GeoEngineers

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# Memorandum

| | |
|---|---|
| **To:** | Alan Noell, PhD, PE |
| **From:** | Garrett Leque, LG; Terry McPhetridge, LG, LHG |
| **Date:** | December 20, 2022 |
| **File:** | 6694-002-05 |
| **Subject:** | Interim Action Completion Report Addendum – Cul-de-Sac Soil Sampling Results |

## INTRODUCTION AND BACKGROUND

This Interim Action Completion Report Addendum documents the results of six soil samples collected at the "cul-de-sac" area of the Go East site for chemical analysis. The Go East site location is shown in Figure 1.

The site contains a former landfill that is being cleaned up under the Model Toxics Control Act (MTCA; Ecology Facility Site Identification [FSID] 2708) and closed under Washington Administrative Code (WAC) 173-350-400 (limited purpose landfill regulation). An interim action was completed in 2021 and consisted of consolidating the "wedge area" of the landfill into the main landfill mass as documented in the report titled Final Interim Action Completion Report – Go East Landfill Corp Site (GeoEngineers 2021).

The site is covered by Washington State's Construction Stormwater General Permit (CSGP; Permit number WAR306901). Construction stormwater was temporarily detained in an unlined stormwater pond in the future cul-de-sac area of the site from the fall of 2021 until the summer of 2022. The approximate location of the temporary ponded water is shown in Figure 2.

Stormwater was pumped from the pond through a treatment system prior to discharge. Treatment was necessary per the CSGP primarily to reduce turbidity (water cloudiness). Treatment was also performed due to known or suspected site contaminants such as petroleum hydrocarbons, metals, and polycyclic aromatic hydrocarbons (PAHs). The Washington State Department of Ecology (Ecology) requested that six soil samples be collected from the detention pond after it was permanently dry in the summer of 2022. The purpose of the soil sampling was to confirm that construction stormwater did not contaminate the soils at the pond/future cul-de-sac area. The cul-de-sac area will be paved in the future.

## METHODS

The approximate area where stormwater was temporarily ponded is shown in Figure 2[1]. The pond was dry by late July 2022 and the pond will no longer be used for stormwater detention. Soil samples were collected from six locations on August 3, 2022. The six locations are labeled "Soil-1-220803" through "Soil-6-220803" and shown in Figure 2. Figure 2 also includes the prior soil sampling locations completed during the Interim Action ("IAEX" sample locations).

The six soil samples were collected from the base of the stormwater pond/future cul-de-sac area. A decontaminated steel trowel was used to collect the soil samples. Each soil sample was collected between

[1] The pond changed in size over time depending on weather conditions. The area outlined in Figure 2 is considered to be the approximate "average" extent of the pond throughout the majority of the project based on review of drone photography on multiple different days.

0 to 0.5 feet below ground surface (bgs). Sampling was performed in general accordance with soil sampling procedures specified in the Interim Action Work Plan (GeoEngineers 2020). Samples were delivered in a cooler with ice to OnSite Environmental, Inc. in Redmond, Washington. Samples were analyzed for petroleum hydrocarbons (diesel- and lube-oil-range), metals, and PAHs.

## RESULTS

There was no field screening evidence of soil contamination at the sampling locations on the day of sampling. Chemical analytical results are summarized in Table 1 and the laboratory reports are attached as Appendix A. Petroleum hydrocarbons, metals, and PAHs were generally either not detected or were detected at concentrations less than the respective soil screening levels. The exceptions to this included nickel concentrations that exceeded the screening level of 48 milligrams per kilogram (mg/kg) in four samples, and one chromium detection slightly above the screening level of 48 mg/kg.

The concentrations of nickel ranged from 42 to 64 mg/kg, which are below the protective concentration of 1,600 mg/kg for the direct contact and 130 mg/kg for the leaching-to-groundwater exposure pathways (Ecology 2022). The concentrations of nickel exceeded the 30 mg/kg protective concentration for the terrestrial ecology exposure pathway, and in four samples, exceeded the 48 mg/kg Puget Sound Basin background concentration for nickel (Ecology 1994). Nickel appears to be elevated in soil generally in the project area as discussed in the Interim Action Completion Report (GeoEngineers 2021). The concentrations of nickel in confirmation soil samples IAEX-59-5, IAEX-55-3, and IAEX-54-4 ranged from 68 to 74 mg/kg. As shown in Figure 4 (GeoEngineers 2021), these samples were collected beyond the waste limits near the cul-de-sac area in May and June 2021, prior to any stormwater storage. Nickel exceedances are therefore unlikely a result of the stormwater that was temporarily detained. No further action is recommended regarding the nickel exceedances.

The concentrations of chromium ranged from 23 to 51 mg/kg, which are below the protective concentration of 120,000 mg/kg for the direct contact and 480,000 mg/kg leaching-to-groundwater exposure pathway for trivalent chromium. Two soil samples exceeded the 42 mg/kg protective concentration for the terrestrial ecology exposure pathway, but only one soil sample exceeded the 48 mg/kg Puget Sound Basin background concentration for chromium (Ecology 1994). The single slight exceedance of chromium is also likely related to background soils in this area and not related to the stormwater that was temporarily detained. A total of 67 soil samples have been analyzed for chromium at the site between the Interim Action and this sