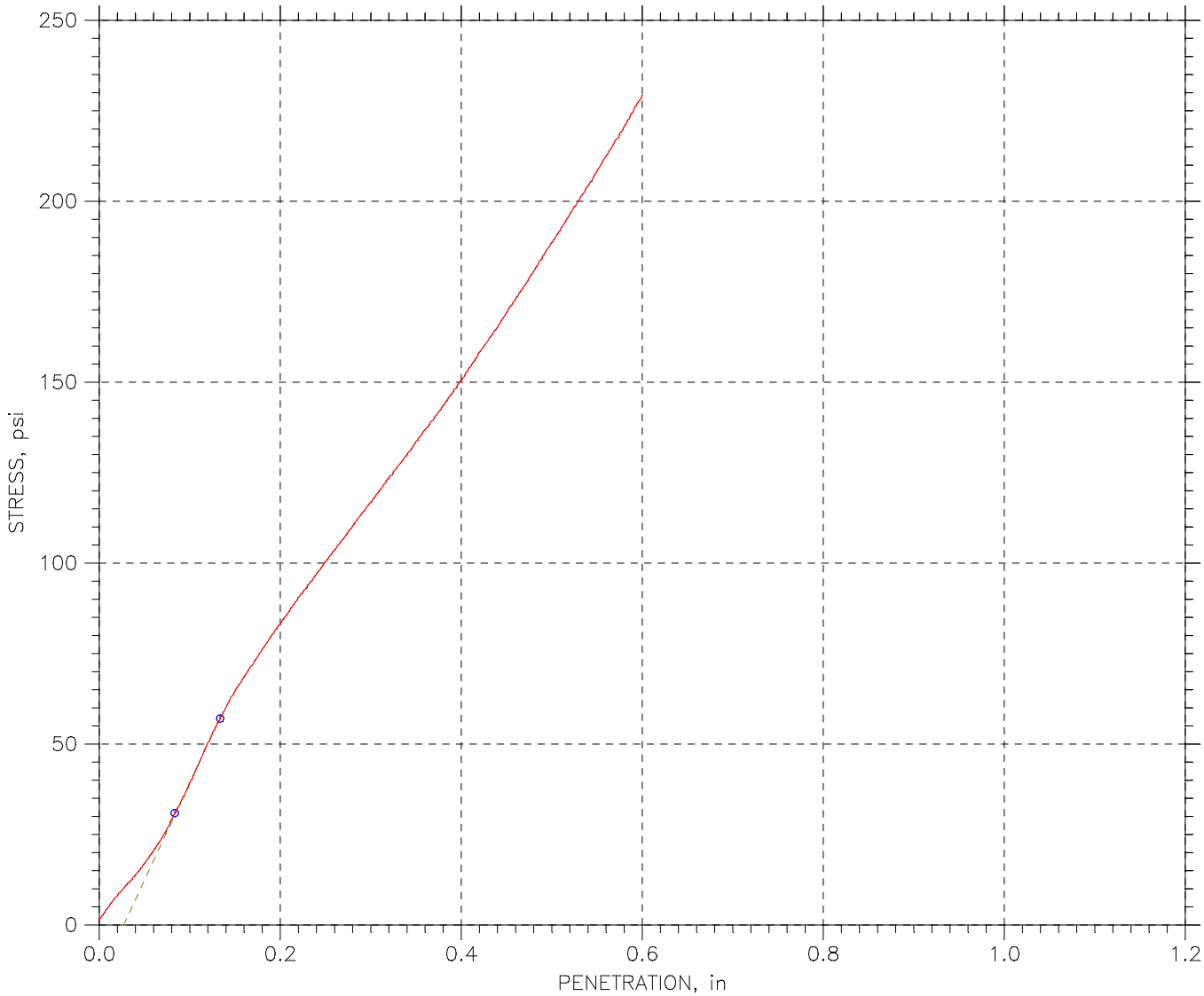
Sample Height: 4.58 in	California Bearing Ratio			
Sample Area: 28.274 in^2	at 0.1 in: 7	at 0.3 in: 10	at 0.5 in: 11	
Sample Volume: 0.07494 ft^3	at 0.2 in: 8	at 0.4 in: 10		
Sample Mass: 4548 gm				
Sample Condition: Soaked	Water Content	Before	Top	Average
Swell: 0.76 %	Tare ID	E13501	E13501	E12333
Surcharge: 4540 gm	Tare Mass, gm	8.3	8.22	8.33
Void Ratio: 0.42	Mass Tare + Wet Soil, gm	253.54	159.72	200.28
Wet Unit Weight: 133.8 pcf	Mass Tare + Dry Soil, gm	222.18	137.25	173.54
Dry Unit Weight: 116.69 pcf	Water Content, %	14.66	17.41	16.19

Project: Proposed ERCIP Wellfield	Location: Fort Drum, NY	Project No.: GTX-321270
Boring No.: B-W4R	Tested By: cwd	Checked By: ank
Sample No.: B-W4R	Test Date: 7/16/25	Depth: 3-15’
Test No.: cbr-4	Sample Type: remolded	Elevation: ---
Description: Moist, dark brown silt		
Remarks: Compacted with moderate effort at optimum moisture content.		

Fri, 18-JUL-2025 11:39:40

CALIFORNIA BEARING RATIO TEST REPORT

ASTM D1883



Sample Height: 4.58 in	California Bearing Ratio			
Sample Area: 28.274 in^2	at 0.1 in: 5	at 0.3 in: 7	at 0.5 in: 8	
Sample Volume: 0.07494 ft^3	at 0.2 in: 6	at 0.4 in: 7		
Sample Mass: 4414 gm				
Sample Condition: Soaked	Water Content	Before	Top	Average
Swell: 2.40 %	Tare ID	E14870	E13095	E13038
Surcharge: 4540 gm	Tare Mass, gm	8.21	8.14	8.13
Void Ratio: 0.41	Mass Tare + Wet Soil, gm	257.85	189.24	233.39
Wet Unit Weight: 129.85 pcf	Mass Tare + Dry Soil, gm	233.14	160.02	202.3
Dry Unit Weight: 117 pcf	Water Content, %	10.99	19.24	16.01

Project: Proposed ERCIP Wellfield	Location: Fort Drum, NY	Project No.: GTX-321270
Boring No.: B-W1	Tested By: cwd	Checked By: ank
Sample No.: B-W1	Test Date: 7/16/25	Depth: 3-15’
Test No.: cbr-5	Sample Type: remolded	Elevation: ---
Description: Moist, olive brown silt		
Remarks: Compacted with moderate effort at optimum moisture content.		

Fri, 18-JUL-2025 11:40:14

PO Box 572455 / Salt Lake City UT 84157-2455 / USA
TEL +1 801 262 2448 · FAX +1 801 262 9870 · www.TEi-TS.com

GEOTESTING EXPRESS INCORPORATED
125 NAGOG PARK
ACTON MA 01720-3451
USA

Analysis No.	TS-A2512834
Report Date	15 July 2025
Date Sampled	23 June 2025
Date Received	25 June 2025
Where Sampled	Acton, MA USA
Sampled By	Client

This is to attest that we have examined: Soil: Project: Proposed ERCIP Wellfield Expansion; Site Location: Ft. Drum, NY; Job Number: GTX-321270

When examined to the applicable requirements of: ANSI/AWWA C906-21 “Polyethylene (PE) Pressure Pipe and Fittings, 4 In. through 65 In. (100 mm through 1,650 mm), for Waterworks” and AWWA C105/A21.5-18 “Polyethylene Encasement for Ductile-Iron Pipe Systems” for compliance with Appendix A using

ASTM D 512-23	“Standard Test Methods for Chloride Ion in Water” Method B
ASTM C 1580-20	“Standard Test Method for Water-Soluble Sulfate in Soil”
Standard Methods-2023	Part 4000 “Inorganic Nonmetallic Constituents” 4500-S^{2-} Sulfide
Standard Methods-2023	Part 4000 “Inorganic Nonmetallic Constituents” 4500-H+- pH
ASTM G 200-20	“Standard Test Method for Measurement of Oxidation-Reduction Potential (ORP) of Soil”

Results:

ASTM D 512 - Chloride Method B

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
B-W1		< 10.	< 0.0010	10.
B-W1	3 – 15’			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

ASTM C 1580 – Sulfates (Soluble)

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
B-W1		20.	0.0020	10.
B-W1	3 – 15’			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

Testing Services analytical laboratory
3455 South 500 West
Salt Lake City, UT 84115-4234 USA
TEL: +1 801 262 2448
FAX: +1 801 262 9870

SM 4500-S^{2-} – Sulfide

Sample		Results		Minimum Detection Limit
		ppb (µg/kg)	%[1]	
B-W1		1 140.	0.0001140	10.
B-W1	3 – 15’			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

SM 4500 H+ – pH

Sample		Results	Minimum Detection Limit
B-W1		6.04	0.01
B-W1	3 – 15’		

NOTE: Prepared as per the Standard.

ASTM G 200 – Reduction Oxidation Potential (REDOX)

Sample		Results	Minimum Detection Limit
B-W1		165.0 @ 26.2 ºC	0.1mV
B-W1	3 – 15’		

NOTE: Prepared as per the Standard.

END OF ANALYSIS

USEPA Laboratory ID UT00930

Merrill Gee P.E. – Engineer in Charge

© 2025 by Testing Engineers International, Inc. CAVEAT: This certificate may not be reproduced except in full, without the expressed written consent of TEi-Testing Services, LLC. Note: The values in this certificate are the values obtained under standard test conditions as reported in the appropriate Report of Test and thus may be used for purposes of demonstrating compliance or for comparison with other units tested under the same standard. The results do not indicate the function of the sample(s) under nonstandard or field conditions. Statement of Risk: Client understands and agrees that declarations of conformity are made by directly comparing the measurement results against the test limits given in the standard without consideration to factors that may contribute to measurement uncertainty and accepts the shared risk that arises from this approach. This certificate gives the characteristics of the sample(s) submitted for testing only. It does not and may not be used to certify the characteristics of the product, nor to imply that the product in general meets the requirements of any standard, nor its acceptability in the marketplace. TEi stylized lettering and logo are registered trademarks, and use is by contract and/or written permission only. USEPA Laboratory ID UT00930 TEi-Testing Services is a wholly owned LLC of Testing Engineers International, Inc.

PO Box 572455 / Salt Lake City UT 84157-2455 / USA
TEL +1 801 262 2448 · FAX +1 801 262 9870 · www.TEi-TS.com

GEOTESTING EXPRESS INCORPORATED
125 NAGOG PARK
ACTON MA 01720-3451
USA

Analysis No.	TS-A2512836
Report Date	15 July 2025
Date Sampled	19 June 2025
Date Received	25 June 2025
Where Sampled	Acton, MA USA
Sampled By	Client

This is to attest that we have examined: Soil: Project: Proposed ERCIP Wellfield Expansion; Site Location: Ft. Drum, NY; Job Number: GTX-321270

When examined to the applicable requirements of: ANSI/AWWA C906-21 “Polyethylene (PE) Pressure Pipe and Fittings, 4 In. through 65 In. (100 mm through 1,650 mm), for Waterworks” and AWWA C105/A21.5-18 “Polyethylene Encasement for Ductile-Iron Pipe Systems” for compliance with Appendix A using

ASTM D 512-23	“Standard Test Methods for Chloride Ion in Water” Method B
ASTM C 1580-20	“Standard Test Method for Water-Soluble Sulfate in Soil”
Standard Methods-2023	Part 4000 “Inorganic Nonmetallic Constituents” 4500-S^{2-} Sulfide
Standard Methods-2023	Part 4000 “Inorganic Nonmetallic Constituents” 4500-H+- pH
ASTM G 200-20	“Standard Test Method for Measurement of Oxidation-Reduction Potential (ORP) of Soil”

Results:

ASTM D 512 - Chloride Method B

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
B-W2		< 10.	< 0.0010	10.
B-W2	3 – 15’			
B-W3R		< 10.	< 0.0010	
B-W3R	0 – 3’			
B-W4R		< 10.	< 0.0010	
B-W4R	3 – 15’			
B-W5		< 10.	< 0.0010	
B-W5	3 – 15’			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

Testing Services analytical laboratory
3455 South 500 West
Salt Lake City, UT 84115-4234 USA
TEL: +1 801 262 2448
FAX: +1 801 262 9870

ASTM C 1580 – Sulfates (Soluble)

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
B-W2		20.	0.0020	10.
B-W2	3 – 15’			
B-W3R		120.	0.0120	
B-W3R	0 – 3’			
B-W4R		20.	0.0020	
B-W4R	3 – 15’			
B-W5		20.	0.0020	
B-W5	3 – 15’			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

SM 4500-S^{2-} – Sulfide

Sample		Results		Minimum Detection Limit
		ppb (µg/kg)	%[1]	
B-W2		70.	0.0000070	10.
B-W2	3 – 15’			
B-W3R		80.	0.0000080	
B-W3R	0 – 3’			
B-W4R		4 200.	0.0004200	
B-W4R	3 – 15’			
B-W5		2 140.	0.0002140	
B-W5	3 – 15’			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

SM 4500 H+ – pH

Sample		Results	Minimum Detection Limit
B-W2		6.07	0.01
B-W2	3 – 15’		
B-W3R		6.00	
B-W3R	0 – 3’		
B-W4R		6.03	
B-W4R	3 – 15’		
B-W5		5.99	
B-W5	3 – 15’		

NOTE: Prepared as per the Standard.

© 2025 by Testing Engineers International, Inc. CAVEAT: This certificate may not be reproduced except in full, without the expressed written consent of TEi-Testing Services, LLC. Note: The values in this certificate are the values obtained under standard test conditions as reported in the appropriate Report of Test and thus may be used for purposes of demonstrating compliance or for comparison with other units tested under the same standard. The results do not indicate the function of the sample(s) under nonstandard or field conditions. Statement of Risk: Client understands and agrees that declarations of conformity are made by directly comparing the measurement results against the test limits given in the standard without consideration to factors that may contribute to measurement uncertainty and accepts the shared risk that arises from this approach. This certificate gives the characteristics of the sample(s) submitted for testing only. It does not and may not be used to certify the characteristics of the product, nor to imply that the product in general meets the requirements of any standard, nor its acceptability in the marketplace. TEi stylized lettering and logo are registered trademarks, and use is by contract and/or written permission only. USEPA Laboratory ID UT00930 TEi-Testing Services is a wholly owned LLC of Testing Engineers International, Inc.

TEi Testing Services analytical laboratory
3455 South 500 West
Salt Lake City, UT 84115-4234 USA
TEL: +1 801 262 2448
FAX: +1 801 262 9870

ASTM G 200 – Reduction Oxidation Potential (REDOX)

Sample		Results	Minimum Detection Limit
B-W2		145.9 @ 25.2 ºC	0.1mV
B-W2	3 – 15’		
B-W3R		191.6 @ 25.0 ºC	
B-W3R	0 – 3’		
B-W4R		177.0 @ 24.7 ºC	
B-W4R	3 – 15’		
B-W5		144.6 @ 24.2 ºC	
B-W5	3 – 15’		

NOTE: Prepared as per the Standard.

END OF ANALYSIS

USEPA Laboratory ID UT00930

Merrill Gee P.E. – Engineer in Charge

© 2025 by Testing Engineers International, Inc. CAVEAT: This certificate may not be reproduced except in full, without the expressed written consent of TEi-Testing Services, LLC. Note: The values in this certificate are the values obtained under standard test conditions as reported in the appropriate Report of Test and thus may be used for purposes of demonstrating compliance or for comparison with other units tested under the same standard. The results do not indicate the function of the sample(s) under nonstandard or field conditions. Statement of Risk: Client understands and agrees that declarations of conformity are made by directly comparing the measurement results against the test limits given in the standard without consideration to factors that may contribute to measurement uncertainty and accepts the shared risk that arises from this approach. This certificate gives the characteristics of the sample(s) submitted for testing only. It does not and may not be used to certify the characteristics of the product, nor to imply that the product in general meets the requirements of any standard, nor its acceptability in the marketplace. TEi stylized lettering and logo are registered trademarks, and use is by contract and/or written permission only. USEPA Laboratory ID UT00930 TEi-Testing Services is a wholly owned LLC of Testing Engineers International, Inc.

WARRANTY and LIABILITY

GeoTesting Express (GTX) warrants that all tests it performs are run in general accordance with the specified test procedures and accepted industry practice. GTX will correct or repeat any test that does not comply with this warranty. GTX has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GTX may report engineering parameters that require us to interpret the test data. Such parameters are determined using accepted engineering procedures. However, GTX does not warrant that these parameters accurately reflect the true engineering properties of the *in situ* material. Responsibility for interpretation and use of the test data and these parameters for engineering and/or construction purposes rests solely with the user and not with GTX or any of its employees.

GTX's liability will be limited to correcting or repeating a test which fails our warranty. GTX's liability for damages to the Purchaser of testing services for any cause whatsoever shall be limited to the amount GTX received for the testing services. GTX will not be liable for any damages, or for any lost benefits or other consequential damages resulting from the use of these test results, even if GTX has been advised of the possibility of such damages. GTX will not be responsible for any liability of the Purchaser to any third party.

Commonly Used Symbols

A	pore pressure parameter for $\Delta\sigma_1 - \Delta\sigma_3$
B	pore pressure parameter for $\Delta\sigma_3$
CAI	CERCHAR Abrasiveness Index
CIU	isotropically consolidated undrained triaxial shear test
CR	compression ratio for one dimensional consolidation
CSR	cyclic stress ratio
C_c	coefficient of curvature, $(D_{30})^2 / (D_{10} \times D_{60})$
C_u	coefficient of uniformity, D_{60}/D_{10}
C_c	compression index for one dimensional consolidation
C_α	coefficient of secondary compression
c_v	coefficient of consolidation
c	cohesion intercept for total stresses
c'	cohesion intercept for effective stresses
D	diameter of specimen
D	damping ratio
D_{10}	diameter at which 10% of soil is finer
D_{15}	diameter at which 15% of soil is finer
D_{30}	diameter at which 30% of soil is finer
D_{50}	diameter at which 50% of soil is finer
D_{60}	diameter at which 60% of soil is finer
D_{85}	diameter at which 85% of soil is finer
d_{50}	displacement for 50% consolidation
d_{90}	displacement for 90% consolidation
d_{100}	displacement for 100% consolidation
E	Young's modulus
e	void ratio
e_c	void ratio after consolidation
e_o	initial void ratio
G	shear modulus
G_s	specific gravity of soil particles
H	height of specimen
H_R	Rebound Hardness number
i	gradient
I_S	Uncorrected point load strength
$I_{S(50)}$	Size corrected point load strength index
H_A	Modified Taber Abrasion
H_T	Total hardness
K_o	lateral stress ratio for one dimensional strain
k	permeability
LI	Liquidity Index
m_v	coefficient of volume change
n	porosity
PI	plasticity index
P_c	preconsolidation pressure
p	$(\sigma_1 + \sigma_3) / 2$, $(\sigma_v + \sigma_h) / 2$
p'	$(\sigma'_1 + \sigma'_3) / 2$, $(\sigma'_v + \sigma'_h) / 2$
p'_c	p' at consolidation
Q	quantity of flow
q	$(\sigma_1 - \sigma_3) / 2$
q_f	q at failure
q_o, q_i	initial q
q_c	q at consolidation
S	degree of saturation
SL	shrinkage limit
U, UC	unconfined compression test
UU, Q	unconsolidated undrained triaxial test
u_a	pore gas pressure
u_e	excess pore water pressure
u, u_w	pore water pressure
V	total volume
V_g	volume of gas
V_s	volume of solids
V_s	shear wave velocity
V_v	volume of voids
V_w	volume of water
V_o	initial volume
v	velocity
W	total weight
W_s	weight of solids
W_w	weight of water
w	water content
w_c	water content at consolidation
w_f	final water content
w_l	liquid limit
w_n	natural water content
w_p	plastic limit
w_s	shrinkage limit
w_o, w_i	initial water content
α	slope of q_f versus p_f
α'	slope of q_f versus p_f'
γ_t	total unit weight
γ_d	dry unit weight
γ_s	unit weight of solids
γ_w	unit weight of water
ε	strain
ε_{vol}	volume strain
ε_h, ε_v	horizontal strain, vertical strain
μ	Poisson's ratio, also viscosity
σ	normal stress
σ'	effective normal stress
σ_c, σ'_c	consolidation stress in isotropic stress system
σ_h, σ'_h	horizontal normal stress
σ_v, σ'_v	vertical normal stress
σ'_{vc}	Effective vertical consolidation stress
σ_1	major principal stress
σ_2	intermediate principal stress
σ_3	minor principal stress
τ	shear stress
φ	friction angle based on total stresses
φ'	friction angle based on effective stresses
φ'_r	residual friction angle
φ_{ult}	φ for ultimate strength

ANALYTICAL REPORT

Lab Number:	L2535672
Client:	Pinchin, LLC 400 Commercial Street Suite 404 Portland, ME 04101-4660
ATTN:	Brian Pettingill
Phone:	(207) 772-2891
Project Name:	PROPOSED ERCIP WELLFIELD EXP
Project Number:	181.05025.101
Report Date:	06/27/25

The original project report/data package is held by Pace Analytical Services. This report/data package is paginated and should be reproduced only in its entirety. Pace Analytical Services holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2535672-01	SS-T3	SOIL	FORT DRUM, NY	06/04/25 12:54	06/06/25
L2535672-02	SS-T4	SOIL	FORT DRUM, NY	06/04/25 14:30	06/06/25
L2535672-03	SS-4-1	SOIL	FORT DRUM, NY	06/05/25 08:30	06/06/25
L2535672-04	SS-W5	SOIL	FORT DRUM, NY	06/05/25 12:10	06/06/25
L2535672-05	SS-W4R	SOIL	FORT DRUM, NY	06/05/25 14:10	06/06/25

Project Name:	PROPOSED ERCIP WELLFIELD EXP	**Lab Number:**	L2535672
Project Number:	181.05025.101	**Report Date:**	06/27/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PROPOSED ERCIP WELLFIELD EXP	**Lab Number:**	L2535672
Project Number:	181.05025.101	**Report Date:**	06/27/25

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

The analyses performed were specified by the client.

Total Metals

L2535672-01 through -05: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Cristin Walker

Title: Technical Director/Representative

Date: 06/27/25

ORGANICS

VOLATILES

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-01
Client ID: SS-T3
Sample Location: FORT DRUM, NY

Date Collected: 06/04/25 12:54
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/17/25 02:18
Analyst: JIC
Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	5.8	2.6	1
1,1-Dichloroethane	ND		ug/kg	1.2	0.17	1
Chloroform	ND		ug/kg	1.7	0.16	1
Carbon tetrachloride	ND		ug/kg	1.2	0.27	1
1,2-Dichloropropane	ND		ug/kg	1.2	0.14	1
Dibromochloromethane	ND		ug/kg	1.2	0.16	1
1,1,2-Trichloroethane	ND		ug/kg	1.2	0.31	1
Tetrachloroethene	ND		ug/kg	0.58	0.23	1
Chlorobenzene	ND		ug/kg	0.58	0.15	1
Trichlorofluoromethane	ND		ug/kg	4.6	0.80	1
1,2-Dichloroethane	ND		ug/kg	1.2	0.30	1
1,1,1-Trichloroethane	ND		ug/kg	0.58	0.19	1
Bromodichloromethane	ND		ug/kg	0.58	0.13	1
trans-1,3-Dichloropropene	ND		ug/kg	1.2	0.32	1
cis-1,3-Dichloropropene	ND		ug/kg	0.58	0.18	1
Bromoform	ND		ug/kg	4.6	0.28	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.58	0.19	1
Benzene	ND		ug/kg	0.58	0.19	1
Toluene	ND		ug/kg	1.2	0.63	1
Ethylbenzene	ND		ug/kg	1.2	0.16	1
Chloromethane	ND		ug/kg	4.6	1.1	1
Bromomethane	ND		ug/kg	2.3	0.67	1
Vinyl chloride	ND		ug/kg	1.2	0.39	1
Chloroethane	ND		ug/kg	2.3	0.52	1
1,1-Dichloroethene	ND		ug/kg	1.2	0.28	1
trans-1,2-Dichloroethene	ND		ug/kg	1.7	0.16	1
Trichloroethene	ND		ug/kg	0.58	0.16	1
1,2-Dichlorobenzene	ND		ug/kg	2.3	0.17	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-01 Date Collected: 06/04/25 12:54

Client ID: SS-T3 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	2.3	0.17	1
1,4-Dichlorobenzene	ND		ug/kg	2.3	0.20	1
Methyl tert butyl ether	ND		ug/kg	2.3	0.23	1
p/m-Xylene	ND		ug/kg	2.3	0.65	1
o-Xylene	ND		ug/kg	1.2	0.34	1
cis-1,2-Dichloroethene	ND		ug/kg	1.2	0.20	1
Styrene	ND		ug/kg	1.2	0.23	1
Dichlorodifluoromethane	ND		ug/kg	12	1.1	1
Acetone	ND		ug/kg	12	5.6	1
Carbon disulfide	ND		ug/kg	12	5.3	1
2-Butanone	ND		ug/kg	12	2.6	1
4-Methyl-2-pentanone	ND		ug/kg	12	1.5	1
2-Hexanone	ND		ug/kg	12	1.4	1
1,2-Dibromoethane	ND		ug/kg	1.2	0.32	1
n-Butylbenzene	ND		ug/kg	1.2	0.19	1
sec-Butylbenzene	ND		ug/kg	1.2	0.17	1
tert-Butylbenzene	ND		ug/kg	2.3	0.14	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.5	1.2	1
Isopropylbenzene	ND		ug/kg	1.2	0.13	1
p-Isopropyltoluene	ND		ug/kg	1.2	0.13	1
Naphthalene	ND		ug/kg	4.6	0.75	1
n-Propylbenzene	ND		ug/kg	1.2	0.20	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.3	0.32	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.3	0.22	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.3	0.39	1
Methyl Acetate	ND		ug/kg	4.6	1.1	1
Cyclohexane	ND		ug/kg	12	0.63	1
Freon-113	ND		ug/kg	4.6	0.80	1
Methyl cyclohexane	ND		ug/kg	4.6	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	94		70-130

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-02
Client ID: SS-T4
Sample Location: FORT DRUM, NY

Date Collected: 06/04/25 14:30
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/17/25 02:40
Analyst: JIC
Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	5.8	2.7	1
1,1-Dichloroethane	ND		ug/kg	1.2	0.17	1
Chloroform	ND		ug/kg	1.7	0.16	1
Carbon tetrachloride	ND		ug/kg	1.2	0.27	1
1,2-Dichloropropane	ND		ug/kg	1.2	0.14	1
Dibromochloromethane	ND		ug/kg	1.2	0.16	1
1,1,2-Trichloroethane	ND		ug/kg	1.2	0.31	1
Tetrachloroethene	ND		ug/kg	0.58	0.23	1
Chlorobenzene	ND		ug/kg	0.58	0.15	1
Trichlorofluoromethane	ND		ug/kg	4.7	0.81	1
1,2-Dichloroethane	ND		ug/kg	1.2	0.30	1
1,1,1-Trichloroethane	ND		ug/kg	0.58	0.19	1
Bromodichloromethane	ND		ug/kg	0.58	0.13	1
trans-1,3-Dichloropropene	ND		ug/kg	1.2	0.32	1
cis-1,3-Dichloropropene	ND		ug/kg	0.58	0.18	1
Bromoform	ND		ug/kg	4.7	0.29	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.58	0.19	1
Benzene	ND		ug/kg	0.58	0.19	1
Toluene	ND		ug/kg	1.2	0.63	1
Ethylbenzene	ND		ug/kg	1.2	0.16	1
Chloromethane	ND		ug/kg	4.7	1.1	1
Bromomethane	ND		ug/kg	2.3	0.68	1
Vinyl chloride	ND		ug/kg	1.2	0.39	1
Chloroethane	ND		ug/kg	2.3	0.53	1
1,1-Dichloroethene	ND		ug/kg	1.2	0.28	1
trans-1,2-Dichloroethene	ND		ug/kg	1.7	0.16	1
Trichloroethene	ND		ug/kg	0.58	0.16	1
1,2-Dichlorobenzene	ND		ug/kg	2.3	0.17	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-02 Date Collected: 06/04/25 14:30

Client ID: SS-T4 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	2.3	0.17	1
1,4-Dichlorobenzene	ND		ug/kg	2.3	0.20	1
Methyl tert butyl ether	ND		ug/kg	2.3	0.23	1
p/m-Xylene	ND		ug/kg	2.3	0.65	1
o-Xylene	ND		ug/kg	1.2	0.34	1
cis-1,2-Dichloroethene	ND		ug/kg	1.2	0.20	1
Styrene	ND		ug/kg	1.2	0.23	1
Dichlorodifluoromethane	ND		ug/kg	12	1.1	1
Acetone	ND		ug/kg	12	5.6	1
Carbon disulfide	ND		ug/kg	12	5.3	1
2-Butanone	ND		ug/kg	12	2.6	1
4-Methyl-2-pentanone	ND		ug/kg	12	1.5	1
2-Hexanone	ND		ug/kg	12	1.4	1
1,2-Dibromoethane	ND		ug/kg	1.2	0.32	1
n-Butylbenzene	ND		ug/kg	1.2	0.19	1
sec-Butylbenzene	ND		ug/kg	1.2	0.17	1
tert-Butylbenzene	ND		ug/kg	2.3	0.14	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.5	1.2	1
Isopropylbenzene	ND		ug/kg	1.2	0.13	1
p-Isopropyltoluene	ND		ug/kg	1.2	0.13	1
Naphthalene	ND		ug/kg	4.7	0.76	1
n-Propylbenzene	ND		ug/kg	1.2	0.20	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.3	0.32	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.3	0.22	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.3	0.39	1
Methyl Acetate	ND		ug/kg	4.7	1.1	1
Cyclohexane	ND		ug/kg	12	0.63	1
Freon-113	ND		ug/kg	4.7	0.81	1
Methyl cyclohexane	ND		ug/kg	4.7	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	94		70-130

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-03
Client ID: SS-4-1
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 08:30
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/17/25 03:03
Analyst: JIC
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.8	2.2	1
1,1-Dichloroethane	ND		ug/kg	0.97	0.14	1
Chloroform	ND		ug/kg	1.4	0.14	1
Carbon tetrachloride	ND		ug/kg	0.97	0.22	1
1,2-Dichloropropane	ND		ug/kg	0.97	0.12	1
Dibromochloromethane	ND		ug/kg	0.97	0.14	1
1,1,2-Trichloroethane	ND		ug/kg	0.97	0.26	1
Tetrachloroethene	ND		ug/kg	0.48	0.19	1
Chlorobenzene	ND		ug/kg	0.48	0.12	1
Trichlorofluoromethane	ND		ug/kg	3.9	0.67	1
1,2-Dichloroethane	ND		ug/kg	0.97	0.25	1
1,1,1-Trichloroethane	ND		ug/kg	0.48	0.16	1
Bromodichloromethane	ND		ug/kg	0.48	0.10	1
trans-1,3-Dichloropropene	ND		ug/kg	0.97	0.26	1
cis-1,3-Dichloropropene	ND		ug/kg	0.48	0.15	1
Bromoform	ND		ug/kg	3.9	0.24	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.48	0.16	1
Benzene	0.16	J	ug/kg	0.48	0.16	1
Toluene	ND		ug/kg	0.97	0.52	1
Ethylbenzene	ND		ug/kg	0.97	0.14	1
Chloromethane	ND		ug/kg	3.9	0.90	1
Bromomethane	ND		ug/kg	1.9	0.56	1
Vinyl chloride	ND		ug/kg	0.97	0.32	1
Chloroethane	ND		ug/kg	1.9	0.44	1
1,1-Dichloroethene	ND		ug/kg	0.97	0.23	1
trans-1,2-Dichloroethene	ND		ug/kg	1.4	0.13	1
Trichloroethene	ND		ug/kg	0.48	0.13	1
1,2-Dichlorobenzene	ND		ug/kg	1.9	0.14	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-03 Date Collected: 06/05/25 08:30

Client ID: SS-4-1 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	1.9	0.14	1
1,4-Dichlorobenzene	ND		ug/kg	1.9	0.16	1
Methyl tert butyl ether	ND		ug/kg	1.9	0.19	1
p/m-Xylene	ND		ug/kg	1.9	0.54	1
o-Xylene	ND		ug/kg	0.97	0.28	1
cis-1,2-Dichloroethene	ND		ug/kg	0.97	0.17	1
Styrene	ND		ug/kg	0.97	0.19	1
Dichlorodifluoromethane	ND		ug/kg	9.7	0.89	1
Acetone	7.6	J	ug/kg	9.7	4.6	1
Carbon disulfide	ND		ug/kg	9.7	4.4	1
2-Butanone	ND		ug/kg	9.7	2.2	1
4-Methyl-2-pentanone	ND		ug/kg	9.7	1.2	1
2-Hexanone	ND		ug/kg	9.7	1.1	1
1,2-Dibromoethane	ND		ug/kg	0.97	0.27	1
n-Butylbenzene	ND		ug/kg	0.97	0.16	1
sec-Butylbenzene	ND		ug/kg	0.97	0.14	1
tert-Butylbenzene	ND		ug/kg	1.9	0.11	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.9	0.97	1
Isopropylbenzene	ND		ug/kg	0.97	0.10	1
p-Isopropyltoluene	ND		ug/kg	0.97	0.10	1
Naphthalene	ND		ug/kg	3.9	0.63	1
n-Propylbenzene	ND		ug/kg	0.97	0.16	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.9	0.26	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.9	0.19	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.9	0.32	1
Methyl Acetate	ND		ug/kg	3.9	0.92	1
Cyclohexane	ND		ug/kg	9.7	0.53	1
Freon-113	ND		ug/kg	3.9	0.67	1
Methyl cyclohexane	ND		ug/kg	3.9	0.58	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	94		70-130

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-04
Client ID: SS-W5
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 12:10
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/17/25 03:26
Analyst: JIC
Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	5.2	2.4	1
1,1-Dichloroethane	ND		ug/kg	1.0	0.15	1
Chloroform	ND		ug/kg	1.5	0.14	1
Carbon tetrachloride	ND		ug/kg	1.0	0.24	1
1,2-Dichloropropane	ND		ug/kg	1.0	0.13	1
Dibromochloromethane	ND		ug/kg	1.0	0.14	1
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.28	1
Tetrachloroethene	ND		ug/kg	0.52	0.20	1
Chlorobenzene	ND		ug/kg	0.52	0.13	1
Trichlorofluoromethane	ND		ug/kg	4.1	0.72	1
1,2-Dichloroethane	ND		ug/kg	1.0	0.26	1
1,1,1-Trichloroethane	ND		ug/kg	0.52	0.17	1
Bromodichloromethane	ND		ug/kg	0.52	0.11	1
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.28	1
cis-1,3-Dichloropropene	ND		ug/kg	0.52	0.16	1
Bromoform	ND		ug/kg	4.1	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.52	0.17	1
Benzene	ND		ug/kg	0.52	0.17	1
Toluene	ND		ug/kg	1.0	0.56	1
Ethylbenzene	ND		ug/kg	1.0	0.14	1
Chloromethane	ND		ug/kg	4.1	0.96	1
Bromomethane	ND		ug/kg	2.1	0.60	1
Vinyl chloride	ND		ug/kg	1.0	0.35	1
Chloroethane	ND		ug/kg	2.1	0.47	1
1,1-Dichloroethene	ND		ug/kg	1.0	0.24	1
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14	1
Trichloroethene	ND		ug/kg	0.52	0.14	1
1,2-Dichlorobenzene	ND		ug/kg	2.1	0.15	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-04 Date Collected: 06/05/25 12:10

Client ID: SS-W5 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	2.1	0.15	1
1,4-Dichlorobenzene	ND		ug/kg	2.1	0.18	1
Methyl tert butyl ether	ND		ug/kg	2.1	0.21	1
p/m-Xylene	ND		ug/kg	2.1	0.58	1
o-Xylene	ND		ug/kg	1.0	0.30	1
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18	1
Styrene	ND		ug/kg	1.0	0.20	1
Dichlorodifluoromethane	ND		ug/kg	10	0.94	1
Acetone	ND		ug/kg	10	5.0	1
Carbon disulfide	ND		ug/kg	10	4.7	1
2-Butanone	ND		ug/kg	10	2.3	1
4-Methyl-2-pentanone	ND		ug/kg	10	1.3	1
2-Hexanone	ND		ug/kg	10	1.2	1
1,2-Dibromoethane	ND		ug/kg	1.0	0.29	1
n-Butylbenzene	ND		ug/kg	1.0	0.17	1
sec-Butylbenzene	ND		ug/kg	1.0	0.15	1
tert-Butylbenzene	ND		ug/kg	2.1	0.12	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.1	1.0	1
Isopropylbenzene	ND		ug/kg	1.0	0.11	1
p-Isopropyltoluene	ND		ug/kg	1.0	0.11	1
Naphthalene	ND		ug/kg	4.1	0.67	1
n-Propylbenzene	ND		ug/kg	1.0	0.18	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.1	0.28	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.1	0.20	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.1	0.34	1
Methyl Acetate	ND		ug/kg	4.1	0.98	1
Cyclohexane	ND		ug/kg	10	0.56	1
Freon-113	ND		ug/kg	4.1	0.72	1
Methyl cyclohexane	ND		ug/kg	4.1	0.62	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	95		70-130

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-05
Client ID: SS-W4R
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 14:10
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/17/25 03:48
Analyst: JIC
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	5.2	2.4	1
1,1-Dichloroethane	ND		ug/kg	1.0	0.15	1
Chloroform	ND		ug/kg	1.6	0.15	1
Carbon tetrachloride	ND		ug/kg	1.0	0.24	1
1,2-Dichloropropane	ND		ug/kg	1.0	0.13	1
Dibromochloromethane	ND		ug/kg	1.0	0.15	1
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.28	1
Tetrachloroethene	ND		ug/kg	0.52	0.20	1
Chlorobenzene	ND		ug/kg	0.52	0.13	1
Trichlorofluoromethane	ND		ug/kg	4.2	0.73	1
1,2-Dichloroethane	ND		ug/kg	1.0	0.27	1
1,1,1-Trichloroethane	ND		ug/kg	0.52	0.18	1
Bromodichloromethane	ND		ug/kg	0.52	0.11	1
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.29	1
cis-1,3-Dichloropropene	ND		ug/kg	0.52	0.16	1
Bromoform	ND		ug/kg	4.2	0.26	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.52	0.17	1
Benzene	ND		ug/kg	0.52	0.17	1
Toluene	ND		ug/kg	1.0	0.57	1
Ethylbenzene	ND		ug/kg	1.0	0.15	1
Chloromethane	ND		ug/kg	4.2	0.98	1
Bromomethane	0.73	J	ug/kg	2.1	0.61	1
Vinyl chloride	ND		ug/kg	1.0	0.35	1
Chloroethane	ND		ug/kg	2.1	0.47	1
1,1-Dichloroethene	ND		ug/kg	1.0	0.25	1
trans-1,2-Dichloroethene	ND		ug/kg	1.6	0.14	1
Trichloroethene	ND		ug/kg	0.52	0.14	1
1,2-Dichlorobenzene	ND		ug/kg	2.1	0.15	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-05 Date Collected: 06/05/25 14:10

Client ID: SS-W4R Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	2.1	0.16	1
1,4-Dichlorobenzene	ND		ug/kg	2.1	0.18	1
Methyl tert butyl ether	ND		ug/kg	2.1	0.21	1
p/m-Xylene	ND		ug/kg	2.1	0.59	1
o-Xylene	ND		ug/kg	1.0	0.30	1
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18	1
Styrene	ND		ug/kg	1.0	0.20	1
Dichlorodifluoromethane	ND		ug/kg	10	0.96	1
Acetone	ND		ug/kg	10	5.0	1
Carbon disulfide	ND		ug/kg	10	4.8	1
2-Butanone	ND		ug/kg	10	2.3	1
4-Methyl-2-pentanone	ND		ug/kg	10	1.3	1
2-Hexanone	ND		ug/kg	10	1.2	1
1,2-Dibromoethane	ND		ug/kg	1.0	0.29	1
n-Butylbenzene	ND		ug/kg	1.0	0.18	1
sec-Butylbenzene	ND		ug/kg	1.0	0.15	1
tert-Butylbenzene	ND		ug/kg	2.1	0.12	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.2	1.0	1
Isopropylbenzene	ND		ug/kg	1.0	0.11	1
p-Isopropyltoluene	ND		ug/kg	1.0	0.11	1
Naphthalene	ND		ug/kg	4.2	0.68	1
n-Propylbenzene	ND		ug/kg	1.0	0.18	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.1	0.28	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.1	0.20	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.1	0.35	1
Methyl Acetate	ND		ug/kg	4.2	1.0	1
Cyclohexane	ND		ug/kg	10	0.57	1
Freon-113	ND		ug/kg	4.2	0.73	1
Methyl cyclohexane	ND		ug/kg	4.2	0.63	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	95		70-130

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 06/16/25 21:38
Analyst: TMH

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-05 Batch: WG2080021-5					
Methylene chloride	ND		ug/kg	5.0	2.3
1,1-Dichloroethane	ND		ug/kg	1.0	0.14
Chloroform	ND		ug/kg	1.5	0.14
Carbon tetrachloride	ND		ug/kg	1.0	0.23
1,2-Dichloropropane	ND		ug/kg	1.0	0.12
Dibromochloromethane	ND		ug/kg	1.0	0.14
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.27
Tetrachloroethene	ND		ug/kg	0.50	0.20
Chlorobenzene	ND		ug/kg	0.50	0.13
Trichlorofluoromethane	ND		ug/kg	4.0	0.70
1,2-Dichloroethane	ND		ug/kg	1.0	0.26
1,1,1-Trichloroethane	ND		ug/kg	0.50	0.17
Bromodichloromethane	ND		ug/kg	0.50	0.11
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.27
cis-1,3-Dichloropropene	ND		ug/kg	0.50	0.16
Bromoform	ND		ug/kg	4.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	0.17
Benzene	ND		ug/kg	0.50	0.17
Toluene	ND		ug/kg	1.0	0.54
Ethylbenzene	ND		ug/kg	1.0	0.14
Chloromethane	ND		ug/kg	4.0	0.93
Bromomethane	ND		ug/kg	2.0	0.58
Vinyl chloride	ND		ug/kg	1.0	0.34
Chloroethane	ND		ug/kg	2.0	0.45
1,1-Dichloroethene	ND		ug/kg	1.0	0.24
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14
Trichloroethene	ND		ug/kg	0.50	0.14
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 06/16/25 21:38
Analyst: TMH

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-05 Batch: WG2080021-5					
1,4-Dichlorobenzene	ND		ug/kg	2.0	0.17
Methyl tert butyl ether	ND		ug/kg	2.0	0.20
p/m-Xylene	ND		ug/kg	2.0	0.56
o-Xylene	ND		ug/kg	1.0	0.29
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
Styrene	ND		ug/kg	1.0	0.20
Dichlorodifluoromethane	ND		ug/kg	10	0.92
Acetone	ND		ug/kg	10	4.8
Carbon disulfide	ND		ug/kg	10	4.6
2-Butanone	ND		ug/kg	10	2.2
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
2-Hexanone	ND		ug/kg	10	1.2
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
n-Butylbenzene	ND		ug/kg	1.0	0.17
sec-Butylbenzene	ND		ug/kg	1.0	0.15
tert-Butylbenzene	ND		ug/kg	2.0	0.12
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Isopropylbenzene	ND		ug/kg	1.0	0.11
p-Isopropyltoluene	ND		ug/kg	1.0	0.11
Naphthalene	ND		ug/kg	4.0	0.65
n-Propylbenzene	ND		ug/kg	1.0	0.17
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.33
Methyl Acetate	ND		ug/kg	4.0	0.95
Cyclohexane	ND		ug/kg	10	0.54
Freon-113	ND		ug/kg	4.0	0.69
Methyl cyclohexane	ND		ug/kg	4.0	0.60

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 06/16/25 21:38
Analyst: TMH

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-05 Batch: WG2080021-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	93		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP

Project Number: 181.05025.101

Lab Number: L2535672

Report Date: 06/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05 Batch: WG2080021-3 WG2080021-4								
Methylene chloride	99		92		70-130	7		30
1,1-Dichloroethane	119		108		70-130	10		30
Chloroform	109		102		70-130	7		30
Carbon tetrachloride	108		99		70-130	9		30
1,2-Dichloropropane	111		105		70-130	6		30
Dibromochloromethane	100		101		70-130	1		30
1,1,2-Trichloroethane	100		102		70-130	2		30
Tetrachloroethene	101		97		70-130	4		30
Chlorobenzene	102		98		70-130	4		30
Trichlorofluoromethane	76		73		70-139	4		30
1,2-Dichloroethane	111		108		70-130	3		30
1,1,1-Trichloroethane	109		101		70-130	8		30
Bromodichloromethane	100		98		70-130	2		30
trans-1,3-Dichloropropene	103		104		70-130	1		30
cis-1,3-Dichloropropene	106		103		70-130	3		30
Bromoform	90		93		70-130	3		30
1,1,2,2-Tetrachloroethane	90		97		70-130	7		30
Benzene	107		100		70-130	7		30
Toluene	102		98		70-130	4		30
Ethylbenzene	100		97		70-130	3		30
Chloromethane	104		94		52-130	10		30
Bromomethane	96		86		57-147	11		30
Vinyl chloride	102		85		67-130	18		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP

Project Number: 181.05025.101

Lab Number: L2535672

Report Date: 06/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05 Batch: WG2080021-3 WG2080021-4								
Chloroethane	88		85		50-151	3		30
1,1-Dichloroethene	76		72		65-135	5		30
trans-1,2-Dichloroethene	104		97		70-130	7		30
Trichloroethene	101		95		70-130	6		30
1,2-Dichlorobenzene	100		99		70-130	1		30
1,3-Dichlorobenzene	99		98		70-130	1		30
1,4-Dichlorobenzene	98		96		70-130	2		30
Methyl tert butyl ether	110		109		66-130	1		30
p/m-Xylene	99		96		70-130	3		30
o-Xylene	98		96		70-130	2		30
cis-1,2-Dichloroethene	105		98		70-130	7		30
Styrene	98		95		70-130	3		30
Dichlorodifluoromethane	98		87		30-146	12		30
Acetone	**165**	Q	**166**	Q	54-140	1		30
Carbon disulfide	81		74		59-130	9		30
2-Butanone	114		122		70-130	7		30
4-Methyl-2-pentanone	89		98		70-130	10		30
2-Hexanone	84		95		70-130	12		30
1,2-Dibromoethane	101		104		70-130	3		30
n-Butylbenzene	106		101		70-130	5		30
sec-Butylbenzene	103		98		70-130	5		30
tert-Butylbenzene	100		96		70-130	4		30
1,2-Dibromo-3-chloropropane	78		89		68-130	13		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101
Lab Number: L2535672
Report Date: 06/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05 Batch: WG2080021-3 WG2080021-4								
Isopropylbenzene	102		96		70-130	6		30
p-Isopropyltoluene	102		98		70-130	4		30
Naphthalene	94		98		70-130	4		30
n-Propylbenzene	104		99		70-130	5		30
1,2,4-Trichlorobenzene	101		101		70-130	0		30
1,3,5-Trimethylbenzene	104		99		70-130	5		30
1,2,4-Trimethylbenzene	104		100		70-130	4		30
Methyl Acetate	112		114		51-146	2		30
Cyclohexane	136		123		59-142	10		30
Freon-113	79		72		50-139	9		30
Methyl cyclohexane	108		101		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		107		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	108		108		70-130
Dibromofluoromethane	98		96		70-130

SEMIVOLATILES

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-01
Client ID: SS-T3
Sample Location: FORT DRUM, NY

Date Collected: 06/04/25 12:54
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 06/17/25 03:21
Analyst: SLR
Percent Solids: 95%

Extraction Method: EPA 3546
Extraction Date: 06/16/25 09:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	140	18.	1
Hexachlorobenzene	ND		ug/kg	100	19.	1
Bis(2-chloroethyl)ether	ND		ug/kg	150	23.	1
2-Chloronaphthalene	ND		ug/kg	170	17.	1
3,3'-Dichlorobenzidine	ND		ug/kg	170	45.	1
2,4-Dinitrotoluene	ND		ug/kg	170	34.	1
2,6-Dinitrotoluene	ND		ug/kg	170	29.	1
Fluoranthene	ND		ug/kg	100	20.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	170	18.	1
4-Bromophenyl phenyl ether	ND		ug/kg	170	26.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	29.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	180	17.	1
Hexachlorobutadiene	ND		ug/kg	170	25.	1
Hexachlorocyclopentadiene	ND		ug/kg	490	150	1
Hexachloroethane	ND		ug/kg	140	28.	1
Isophorone	ND		ug/kg	150	22.	1
Naphthalene	ND		ug/kg	170	21.	1
Nitrobenzene	ND		ug/kg	150	25.	1
NDPA/DPA	ND		ug/kg	140	19.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	170	26.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	170	59.	1
Butyl benzyl phthalate	ND		ug/kg	170	43.	1
Di-n-butylphthalate	ND		ug/kg	170	32.	1
Di-n-octylphthalate	ND		ug/kg	170	58.	1
Diethyl phthalate	ND		ug/kg	170	16.	1
Dimethyl phthalate	ND		ug/kg	170	36.	1
Benzo(a)anthracene	ND		ug/kg	100	19.	1
Benzo(a)pyrene	ND		ug/kg	140	42.	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-01 Date Collected: 06/04/25 12:54

Client ID: SS-T3 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	ND		ug/kg	100	29.	1
Benzo(k)fluoranthene	ND		ug/kg	100	27.	1
Chrysene	ND		ug/kg	100	18.	1
Acenaphthylene	ND		ug/kg	140	26.	1
Anthracene	ND		ug/kg	100	33.	1
Benzo(ghi)perylene	ND		ug/kg	140	20.	1
Fluorene	ND		ug/kg	170	16.	1
Phenanthrene	ND		ug/kg	100	21.	1
Dibenzo(a,h)anthracene	ND		ug/kg	100	20.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	140	24.	1
Pyrene	ND		ug/kg	100	17.	1
Biphenyl	ND		ug/kg	390	22.	1
4-Chloroaniline	ND		ug/kg	170	31.	1
2-Nitroaniline	ND		ug/kg	170	33.	1
3-Nitroaniline	ND		ug/kg	170	32.	1
4-Nitroaniline	ND		ug/kg	170	70.	1
Dibenzofuran	ND		ug/kg	170	16.	1
2-Methylnaphthalene	ND		ug/kg	200	20.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	170	18.	1
Acetophenone	ND		ug/kg	170	21.	1
2,4,6-Trichlorophenol	ND		ug/kg	100	32.	1
p-Chloro-m-cresol	ND		ug/kg	170	25.	1
2-Chlorophenol	ND		ug/kg	170	20.	1
2,4-Dichlorophenol	ND		ug/kg	150	27.	1
2,4-Dimethylphenol	ND		ug/kg	170	56.	1
2-Nitrophenol	ND		ug/kg	370	64.	1
4-Nitrophenol	ND		ug/kg	240	70.	1
2,4-Dinitrophenol	ND		ug/kg	820	79.	1
4,6-Dinitro-o-cresol	ND		ug/kg	440	82.	1
Pentachlorophenol	ND		ug/kg	140	37.	1
Phenol	ND		ug/kg	170	26.	1
2-Methylphenol	ND		ug/kg	170	26.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	27.	1
2,4,5-Trichlorophenol	ND		ug/kg	170	33.	1
Carbazole	ND		ug/kg	170	16.	1
Atrazine	ND		ug/kg	140	60.	1
Benzaldehyde	ND		ug/kg	220	46.	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-01 Date Collected: 06/04/25 12:54

Client ID: SS-T3 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	170	52.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	170	34.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	91		25-120
Phenol-d6	85		10-120
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	72		30-120
2,4,6-Tribromophenol	65		10-136
4-Terphenyl-d14	68		18-120

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-02
Client ID: SS-T4
Sample Location: FORT DRUM, NY

Date Collected: 06/04/25 14:30
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 06/17/25 03:42
Analyst: SLR
Percent Solids: 97%

Extraction Method: EPA 3546
Extraction Date: 06/16/25 09:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	140	18.	1
Hexachlorobenzene	ND		ug/kg	100	19.	1
Bis(2-chloroethyl)ether	ND		ug/kg	150	23.	1
2-Chloronaphthalene	ND		ug/kg	170	17.	1
3,3'-Dichlorobenzidine	ND		ug/kg	170	45.	1
2,4-Dinitrotoluene	ND		ug/kg	170	34.	1
2,6-Dinitrotoluene	ND		ug/kg	170	29.	1
Fluoranthene	ND		ug/kg	100	20.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	170	18.	1
4-Bromophenyl phenyl ether	ND		ug/kg	170	26.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	29.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	180	17.	1
Hexachlorobutadiene	ND		ug/kg	170	25.	1
Hexachlorocyclopentadiene	ND		ug/kg	490	150	1
Hexachloroethane	ND		ug/kg	140	28.	1
Isophorone	ND		ug/kg	150	22.	1
Naphthalene	ND		ug/kg	170	21.	1
Nitrobenzene	ND		ug/kg	150	25.	1
NDPA/DPA	ND		ug/kg	140	19.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	170	26.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	170	59.	1
Butyl benzyl phthalate	ND		ug/kg	170	43.	1
Di-n-butylphthalate	ND		ug/kg	170	32.	1
Di-n-octylphthalate	ND		ug/kg	170	58.	1
Diethyl phthalate	ND		ug/kg	170	16.	1
Dimethyl phthalate	ND		ug/kg	170	36.	1
Benzo(a)anthracene	ND		ug/kg	100	19.	1
Benzo(a)pyrene	ND		ug/kg	140	42.	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-02 Date Collected: 06/04/25 14:30

Client ID: SS-T4 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	ND		ug/kg	100	29.	1
Benzo(k)fluoranthene	ND		ug/kg	100	27.	1
Chrysene	ND		ug/kg	100	18.	1
Acenaphthylene	ND		ug/kg	140	26.	1
Anthracene	ND		ug/kg	100	33.	1
Benzo(ghi)perylene	ND		ug/kg	140	20.	1
Fluorene	ND		ug/kg	170	16.	1
Phenanthrene	ND		ug/kg	100	21.	1
Dibenzo(a,h)anthracene	ND		ug/kg	100	20.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	140	24.	1
Pyrene	ND		ug/kg	100	17.	1
Biphenyl	ND		ug/kg	390	22.	1
4-Chloroaniline	ND		ug/kg	170	31.	1
2-Nitroaniline	ND		ug/kg	170	33.	1
3-Nitroaniline	ND		ug/kg	170	32.	1
4-Nitroaniline	ND		ug/kg	170	70.	1
Dibenzofuran	ND		ug/kg	170	16.	1
2-Methylnaphthalene	ND		ug/kg	200	20.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	170	18.	1
Acetophenone	ND		ug/kg	170	21.	1
2,4,6-Trichlorophenol	ND		ug/kg	100	32.	1
p-Chloro-m-cresol	ND		ug/kg	170	25.	1
2-Chlorophenol	ND		ug/kg	170	20.	1
2,4-Dichlorophenol	ND		ug/kg	150	27.	1
2,4-Dimethylphenol	ND		ug/kg	170	56.	1
2-Nitrophenol	ND		ug/kg	370	64.	1
4-Nitrophenol	ND		ug/kg	240	69.	1
2,4-Dinitrophenol	ND		ug/kg	820	79.	1
4,6-Dinitro-o-cresol	ND		ug/kg	440	82.	1
Pentachlorophenol	ND		ug/kg	140	37.	1
Phenol	ND		ug/kg	170	26.	1
2-Methylphenol	ND		ug/kg	170	26.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	27.	1
2,4,5-Trichlorophenol	ND		ug/kg	170	33.	1
Carbazole	ND		ug/kg	170	16.	1
Atrazine	ND		ug/kg	140	60.	1
Benzaldehyde	ND		ug/kg	220	46.	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-02 Date Collected: 06/04/25 14:30

Client ID: SS-T4 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	170	52.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	170	34.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	85		25-120
Phenol-d6	86		10-120
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	74		30-120
2,4,6-Tribromophenol	67		10-136
4-Terphenyl-d14	68		18-120

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-03
Client ID: SS-4-1
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 08:30
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 06/17/25 04:03
Analyst: SLR
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 06/16/25 10:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	150	19.	1
Hexachlorobenzene	ND		ug/kg	110	21.	1
Bis(2-chloroethyl)ether	ND		ug/kg	170	25.	1
2-Chloronaphthalene	ND		ug/kg	190	18.	1
3,3'-Dichlorobenzidine	ND		ug/kg	190	50.	1
2,4-Dinitrotoluene	ND		ug/kg	190	37.	1
2,6-Dinitrotoluene	ND		ug/kg	190	32.	1
Fluoranthene	ND		ug/kg	110	21.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	190	20.	1
4-Bromophenyl phenyl ether	ND		ug/kg	190	28.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	220	32.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	19.	1
Hexachlorobutadiene	ND		ug/kg	190	27.	1
Hexachlorocyclopentadiene	ND		ug/kg	530	170	1
Hexachloroethane	ND		ug/kg	150	30.	1
Isophorone	ND		ug/kg	170	24.	1
Naphthalene	ND		ug/kg	190	23.	1
Nitrobenzene	ND		ug/kg	170	28.	1
NDPA/DPA	ND		ug/kg	150	21.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	190	29.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	190	65.	1
Butyl benzyl phthalate	ND		ug/kg	190	47.	1
Di-n-butylphthalate	ND		ug/kg	190	35.	1
Di-n-octylphthalate	ND		ug/kg	190	64.	1
Diethyl phthalate	ND		ug/kg	190	17.	1
Dimethyl phthalate	ND		ug/kg	190	39.	1
Benzo(a)anthracene	ND		ug/kg	110	21.	1
Benzo(a)pyrene	ND		ug/kg	150	46.	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-03 Date Collected: 06/05/25 08:30

Client ID: SS-4-1 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	ND		ug/kg	110	31.	1
Benzo(k)fluoranthene	ND		ug/kg	110	30.	1
Chrysene	ND		ug/kg	110	19.	1
Acenaphthylene	ND		ug/kg	150	29.	1
Anthracene	ND		ug/kg	110	36.	1
Benzo(ghi)perylene	ND		ug/kg	150	22.	1
Fluorene	ND		ug/kg	190	18.	1
Phenanthrene	ND		ug/kg	110	23.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	22.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	150	26.	1
Pyrene	ND		ug/kg	110	18.	1
Biphenyl	ND		ug/kg	420	24.	1
4-Chloroaniline	ND		ug/kg	190	34.	1
2-Nitroaniline	ND		ug/kg	190	36.	1
3-Nitroaniline	ND		ug/kg	190	35.	1
4-Nitroaniline	ND		ug/kg	190	77.	1
Dibenzofuran	ND		ug/kg	190	18.	1
2-Methylnaphthalene	ND		ug/kg	220	22.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	190	19.	1
Acetophenone	ND		ug/kg	190	23.	1
2,4,6-Trichlorophenol	ND		ug/kg	110	35.	1
p-Chloro-m-cresol	ND		ug/kg	190	28.	1
2-Chlorophenol	ND		ug/kg	190	22.	1
2,4-Dichlorophenol	ND		ug/kg	170	30.	1
2,4-Dimethylphenol	ND		ug/kg	190	62.	1
2-Nitrophenol	ND		ug/kg	400	70.	1
4-Nitrophenol	ND		ug/kg	260	76.	1
2,4-Dinitrophenol	ND		ug/kg	900	87.	1
4,6-Dinitro-o-cresol	ND		ug/kg	480	90.	1
Pentachlorophenol	ND		ug/kg	150	41.	1
Phenol	ND		ug/kg	190	28.	1
2-Methylphenol	ND		ug/kg	190	29.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	270	29.	1
2,4,5-Trichlorophenol	ND		ug/kg	190	36.	1
Carbazole	ND		ug/kg	190	18.	1
Atrazine	ND		ug/kg	150	65.	1
Benzaldehyde	ND		ug/kg	250	50.	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-03 Date Collected: 06/05/25 08:30

Client ID: SS-4-1 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	190	57.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	190	38.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	89		25-120
Phenol-d6	88		10-120
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	70		30-120
2,4,6-Tribromophenol	62		10-136
4-Terphenyl-d14	49		18-120

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-04
Client ID: SS-W5
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 12:10
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 06/17/25 02:39
Analyst: SLR
Percent Solids: 75%

Extraction Method: EPA 3546
Extraction Date: 06/16/25 10:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	170	22.	1
Hexachlorobenzene	ND		ug/kg	130	24.	1
Bis(2-chloroethyl)ether	ND		ug/kg	190	29.	1
2-Chloronaphthalene	ND		ug/kg	220	21.	1
3,3'-Dichlorobenzidine	ND		ug/kg	220	57.	1
2,4-Dinitrotoluene	ND		ug/kg	220	43.	1
2,6-Dinitrotoluene	ND		ug/kg	220	37.	1
Fluoranthene	ND		ug/kg	130	25.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	220	23.	1
4-Bromophenyl phenyl ether	ND		ug/kg	220	33.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	260	37.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	230	22.	1
Hexachlorobutadiene	ND		ug/kg	220	31.	1
Hexachlorocyclopentadiene	ND		ug/kg	620	190	1
Hexachloroethane	ND		ug/kg	170	35.	1
Isophorone	ND		ug/kg	190	28.	1
Naphthalene	ND		ug/kg	220	26.	1
Nitrobenzene	ND		ug/kg	190	32.	1
NDPA/DPA	ND		ug/kg	170	24.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	220	33.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	220	74.	1
Butyl benzyl phthalate	ND		ug/kg	220	54.	1
Di-n-butylphthalate	ND		ug/kg	220	41.	1
Di-n-octylphthalate	ND		ug/kg	220	73.	1
Diethyl phthalate	ND		ug/kg	220	20.	1
Dimethyl phthalate	ND		ug/kg	220	45.	1
Benzo(a)anthracene	ND		ug/kg	130	24.	1
Benzo(a)pyrene	ND		ug/kg	170	52.	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-04 Date Collected: 06/05/25 12:10

Client ID: SS-W5 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	ND		ug/kg	130	36.	1
Benzo(k)fluoranthene	ND		ug/kg	130	34.	1
Chrysene	ND		ug/kg	130	22.	1
Acenaphthylene	ND		ug/kg	170	33.	1
Anthracene	ND		ug/kg	130	42.	1
Benzo(ghi)perylene	ND		ug/kg	170	25.	1
Fluorene	ND		ug/kg	220	21.	1
Phenanthrene	ND		ug/kg	130	26.	1
Dibenzo(a,h)anthracene	ND		ug/kg	130	25.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	170	30.	1
Pyrene	ND		ug/kg	130	21.	1
Biphenyl	ND		ug/kg	490	28.	1
4-Chloroaniline	ND		ug/kg	220	39.	1
2-Nitroaniline	ND		ug/kg	220	41.	1
3-Nitroaniline	ND		ug/kg	220	40.	1
4-Nitroaniline	ND		ug/kg	220	89.	1
Dibenzofuran	ND		ug/kg	220	20.	1
2-Methylnaphthalene	ND		ug/kg	260	26.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	220	22.	1
Acetophenone	ND		ug/kg	220	27.	1
2,4,6-Trichlorophenol	ND		ug/kg	130	41.	1
p-Chloro-m-cresol	ND		ug/kg	220	32.	1
2-Chlorophenol	ND		ug/kg	220	25.	1
2,4-Dichlorophenol	ND		ug/kg	190	34.	1
2,4-Dimethylphenol	ND		ug/kg	220	71.	1
2-Nitrophenol	ND		ug/kg	460	81.	1
4-Nitrophenol	ND		ug/kg	300	88.	1
2,4-Dinitrophenol	ND		ug/kg	1000	100	1
4,6-Dinitro-o-cresol	ND		ug/kg	560	100	1
Pentachlorophenol	ND		ug/kg	170	47.	1
Phenol	ND		ug/kg	220	32.	1
2-Methylphenol	ND		ug/kg	220	33.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	310	34.	1
2,4,5-Trichlorophenol	ND		ug/kg	220	41.	1
Carbazole	ND		ug/kg	220	21.	1
Atrazine	ND		ug/kg	170	75.	1
Benzaldehyde	ND		ug/kg	280	58.	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-04 Date Collected: 06/05/25 12:10

Client ID: SS-W5 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	220	65.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	220	43.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	73		25-120
Phenol-d6	72		10-120
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	65		30-120
2,4,6-Tribromophenol	58		10-136
4-Terphenyl-d14	57		18-120

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-05
Client ID: SS-W4R
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 14:10
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 06/17/25 03:00
Analyst: SLR
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 06/16/25 10:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	160	20.	1
Hexachlorobenzene	ND		ug/kg	120	22.	1
Bis(2-chloroethyl)ether	ND		ug/kg	180	27.	1
2-Chloronaphthalene	ND		ug/kg	200	20.	1
3,3'-Dichlorobenzidine	ND		ug/kg	200	52.	1
2,4-Dinitrotoluene	ND		ug/kg	200	40.	1
2,6-Dinitrotoluene	ND		ug/kg	200	34.	1
Fluoranthene	ND		ug/kg	120	23.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	200	21.	1
4-Bromophenyl phenyl ether	ND		ug/kg	200	30.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	240	34.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	210	20.	1
Hexachlorobutadiene	ND		ug/kg	200	29.	1
Hexachlorocyclopentadiene	ND		ug/kg	560	180	1
Hexachloroethane	ND		ug/kg	160	32.	1
Isophorone	ND		ug/kg	180	26.	1
Naphthalene	ND		ug/kg	200	24.	1
Nitrobenzene	ND		ug/kg	180	29.	1
NDPA/DPA	ND		ug/kg	160	22.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	200	30.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	200	68.	1
Butyl benzyl phthalate	ND		ug/kg	200	50.	1
Di-n-butylphthalate	ND		ug/kg	200	37.	1
Di-n-octylphthalate	ND		ug/kg	200	67.	1
Diethyl phthalate	ND		ug/kg	200	18.	1
Dimethyl phthalate	ND		ug/kg	200	42.	1
Benzo(a)anthracene	ND		ug/kg	120	22.	1
Benzo(a)pyrene	ND		ug/kg	160	48.	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-05 Date Collected: 06/05/25 14:10

Client ID: SS-W4R Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	ND		ug/kg	120	33.	1
Benzo(k)fluoranthene	ND		ug/kg	120	32.	1
Chrysene	ND		ug/kg	120	20.	1
Acenaphthylene	ND		ug/kg	160	30.	1
Anthracene	ND		ug/kg	120	38.	1
Benzo(ghi)perylene	ND		ug/kg	160	23.	1
Fluorene	ND		ug/kg	200	19.	1
Phenanthrene	ND		ug/kg	120	24.	1
Dibenzo(a,h)anthracene	ND		ug/kg	120	23.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	160	28.	1
Pyrene	ND		ug/kg	120	20.	1
Biphenyl	ND		ug/kg	450	26.	1
4-Chloroaniline	ND		ug/kg	200	36.	1
2-Nitroaniline	ND		ug/kg	200	38.	1
3-Nitroaniline	ND		ug/kg	200	37.	1
4-Nitroaniline	ND		ug/kg	200	82.	1
Dibenzofuran	ND		ug/kg	200	19.	1
2-Methylnaphthalene	ND		ug/kg	240	24.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	200	21.	1
Acetophenone	ND		ug/kg	200	24.	1
2,4,6-Trichlorophenol	ND		ug/kg	120	37.	1
p-Chloro-m-cresol	ND		ug/kg	200	29.	1
2-Chlorophenol	ND		ug/kg	200	23.	1
2,4-Dichlorophenol	ND		ug/kg	180	32.	1
2,4-Dimethylphenol	ND		ug/kg	200	65.	1
2-Nitrophenol	ND		ug/kg	430	74.	1
4-Nitrophenol	ND		ug/kg	280	81.	1
2,4-Dinitrophenol	ND		ug/kg	950	92.	1
4,6-Dinitro-o-cresol	ND		ug/kg	510	95.	1
Pentachlorophenol	ND		ug/kg	160	43.	1
Phenol	ND		ug/kg	200	30.	1
2-Methylphenol	ND		ug/kg	200	31.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	280	31.	1
2,4,5-Trichlorophenol	ND		ug/kg	200	38.	1
Carbazole	ND		ug/kg	200	19.	1
Atrazine	ND		ug/kg	160	69.	1
Benzaldehyde	ND		ug/kg	260	53.	1

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-05 Date Collected: 06/05/25 14:10

Client ID: SS-W4R Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	200	60.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	200	40.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	99		25-120
Phenol-d6	97		10-120
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	83		30-120
2,4,6-Tribromophenol	73		10-136
4-Terphenyl-d14	69		18-120

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 06/16/25 23:28
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 06/16/25 09:41

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-05 Batch: WG2079335-1					
Acenaphthene	ND		ug/kg	130	17.
Hexachlorobenzene	ND		ug/kg	99	18.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	160	16.
3,3'-Dichlorobenzidine	ND		ug/kg	160	44.
2,4-Dinitrotoluene	ND		ug/kg	160	33.
2,6-Dinitrotoluene	ND		ug/kg	160	28.
Fluoranthene	ND		ug/kg	99	19.
4-Chlorophenyl phenyl ether	ND		ug/kg	160	18.
4-Bromophenyl phenyl ether	ND		ug/kg	160	25.
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	28.
Bis(2-chloroethoxy)methane	ND		ug/kg	180	16.
Hexachlorobutadiene	ND		ug/kg	160	24.
Hexachlorocyclopentadiene	ND		ug/kg	470	150
Hexachloroethane	ND		ug/kg	130	27.
Isophorone	ND		ug/kg	150	21.
Naphthalene	ND		ug/kg	160	20.
Nitrobenzene	ND		ug/kg	150	24.
NDPA/DPA	ND		ug/kg	130	19.
n-Nitrosodi-n-propylamine	ND		ug/kg	160	25.
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	57.
Butyl benzyl phthalate	ND		ug/kg	160	41.
Di-n-butylphthalate	ND		ug/kg	160	31.
Di-n-octylphthalate	ND		ug/kg	160	56.
Diethyl phthalate	ND		ug/kg	160	15.
Dimethyl phthalate	ND		ug/kg	160	34.
Benzo(a)anthracene	ND		ug/kg	99	18.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	99	28.

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 06/16/25 23:28
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 06/16/25 09:41

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-05 Batch: WG2079335-1					
Benzo(k)fluoranthene	ND		ug/kg	99	26.
Chrysene	ND		ug/kg	99	17.
Acenaphthylene	ND		ug/kg	130	25.
Anthracene	ND		ug/kg	99	32.
Benzo(ghi)perylene	ND		ug/kg	130	19.
Fluorene	ND		ug/kg	160	16.
Phenanthrene	ND		ug/kg	99	20.
Dibenzo(a,h)anthracene	ND		ug/kg	99	19.
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	23.
Pyrene	ND		ug/kg	99	16.
Biphenyl	ND		ug/kg	380	21.
4-Chloroaniline	ND		ug/kg	160	30.
2-Nitroaniline	ND		ug/kg	160	32.
3-Nitroaniline	ND		ug/kg	160	31.
4-Nitroaniline	ND		ug/kg	160	68.
Dibenzofuran	ND		ug/kg	160	16.
2-Methylnaphthalene	ND		ug/kg	200	20.
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	160	17.
Acetophenone	ND		ug/kg	160	20.
2,4,6-Trichlorophenol	ND		ug/kg	99	31.
p-Chloro-m-cresol	ND		ug/kg	160	24.
2-Chlorophenol	ND		ug/kg	160	19.
2,4-Dichlorophenol	ND		ug/kg	150	26.
2,4-Dimethylphenol	ND		ug/kg	160	54.
2-Nitrophenol	ND		ug/kg	360	62.
4-Nitrophenol	ND		ug/kg	230	67.
2,4-Dinitrophenol	ND		ug/kg	790	77.
4,6-Dinitro-o-cresol	ND		ug/kg	430	79.
Pentachlorophenol	ND		ug/kg	130	36.

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101
Lab Number: L2535672
Report Date: 06/27/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 06/16/25 23:28
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 06/16/25 09:41

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-05 Batch: WG2079335-1					
Phenol	ND		ug/kg	160	25.
2-Methylphenol	ND		ug/kg	160	26.
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	26.
2,4,5-Trichlorophenol	ND		ug/kg	160	32.
Carbazole	ND		ug/kg	160	16.
Atrazine	ND		ug/kg	130	58.
Benzaldehyde	ND		ug/kg	220	44.
Caprolactam	ND		ug/kg	160	50.
2,3,4,6-Tetrachlorophenol	ND		ug/kg	160	33.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	66		25-120
Phenol-d6	64		10-120
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	54		30-120
2,4,6-Tribromophenol	51		10-136
4-Terphenyl-d14	53		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP

Project Number: 181.05025.101

Lab Number: L2535672

Report Date: 06/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05 Batch: WG2079335-2 WG2079335-3								
Acenaphthene	70		74		31-137	6		50
Hexachlorobenzene	62		66		40-140	6		50
Bis(2-chloroethyl)ether	69		76		40-140	10		50
2-Chloronaphthalene	67		74		40-140	10		50
3,3'-Dichlorobenzidine	68		71		40-140	4		50
2,4-Dinitrotoluene	83		86		40-132	4		50
2,6-Dinitrotoluene	76		83		40-140	9		50
Fluoranthene	73		78		40-140	7		50
4-Chlorophenyl phenyl ether	67		71		40-140	6		50
4-Bromophenyl phenyl ether	65		69		40-140	6		50
Bis(2-chloroisopropyl)ether	45		50		40-140	11		50
Bis(2-chloroethoxy)methane	76		82		40-117	8		50
Hexachlorobutadiene	53		60		40-140	12		50
Hexachlorocyclopentadiene	56		63		40-140	12		50
Hexachloroethane	65		72		40-140	10		50
Isophorone	79		84		40-140	6		50
Naphthalene	66		72		40-140	9		50
Nitrobenzene	77		84		40-140	9		50
NDPA/DPA	73		78		36-157	7		50
n-Nitrosodi-n-propylamine	79		85		32-121	7		50
Bis(2-ethylhexyl)phthalate	93		100		40-140	7		50
Butyl benzyl phthalate	94		98		40-140	4		50
Di-n-butylphthalate	88		93		40-140	6		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP

Project Number: 181.05025.101

Lab Number: L2535672

Report Date: 06/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05 Batch: WG2079335-2 WG2079335-3								
Di-n-octylphthalate	104		112		40-140	7		50
Diethyl phthalate	76		81		40-140	6		50
Dimethyl phthalate	72		77		40-140	7		50
Benzo(a)anthracene	73		79		40-140	8		50
Benzo(a)pyrene	77		81		40-140	5		50
Benzo(b)fluoranthene	74		78		40-140	5		50
Benzo(k)fluoranthene	75		79		40-140	5		50
Chrysene	68		72		40-140	6		50
Acenaphthylene	74		80		40-140	8		50
Anthracene	74		79		40-140	7		50
Benzo(ghi)perylene	74		76		40-140	3		50
Fluorene	74		78		40-140	5		50
Phenanthrene	73		76		40-140	4		50
Dibenzo(a,h)anthracene	75		79		40-140	5		50
Indeno(1,2,3-cd)pyrene	78		82		40-140	5		50
Pyrene	72		77		35-142	7		50
Biphenyl	70		75		37-127	7		50
4-Chloroaniline	67		74		40-140	10		50
2-Nitroaniline	84		91		47-134	8		50
3-Nitroaniline	54		53		26-129	2		50
4-Nitroaniline	75		78		41-125	4		50
Dibenzofuran	73		78		40-140	7		50
2-Methylnaphthalene	67		73		40-140	9		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP

Project Number: 181.05025.101

Lab Number: L2535672

Report Date: 06/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05 Batch: WG2079335-2 WG2079335-3								
1,2,4,5-Tetrachlorobenzene	59		65		40-117	10		50
Acetophenone	72		80		14-144	11		50
2,4,6-Trichlorophenol	73		78		30-130	7		50
p-Chloro-m-cresol	80		87		26-103	8		50
2-Chlorophenol	70		77		25-102	10		50
2,4-Dichlorophenol	75		80		30-130	6		50
2,4-Dimethylphenol	81		88		30-130	8		50
2-Nitrophenol	81		87		30-130	7		50
4-Nitrophenol	114		**118**	Q	11-114	3		50
2,4-Dinitrophenol	90		92		4-130	2		50
4,6-Dinitro-o-cresol	92		95		10-130	3		50
Pentachlorophenol	72		74		17-109	3		50
Phenol	74		79		26-90	7		50
2-Methylphenol	78		85		30-130.	9		50
3-Methylphenol/4-Methylphenol	85		90		30-130	6		50
2,4,5-Trichlorophenol	70		77		30-130	10		50
Carbazole	78		82		54-128	5		50
Atrazine	73		75		40-140	3		50
Benzaldehyde	56		62		40-140	10		50
Caprolactam	67		72		15-130	7		50
2,3,4,6-Tetrachlorophenol	68		73		40-140	7		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP

Project Number: 181.05025.101

Lab Number: L2535672

Report Date: 06/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05 Batch: WG2079335-2 WG2079335-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	84		91		25-120
Phenol-d6	85		90		10-120
Nitrobenzene-d5	81		88		23-120
2-Fluorobiphenyl	68		74		30-120
2,4,6-Tribromophenol	69		72		10-136
4-Terphenyl-d14	71		74		18-120

PCBS

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-01
Client ID: SS-T3
Sample Location: FORT DRUM, NY

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/17/25 09:30
Analyst: MEO
Percent Solids: 95%

Date Collected: 06/04/25 12:54
Date Received: 06/06/25
Field Prep: Not Specified

Extraction Method: EPA 3546
Extraction Date: 06/16/25 19:51
Cleanup Method: EPA 3665A
Cleanup Date: 06/17/25
Cleanup Method: EPA 3660B
Cleanup Date: 06/17/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	48.7	4.32	1	A
Aroclor 1221	ND		ug/kg	48.7	4.88	1	A
Aroclor 1232	ND		ug/kg	48.7	10.3	1	A
Aroclor 1242	ND		ug/kg	48.7	6.56	1	A
Aroclor 1248	ND		ug/kg	48.7	7.30	1	A
Aroclor 1254	ND		ug/kg	48.7	5.33	1	A
Aroclor 1260	ND		ug/kg	48.7	9.00	1	A
Aroclor 1262	ND		ug/kg	48.7	6.18	1	A
Aroclor 1268	ND		ug/kg	48.7	5.04	1	A
PCBs, Total	ND		ug/kg	48.7	4.32	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	79		30-150	A
Decachlorobiphenyl	115		30-150	A
2,4,5,6-Tetrachloro-m-xylene	79		30-150	B
Decachlorobiphenyl	114		30-150	B

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID:	L2535672-02	Date Collected:	06/04/25 14:30
Client ID:	SS-T4	Date Received:	06/06/25
Sample Location:	FORT DRUM, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	06/16/25 19:51
Analytical Date:	06/17/25 09:37	Cleanup Method:	EPA 3665A
Analyst:	MEO	Cleanup Date:	06/17/25
Percent Solids:	97%	Cleanup Method:	EPA 3660B
		Cleanup Date:	06/17/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	49.0	4.36	1	A
Aroclor 1221	ND		ug/kg	49.0	4.91	1	A
Aroclor 1232	ND		ug/kg	49.0	10.4	1	A
Aroclor 1242	ND		ug/kg	49.0	6.61	1	A
Aroclor 1248	ND		ug/kg	49.0	7.36	1	A
Aroclor 1254	ND		ug/kg	49.0	5.36	1	A
Aroclor 1260	ND		ug/kg	49.0	9.06	1	A
Aroclor 1262	ND		ug/kg	49.0	6.23	1	A
Aroclor 1268	ND		ug/kg	49.0	5.08	1	A
PCBs, Total	ND		ug/kg	49.0	4.36	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	88		30-150	A
Decachlorobiphenyl	125		30-150	A
2,4,5,6-Tetrachloro-m-xylene	87		30-150	B
Decachlorobiphenyl	124		30-150	B

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-03
Client ID: SS-4-1
Sample Location: FORT DRUM, NY

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/17/25 09:45
Analyst: MEO
Percent Solids: 87%

Date Collected: 06/05/25 08:30
Date Received: 06/06/25
Field Prep: Not Specified

Extraction Method: EPA 3546
Extraction Date: 06/16/25 19:51
Cleanup Method: EPA 3665A
Cleanup Date: 06/17/25
Cleanup Method: EPA 3660B
Cleanup Date: 06/17/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	54.6	4.85	1	A
Aroclor 1221	ND		ug/kg	54.6	5.47	1	A
Aroclor 1232	ND		ug/kg	54.6	11.6	1	A
Aroclor 1242	ND		ug/kg	54.6	7.36	1	A
Aroclor 1248	ND		ug/kg	54.6	8.19	1	A
Aroclor 1254	ND		ug/kg	54.6	5.97	1	A
Aroclor 1260	ND		ug/kg	54.6	10.1	1	A
Aroclor 1262	ND		ug/kg	54.6	6.94	1	A
Aroclor 1268	ND		ug/kg	54.6	5.66	1	A
PCBs, Total	ND		ug/kg	54.6	4.85	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		30-150	A
Decachlorobiphenyl	102		30-150	A
2,4,5,6-Tetrachloro-m-xylene	66		30-150	B
Decachlorobiphenyl	98		30-150	B

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID:	L2535672-04	Date Collected:	06/05/25 12:10
Client ID:	SS-W5	Date Received:	06/06/25
Sample Location:	FORT DRUM, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	06/16/25 19:51
Analytical Date:	06/17/25 09:52	Cleanup Method:	EPA 3665A
Analyst:	MEO	Cleanup Date:	06/17/25
Percent Solids:	75%	Cleanup Method:	EPA 3660B
		Cleanup Date:	06/17/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	62.5	5.55	1	A
Aroclor 1221	ND		ug/kg	62.5	6.26	1	A
Aroclor 1232	ND		ug/kg	62.5	13.2	1	A
Aroclor 1242	ND		ug/kg	62.5	8.42	1	A
Aroclor 1248	ND		ug/kg	62.5	9.38	1	A
Aroclor 1254	ND		ug/kg	62.5	6.84	1	A
Aroclor 1260	ND		ug/kg	62.5	11.6	1	A
Aroclor 1262	ND		ug/kg	62.5	7.94	1	A
Aroclor 1268	ND		ug/kg	62.5	6.48	1	A
PCBs, Total	ND		ug/kg	62.5	5.55	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	103		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	102		30-150	B

Project Name: PROPOSED ERCIP WELLFIELD EXP
Lab Number: L2535672
Project Number: 181.05025.101
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-05
Client ID: SS-W4R
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 14:10
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/17/25 10:00
Analyst: MEO
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 06/16/25 19:51
Cleanup Method: EPA 3665A
Cleanup Date: 06/17/25
Cleanup Method: EPA 3660B
Cleanup Date: 06/17/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	58.2	5.17	1	A
Aroclor 1221	ND		ug/kg	58.2	5.83	1	A
Aroclor 1232	ND		ug/kg	58.2	12.3	1	A
Aroclor 1242	ND		ug/kg	58.2	7.84	1	A
Aroclor 1248	ND		ug/kg	58.2	8.73	1	A
Aroclor 1254	ND		ug/kg	58.2	6.36	1	A
Aroclor 1260	ND		ug/kg	58.2	10.8	1	A
Aroclor 1262	ND		ug/kg	58.2	7.39	1	A
Aroclor 1268	ND		ug/kg	58.2	6.03	1	A
PCBs, Total	ND		ug/kg	58.2	5.17	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	75		30-150	A
Decachlorobiphenyl	118		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	110		30-150	B

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 06/17/25 09:00
Analyst: MEO

Extraction Method: EPA 3546
Extraction Date: 06/16/25 19:51
Cleanup Method: EPA 3665A
Cleanup Date: 06/17/25
Cleanup Method: EPA 3660B
Cleanup Date: 06/17/25

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01-05 Batch: WG2079579-1						
Aroclor 1016	ND		ug/kg	48.5	4.31	A
Aroclor 1221	ND		ug/kg	48.5	4.86	A
Aroclor 1232	ND		ug/kg	48.5	10.3	A
Aroclor 1242	ND		ug/kg	48.5	6.54	A
Aroclor 1248	ND		ug/kg	48.5	7.27	A
Aroclor 1254	ND		ug/kg	48.5	5.30	A
Aroclor 1260	ND		ug/kg	48.5	8.96	A
Aroclor 1262	ND		ug/kg	48.5	6.16	A
Aroclor 1268	ND		ug/kg	48.5	5.02	A
PCBs, Total	ND		ug/kg	48.5	4.31	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	104		30-150	A
2,4,5,6-Tetrachloro-m-xylene	78		30-150	B
Decachlorobiphenyl	104		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101
Lab Number: L2535672
Report Date: 06/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01-05 Batch: WG2079579-2 WG2079579-3									
Aroclor 1016	112		105		40-140	6		50	A
Aroclor 1260	104		98		40-140	6		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	86		80		30-150	A
Decachlorobiphenyl	117		112		30-150	A
2,4,5,6-Tetrachloro-m-xylene	85		79		30-150	B
Decachlorobiphenyl	118		111		30-150	B

PESTICIDES

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-01
Client ID: SS-T3
Sample Location: FORT DRUM, NY

Date Collected: 06/04/25 12:54
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/19/25 01:08
Analyst: PEG
Percent Solids: 95%

Extraction Method: EPA 3546
Extraction Date: 06/17/25 23:25
Cleanup Method: EPA 3620B
Cleanup Date: 06/18/25
Cleanup Method: EPA 3660B
Cleanup Date: 06/18/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.66	0.325	1	A
Lindane	ND		ug/kg	0.691	0.309	1	A
Alpha-BHC	ND		ug/kg	0.691	0.196	1	A
Beta-BHC	ND		ug/kg	1.66	0.628	1	A
Heptachlor	ND		ug/kg	0.829	0.372	1	A
Aldrin	ND		ug/kg	1.66	0.584	1	A
Heptachlor epoxide	ND		ug/kg	3.11	0.932	1	A
Endrin	ND		ug/kg	0.691	0.283	1	A
Endrin aldehyde	ND		ug/kg	2.07	0.725	1	A
Endrin ketone	ND		ug/kg	1.66	0.427	1	A
Dieldrin	ND		ug/kg	1.04	0.518	1	A
4,4'-DDE	ND		ug/kg	1.66	0.383	1	A
4,4'-DDD	ND		ug/kg	1.66	0.591	1	A
4,4'-DDT	ND		ug/kg	1.66	1.33	1	A
Endosulfan I	ND		ug/kg	1.66	0.392	1	A
Endosulfan II	ND		ug/kg	1.66	0.554	1	A
Endosulfan sulfate	ND		ug/kg	0.691	0.329	1	A
Methoxychlor	ND		ug/kg	3.11	0.967	1	A
Toxaphene	ND		ug/kg	31.1	8.70	1	A
cis-Chlordane	ND		ug/kg	2.07	0.577	1	A
trans-Chlordane	ND		ug/kg	2.07	0.547	1	A
Chlordane	ND		ug/kg	13.8	5.49	1	A

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID:	L2535672-01	Date Collected:	06/04/25 12:54
Client ID:	SS-T3	Date Received:	06/06/25
Sample Location:	FORT DRUM, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	95		30-150	A
Decachlorobiphenyl	91		30-150	A
2,4,5,6-Tetrachloro-m-xylene	92		30-150	B
Decachlorobiphenyl	87		30-150	B

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-02
Client ID: SS-T4
Sample Location: FORT DRUM, NY

Date Collected: 06/04/25 14:30
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/19/25 01:21
Analyst: PEG
Percent Solids: 97%

Extraction Method: EPA 3546
Extraction Date: 06/17/25 23:25
Cleanup Method: EPA 3620B
Cleanup Date: 06/18/25
Cleanup Method: EPA 3660B
Cleanup Date: 06/18/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.62	0.318	1	A
Lindane	ND		ug/kg	0.676	0.302	1	A
Alpha-BHC	ND		ug/kg	0.676	0.192	1	A
Beta-BHC	ND		ug/kg	1.62	0.615	1	A
Heptachlor	ND		ug/kg	0.811	0.363	1	A
Aldrin	ND		ug/kg	1.62	0.571	1	A
Heptachlor epoxide	ND		ug/kg	3.04	0.912	1	A
Endrin	ND		ug/kg	0.676	0.277	1	A
Endrin aldehyde	ND		ug/kg	2.03	0.709	1	A
Endrin ketone	ND		ug/kg	1.62	0.418	1	A
Dieldrin	ND		ug/kg	1.01	0.507	1	A
4,4'-DDE	ND		ug/kg	1.62	0.375	1	A
4,4'-DDD	ND		ug/kg	1.62	0.578	1	A
4,4'-DDT	ND		ug/kg	1.62	1.30	1	A
Endosulfan I	ND		ug/kg	1.62	0.383	1	A
Endosulfan II	ND		ug/kg	1.62	0.542	1	A
Endosulfan sulfate	ND		ug/kg	0.676	0.322	1	A
Methoxychlor	ND		ug/kg	3.04	0.946	1	A
Toxaphene	ND		ug/kg	30.4	8.51	1	A
cis-Chlordane	ND		ug/kg	2.03	0.565	1	A
trans-Chlordane	ND		ug/kg	2.03	0.535	1	A
Chlordane	ND		ug/kg	13.5	5.37	1	A

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID:	L2535672-02	Date Collected:	06/04/25 14:30
Client ID:	SS-T4	Date Received:	06/06/25
Sample Location:	FORT DRUM, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	73		30-150	A
2,4,5,6-Tetrachloro-m-xylene	73		30-150	B
Decachlorobiphenyl	72		30-150	B

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-03
Client ID: SS-4-1
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 08:30
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/19/25 01:34
Analyst: PEG
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 06/17/25 23:25
Cleanup Method: EPA 3620B
Cleanup Date: 06/18/25
Cleanup Method: EPA 3660B
Cleanup Date: 06/18/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.82	0.356	1	A
Lindane	ND		ug/kg	0.757	0.338	1	A
Alpha-BHC	ND		ug/kg	0.757	0.215	1	A
Beta-BHC	ND		ug/kg	1.82	0.689	1	A
Heptachlor	ND		ug/kg	0.909	0.408	1	A
Aldrin	ND		ug/kg	1.82	0.640	1	A
Heptachlor epoxide	ND		ug/kg	3.41	1.02	1	A
Endrin	ND		ug/kg	0.757	0.310	1	A
Endrin aldehyde	ND		ug/kg	2.27	0.795	1	A
Endrin ketone	ND		ug/kg	1.82	0.468	1	A
Dieldrin	ND		ug/kg	1.14	0.568	1	A
4,4'-DDE	ND		ug/kg	1.82	0.420	1	A
4,4'-DDD	ND		ug/kg	1.82	0.648	1	A
4,4'-DDT	ND		ug/kg	1.82	1.46	1	A
Endosulfan I	ND		ug/kg	1.82	0.429	1	A
Endosulfan II	ND		ug/kg	1.82	0.607	1	A
Endosulfan sulfate	ND		ug/kg	0.757	0.360	1	A
Methoxychlor	ND		ug/kg	3.41	1.06	1	A
Toxaphene	ND		ug/kg	34.1	9.54	1	A
cis-Chlordane	ND		ug/kg	2.27	0.633	1	A
trans-Chlordane	ND		ug/kg	2.27	0.600	1	A
Chlordane	ND		ug/kg	15.1	6.02	1	A

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-03 Date Collected: 06/05/25 08:30

Client ID: SS-4-1 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	82		30-150	A
Decachlorobiphenyl	81		30-150	A
2,4,5,6-Tetrachloro-m-xylene	75		30-150	B
Decachlorobiphenyl	80		30-150	B

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101
Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-04
Client ID: SS-W5
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 12:10
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/19/25 01:47
Analyst: PEG
Percent Solids: 75%

Extraction Method: EPA 3546
Extraction Date: 06/17/25 23:25
Cleanup Method: EPA 3620B
Cleanup Date: 06/18/25
Cleanup Method: EPA 3660B
Cleanup Date: 06/18/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	2.02	0.396	1	A
Lindane	ND		ug/kg	0.844	0.377	1	A
Alpha-BHC	ND		ug/kg	0.844	0.240	1	A
Beta-BHC	ND		ug/kg	2.02	0.768	1	A
Heptachlor	ND		ug/kg	1.01	0.454	1	A
Aldrin	ND		ug/kg	2.02	0.713	1	A
Heptachlor epoxide	ND		ug/kg	3.80	1.14	1	A
Endrin	ND		ug/kg	0.844	0.346	1	A
Endrin aldehyde	ND		ug/kg	2.53	0.886	1	A
Endrin ketone	ND		ug/kg	2.02	0.521	1	A
Dieldrin	ND		ug/kg	1.26	0.633	1	A
4,4'-DDE	ND		ug/kg	2.02	0.468	1	A
4,4'-DDD	ND		ug/kg	2.02	0.722	1	A
4,4'-DDT	ND		ug/kg	2.02	1.63	1	A
Endosulfan I	ND		ug/kg	2.02	0.478	1	A
Endosulfan II	ND		ug/kg	2.02	0.677	1	A
Endosulfan sulfate	ND		ug/kg	0.844	0.402	1	A
Methoxychlor	ND		ug/kg	3.80	1.18	1	A
Toxaphene	ND		ug/kg	38.0	10.6	1	A
cis-Chlordane	ND		ug/kg	2.53	0.705	1	A
trans-Chlordane	ND		ug/kg	2.53	0.668	1	A
Chlordane	ND		ug/kg	16.9	6.71	1	A

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-04 Date Collected: 06/05/25 12:10

Client ID: SS-W5 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	82		30-150	A
Decachlorobiphenyl	79		30-150	A
2,4,5,6-Tetrachloro-m-xylene	76		30-150	B
Decachlorobiphenyl	78		30-150	B

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101
Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-05
Client ID: SS-W4R
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 14:10
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/19/25 02:00
Analyst: PEG
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 06/17/25 23:25
Cleanup Method: EPA 3620B
Cleanup Date: 06/18/25
Cleanup Method: EPA 3660B
Cleanup Date: 06/18/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.91	0.375	1	A
Lindane	ND		ug/kg	0.797	0.356	1	A
Alpha-BHC	ND		ug/kg	0.797	0.226	1	A
Beta-BHC	ND		ug/kg	1.91	0.725	1	A
Heptachlor	ND		ug/kg	0.956	0.429	1	A
Aldrin	ND		ug/kg	1.91	0.673	1	A
Heptachlor epoxide	ND		ug/kg	3.59	1.08	1	A
Endrin	ND		ug/kg	0.797	0.327	1	A
Endrin aldehyde	ND		ug/kg	2.39	0.837	1	A
Endrin ketone	ND		ug/kg	1.91	0.492	1	A
Dieldrin	ND		ug/kg	1.20	0.598	1	A
4,4'-DDE	ND		ug/kg	1.91	0.442	1	A
4,4'-DDD	ND		ug/kg	1.91	0.682	1	A
4,4'-DDT	ND		ug/kg	1.91	1.54	1	A
Endosulfan I	ND		ug/kg	1.91	0.452	1	A
Endosulfan II	ND		ug/kg	1.91	0.639	1	A
Endosulfan sulfate	ND		ug/kg	0.797	0.379	1	A
Methoxychlor	ND		ug/kg	3.59	1.12	1	A
Toxaphene	ND		ug/kg	35.9	10.0	1	A
cis-Chlordane	ND		ug/kg	2.39	0.666	1	A
trans-Chlordane	ND		ug/kg	2.39	0.631	1	A
Chlordane	ND		ug/kg	15.9	6.34	1	A

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID:	L2535672-05	Date Collected:	06/05/25 14:10
Client ID:	SS-W4R	Date Received:	06/06/25
Sample Location:	FORT DRUM, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	100		30-150	A
Decachlorobiphenyl	92		30-150	A
2,4,5,6-Tetrachloro-m-xylene	91		30-150	B
Decachlorobiphenyl	95		30-150	B

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/17/25 12:48
Analyst: JAG

Extraction Method: EPA 3546
Extraction Date: 06/17/25 06:57
Cleanup Method: EPA 3620B
Cleanup Date: 06/17/25
Cleanup Method: EPA 3660B
Cleanup Date: 06/17/25

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 01-05 Batch: WG2079733-1						
Delta-BHC	ND		ug/kg	1.52	0.297	A
Lindane	ND		ug/kg	0.632	0.282	A
Alpha-BHC	ND		ug/kg	0.632	0.179	A
Beta-BHC	ND		ug/kg	1.52	0.575	A
Heptachlor	ND		ug/kg	0.758	0.340	A
Aldrin	ND		ug/kg	1.52	0.534	A
Heptachlor epoxide	ND		ug/kg	2.84	0.853	A
Endrin	ND		ug/kg	0.632	0.259	A
Endrin aldehyde	ND		ug/kg	1.90	0.663	A
Endrin ketone	ND		ug/kg	1.52	0.390	A
Dieldrin	ND		ug/kg	0.948	0.474	A
4,4'-DDE	ND		ug/kg	1.52	0.351	A
4,4'-DDD	ND		ug/kg	1.52	0.541	A
4,4'-DDT	ND		ug/kg	1.52	1.22	A
Endosulfan I	ND		ug/kg	1.52	0.358	A
Endosulfan II	ND		ug/kg	1.52	0.507	A
Endosulfan sulfate	ND		ug/kg	0.632	0.301	A
Methoxychlor	ND		ug/kg	2.84	0.884	A
Toxaphene	ND		ug/kg	28.4	7.96	A
cis-Chlordane	ND		ug/kg	1.90	0.528	A
trans-Chlordane	ND		ug/kg	1.90	0.500	A
Chlordane	ND		ug/kg	12.6	5.02	A

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/17/25 12:48
Analyst: JAG

Extraction Method: EPA 3546
Extraction Date: 06/17/25 06:57
Cleanup Method: EPA 3620B
Cleanup Date: 06/17/25
Cleanup Method: EPA 3660B
Cleanup Date: 06/17/25

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 01-05 Batch: WG2079733-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		30-150	A
Decachlorobiphenyl	66		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		30-150	B
Decachlorobiphenyl	72		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP

Project Number: 181.05025.101

Lab Number: L2535672

Report Date: 06/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01-05 Batch: WG2079733-2 WG2079733-3									
Delta-BHC	77		65		30-150	17		30	A
Lindane	79		67		30-150	16		30	A
Alpha-BHC	79		69		30-150	14		30	A
Beta-BHC	78		83		30-150	6		30	A
Heptachlor	78		66		30-150	17		30	A
Aldrin	76		64		30-150	17		30	A
Heptachlor epoxide	55		55		30-150	0		30	A
Endrin	76		64		30-150	17		30	A
Endrin aldehyde	62		52		30-150	18		30	A
Endrin ketone	78		65		30-150	18		30	A
Dieldrin	78		66		30-150	17		30	A
4,4'-DDE	72		60		30-150	18		30	A
4,4'-DDD	77		64		30-150	18		30	A
4,4'-DDT	83		69		30-150	18		30	A
Endosulfan I	73		61		30-150	18		30	A
Endosulfan II	76		63		30-150	19		30	A
Endosulfan sulfate	74		61		30-150	19		30	A
Methoxychlor	72		60		30-150	18		30	A
cis-Chlordane	70		59		30-150	17		30	A
trans-Chlordane	79		66		30-150	18		30	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP

Project Number: 181.05025.101

Lab Number: L2535672

Report Date: 06/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01-05 Batch: WG2079733-2 WG2079733-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	72		61		30-150	A
Decachlorobiphenyl	71		57		30-150	A
2,4,5,6-Tetrachloro-m-xylene	82		69		30-150	B
Decachlorobiphenyl	77		63		30-150	B

METALS

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-01 Date Collected: 06/04/25 12:54

Client ID: SS-T3 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	0.780	J	mg/kg	0.798	0.345	2	06/20/25 16:44	06/26/25 18:49	EPA 3050B	1,6010D	EFM
Barium, Total	5.89		mg/kg	0.798	0.085	2	06/20/25 16:44	06/26/25 18:49	EPA 3050B	1,6010D	EFM
Cadmium, Total	ND		mg/kg	0.798	0.044	2	06/20/25 16:44	06/26/25 18:49	EPA 3050B	1,6010D	EFM
Chromium, Total	1.10		mg/kg	0.798	0.677	2	06/20/25 16:44	06/26/25 18:49	EPA 3050B	1,6010D	EFM
Lead, Total	0.767	J	mg/kg	3.99	0.190	2	06/20/25 16:44	06/26/25 18:49	EPA 3050B	1,6010D	EFM
Mercury, Total	ND		mg/kg	0.084	0.055	1	06/20/25 19:34	06/25/25 08:38	EPA 7471B	1,7471B	JWN
Selenium, Total	ND		mg/kg	1.60	0.262	2	06/20/25 16:44	06/26/25 18:49	EPA 3050B	1,6010D	EFM
Silver, Total	ND		mg/kg	0.399	0.238	2	06/20/25 16:44	06/26/25 18:49	EPA 3050B	1,6010D	EFM

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-02 Date Collected: 06/04/25 14:30

Client ID: SS-T4 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	0.579	J	mg/kg	0.817	0.353	2	06/20/25 16:44	06/26/25 19:06	EPA 3050B	1,6010D	EFM
Barium, Total	5.96		mg/kg	0.817	0.087	2	06/20/25 16:44	06/26/25 19:06	EPA 3050B	1,6010D	EFM
Cadmium, Total	ND		mg/kg	0.817	0.045	2	06/20/25 16:44	06/26/25 19:06	EPA 3050B	1,6010D	EFM
Chromium, Total	2.34		mg/kg	0.817	0.693	2	06/20/25 16:44	06/26/25 19:06	EPA 3050B	1,6010D	EFM
Lead, Total	0.713	J	mg/kg	4.08	0.194	2	06/20/25 16:44	06/26/25 19:06	EPA 3050B	1,6010D	EFM
Mercury, Total	ND		mg/kg	0.079	0.051	1	06/20/25 19:34	06/25/25 08:48	EPA 7471B	1,7471B	JWN
Selenium, Total	ND		mg/kg	1.63	0.269	2	06/20/25 16:44	06/26/25 19:06	EPA 3050B	1,6010D	EFM
Silver, Total	ND		mg/kg	0.408	0.243	2	06/20/25 16:44	06/26/25 19:06	EPA 3050B	1,6010D	EFM

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-03 Date Collected: 06/05/25 08:30

Client ID: SS-4-1 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.73		mg/kg	0.866	0.374	2	06/20/25 16:44	06/26/25 19:09	EPA 3050B	1,6010D	EFM
Barium, Total	78.5		mg/kg	0.866	0.092	2	06/20/25 16:44	06/26/25 19:09	EPA 3050B	1,6010D	EFM
Cadmium, Total	ND		mg/kg	0.866	0.048	2	06/20/25 16:44	06/26/25 19:09	EPA 3050B	1,6010D	EFM
Chromium, Total	10.8		mg/kg	0.866	0.734	2	06/20/25 16:44	06/26/25 19:09	EPA 3050B	1,6010D	EFM
Lead, Total	5.20		mg/kg	4.33	0.206	2	06/20/25 16:44	06/26/25 19:09	EPA 3050B	1,6010D	EFM
Mercury, Total	ND		mg/kg	0.087	0.057	1	06/20/25 19:34	06/25/25 08:51	EPA 7471B	1,7471B	JWN
Selenium, Total	ND		mg/kg	1.73	0.285	2	06/20/25 16:44	06/26/25 19:09	EPA 3050B	1,6010D	EFM
Silver, Total	ND		mg/kg	0.433	0.258	2	06/20/25 16:44	06/26/25 19:09	EPA 3050B	1,6010D	EFM

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-04 Date Collected: 06/05/25 12:10

Client ID: SS-W5 Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	2.63		mg/kg	1.03	0.446	2	06/20/25 16:44	06/26/25 19:13	EPA 3050B	1,6010D	EFM
Barium, Total	107		mg/kg	1.03	0.109	2	06/20/25 16:44	06/26/25 19:13	EPA 3050B	1,6010D	EFM
Cadmium, Total	ND		mg/kg	1.03	0.057	2	06/20/25 16:44	06/26/25 19:13	EPA 3050B	1,6010D	EFM
Chromium, Total	17.3		mg/kg	1.03	0.875	2	06/20/25 16:44	06/26/25 19:13	EPA 3050B	1,6010D	EFM
Lead, Total	6.60		mg/kg	5.16	0.246	2	06/20/25 16:44	06/26/25 19:13	EPA 3050B	1,6010D	EFM
Mercury, Total	ND		mg/kg	0.098	0.064	1	06/20/25 19:34	06/25/25 08:54	EPA 7471B	1,7471B	JWN
Selenium, Total	ND		mg/kg	2.06	0.340	2	06/20/25 16:44	06/26/25 19:13	EPA 3050B	1,6010D	EFM
Silver, Total	ND		mg/kg	0.516	0.308	2	06/20/25 16:44	06/26/25 19:13	EPA 3050B	1,6010D	EFM

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-05 Date Collected: 06/05/25 14:10

Client ID: SS-W4R Date Received: 06/06/25

Sample Location: FORT DRUM, NY Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	3.38		mg/kg	0.953	0.412	2	06/20/25 16:44	06/26/25 19:33	EPA 3050B	1,6010D	EFM
Barium, Total	90.0		mg/kg	0.953	0.101	2	06/20/25 16:44	06/26/25 19:33	EPA 3050B	1,6010D	EFM
Cadmium, Total	ND		mg/kg	0.953	0.052	2	06/20/25 16:44	06/26/25 19:33	EPA 3050B	1,6010D	EFM
Chromium, Total	13.3		mg/kg	0.953	0.808	2	06/20/25 16:44	06/26/25 19:33	EPA 3050B	1,6010D	EFM
Lead, Total	6.18		mg/kg	4.76	0.227	2	06/20/25 16:44	06/26/25 19:33	EPA 3050B	1,6010D	EFM
Mercury, Total	ND		mg/kg	0.092	0.060	1	06/20/25 19:34	06/25/25 08:57	EPA 7471B	1,7471B	JWN
Selenium, Total	ND		mg/kg	1.91	0.314	2	06/20/25 16:44	06/26/25 19:33	EPA 3050B	1,6010D	EFM
Silver, Total	0.286	J	mg/kg	0.476	0.284	2	06/20/25 16:44	06/26/25 19:33	EPA 3050B	1,6010D	EFM

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-05 Batch: WG2081563-1										
Arsenic, Total	ND		mg/kg	0.400	0.173	1	06/20/25 16:44	06/26/25 18:41	1,6010D	EFM
Barium, Total	ND		mg/kg	0.400	0.042	1	06/20/25 16:44	06/26/25 18:41	1,6010D	EFM
Cadmium, Total	ND		mg/kg	0.400	0.022	1	06/20/25 16:44	06/26/25 18:41	1,6010D	EFM
Chromium, Total	ND		mg/kg	0.400	0.339	1	06/20/25 16:44	06/26/25 18:41	1,6010D	EFM
Lead, Total	ND		mg/kg	2.00	0.095	1	06/20/25 16:44	06/26/25 18:41	1,6010D	EFM
Selenium, Total	ND		mg/kg	0.800	0.132	1	06/20/25 16:44	06/26/25 18:41	1,6010D	EFM
Silver, Total	ND		mg/kg	0.200	0.119	1	06/20/25 16:44	06/26/25 18:41	1,6010D	EFM

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-05 Batch: WG2081566-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	06/20/25 19:34	06/25/25 08:31	1,7471B	JWN

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP

Project Number: 181.05025.101

Lab Number: L2535672

Report Date: 06/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-05 Batch: WG2081563-2								
Arsenic, Total	103		-		80-120	-		
Barium, Total	112		-		80-120	-		
Cadmium, Total	107		-		80-120	-		
Chromium, Total	109		-		80-120	-		
Lead, Total	107		-		80-120	-		
Selenium, Total	108		-		80-120	-		
Silver, Total	112		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-05 Batch: WG2081566-2								
Mercury, Total	98		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101
Lab Number: L2535672
Report Date: 06/27/25

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG2081563-3 QC Sample: L2535672-01 Client ID: SS-T3												
Arsenic, Total	0.780J	9.9	10.4	105		-	-		75-125	-		20
Barium, Total	5.89	165	178	104		-	-		75-125	-		20
Cadmium, Total	ND	4.37	4.39	100		-	-		75-125	-		20
Chromium, Total	1.10	16.5	17.7	101		-	-		75-125	-		20
Lead, Total	0.767J	43.7	45.2	103		-	-		75-125	-		20
Selenium, Total	ND	9.9	9.80	99		-	-		75-125	-		20
Silver, Total	ND	4.12	4.38	106		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG2081566-3 QC Sample: L2535672-01 Client ID: SS-T3												
Mercury, Total	ND	1.61	1.57	98		-	-		80-120	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PROPOSED ERCIP WELLFIELD EXP

Project Number: 181.05025.101

Lab Number: L2535672

Report Date: 06/27/25

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG2081563-4 QC Sample: L2535672-01 Client ID: SS-T3						
Arsenic, Total	0.780J	0.612J	mg/kg	NC		20
Barium, Total	5.89	5.91	mg/kg	0		20
Cadmium, Total	ND	ND	mg/kg	NC		20
Chromium, Total	1.10	1.15	mg/kg	4		20
Lead, Total	0.767J	0.837J	mg/kg	NC		20
Selenium, Total	ND	ND	mg/kg	NC		20
Silver, Total	ND	ND	mg/kg	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG2081566-4 QC Sample: L2535672-01 Client ID: SS-T3						
Mercury, Total	ND	ND	mg/kg	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-01
Client ID: SS-T3
Sample Location: FORT DRUM, NY

Date Collected: 06/04/25 12:54
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.0		%	0.100	NA	1	-	06/17/25 06:17	121,2540G	JMN

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-02
Client ID: SS-T4
Sample Location: FORT DRUM, NY

Date Collected: 06/04/25 14:30
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	97.0		%	0.100	NA	1	-	06/17/25 06:17	121,2540G	JMN

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-03
Client ID: SS-4-1
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 08:30
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.2		%	0.100	NA	1	-	06/17/25 06:17	121,2540G	JMN

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-04
Client ID: SS-W5
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 12:10
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.4		%	0.100	NA	1	-	06/17/25 06:17	121,2540G	JMN

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

SAMPLE RESULTS

Lab ID: L2535672-05
Client ID: SS-W4R
Sample Location: FORT DRUM, NY

Date Collected: 06/05/25 14:10
Date Received: 06/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	06/17/25 06:17	121,2540G	JMN

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2535672-01A	Vial MeOH preserved	A	NA		3.1	Y	Absent		NYTCL-8260HLW-R2(14)
L2535672-01B	Vial water preserved	A	NA		3.1	Y	Absent	04-JUN-25 17:00	NYTCL-8260HLW-R2(14)
L2535672-01C	Vial water preserved	A	NA		3.1	Y	Absent	04-JUN-25 17:00	NYTCL-8260HLW-R2(14)
L2535672-01D	Plastic 2oz unpreserved for TS	A	NA		3.1	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),SE-TI(180),PB-TI(180),HG-T(28),CD-TI(180)
L2535672-01E	Glass 250ml/8oz unpreserved	A	NA		3.1	Y	Absent		NYTCL-8270(14),TS(7),NYTCL-8081(14),NYTCL-8082(365)
L2535672-02A	Vial MeOH preserved	A	NA		3.1	Y	Absent		NYTCL-8260HLW-R2(14)
L2535672-02B	Vial water preserved	A	NA		3.1	Y	Absent	04-JUN-25 17:00	NYTCL-8260HLW-R2(14)
L2535672-02C	Vial water preserved	A	NA		3.1	Y	Absent	04-JUN-25 17:00	NYTCL-8260HLW-R2(14)
L2535672-02D	Plastic 2oz unpreserved for TS	A	NA		3.1	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180)
L2535672-02E	Glass 250ml/8oz unpreserved	A	NA		3.1	Y	Absent		NYTCL-8270(14),TS(7),NYTCL-8081(14),NYTCL-8082(365)
L2535672-03A	Vial MeOH preserved	A	NA		3.1	Y	Absent		NYTCL-8260HLW-R2(14)
L2535672-03B	Vial water preserved	A	NA		3.1	Y	Absent	05-JUN-25 16:00	NYTCL-8260HLW-R2(14)
L2535672-03C	Vial water preserved	A	NA		3.1	Y	Absent	05-JUN-25 16:00	NYTCL-8260HLW-R2(14)
L2535672-03D	Plastic 2oz unpreserved for TS	A	NA		3.1	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180)
L2535672-03E	Glass 500ml/16oz unpreserved	A	NA		3.1	Y	Absent		NYTCL-8270(14),TS(7),NYTCL-8081(14),NYTCL-8082(365)
L2535672-04A	Vial MeOH preserved	A	NA		3.1	Y	Absent		NYTCL-8260HLW-R2(14)
L2535672-04B	Vial water preserved	A	NA		3.1	Y	Absent	05-JUN-25 16:00	NYTCL-8260HLW-R2(14)
L2535672-04C	Vial water preserved	A	NA		3.1	Y	Absent	05-JUN-25 16:00	NYTCL-8260HLW-R2(14)

*Values in parentheses indicate holding time in days

Project Name: PROPOSED ERCIP WELLFIELD EXP
Project Number: 181.05025.101

Lab Number: L2535672
Report Date: 06/27/25

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2535672-04D	Plastic 2oz unpreserved for TS	A	NA		3.1	Y	Absent		BA-TI(180),AS-TI(180),AG-TI(180),CR-TI(180),SE-TI(180),PB-TI(180),HG-T(28),CD-TI(180)
L2535672-04E	Glass 500ml/16oz unpreserved	A	NA		3.1	Y	Absent		NYTCL-8270(14),TS(7),NYTCL-8081(14),NYTCL-8082(365)
L2535672-05A	Vial MeOH preserved	A	NA		3.1	Y	Absent		NYTCL-8260HLW-R2(14)
L2535672-05B	Vial water preserved	A	NA		3.1	Y	Absent	05-JUN-25 16:00	NYTCL-8260HLW-R2(14)
L2535672-05C	Vial water preserved	A	NA		3.1	Y	Absent	05-JUN-25 16:00	NYTCL-8260HLW-R2(14)
L2535672-05D	Plastic 2oz unpreserved for TS	A	NA		3.1	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),SE-TI(180),PB-TI(180),HG-T(28),CD-TI(180)
L2535672-05E	Glass 500ml/16oz unpreserved	A	NA		3.1	Y	Absent		NYTCL-8270(14),TS(7),NYTCL-8081(14),NYTCL-8082(365)

*Values in parentheses indicate holding time in days

Project Name:	PROPOSED ERCIP WELLFIELD EXP	**Lab Number:**	L2535672
Project Number:	181.05025.101	**Report Date:**	06/27/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PROPOSED ERCIP WELLFIELD EXP	**Lab Number:**	L2535672
Project Number:	181.05025.101	**Report Date:**	06/27/25

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PROPOSED ERCIP WELLFIELD EXP	**Lab Number:**	L2535672
Project Number:	181.05025.101	**Report Date:**	06/27/25

Data Qualifiers

Identified Compounds (TICs). For calculated parameters, this represents that one or more values used in the calculation were estimated.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PROPOSED ERCIP WELLFIELD EXP **Lab Number:** L2535672

Project Number: 181.05025.101 **Report Date:** 06/27/25

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581
EPA 624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625.1: alpha-Terpineol
EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
MADEP-APH.
Nonpotable Water: EPA RSK-175 Dissolved Gases
Biological Tissue Matrix: EPA 3050B

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables).
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

Certification IDs:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581
CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048
ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.

NEW YORK CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 6/6/25

ALPHA Job #: L2535672 / L2536692

Client Information
Client: Pinchin, LLC
Address: 400 Commercial St Suite 404, Portland, ME 04101
Phone: 207-460-4375
~~Fax:~~ brian.pettingill@pinchin.com
Email: river.fenton@pinchin.com

Project Information
Project Name: Proposed ERCTP Wellfield Expansion
Project Location: Fort Ann, NY
Project #: 181.05025.101
(Use Project name as Project #) ☐
Project Manager: Brian Pettingill
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☒ EQuIS (4 File)
☒ Other (Report PDF?)

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☒ Same as Client Info
PO # 64287

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Samples T3/T4 VOCs frozen @ 6/4 5PM / ~~Samples~~ Rest of VOCs frozen @ 6/5 4PM

Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260D)	SVOCs (8270E)	PCBs (8082A)	RCRA [200.7/6010D/6020B and 245.2/7470A/7471B]					Sample Specific Comments	Total Bottles
~~35672~~ 01	SS-T3	6/4/25	12:54	Soil	RBF	X	X	X	X						
~~35672~~ 02	SS-T4	6/4/25	14:30	↓	↓	↓	↓	↓	↓						
03	SS-4-1	6/5/25	08:30	↓	↓	↓	↓	↓	↓						
	~~SS-W4R~~	↓		↓	↓	↓	↓	↓	↓						
04	SS-W5	↓	12:10	↓	↓	↓	↓	↓	↓						
05	SS-W4R	↓	14:10	↓	↓	↓	↓	↓	↓						
Container Type						V	A	A	A						
Preservative						F	A	A	A						

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
River Fenton	6/6/25 16:13	[signature] PAS	6/6/25 1612

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)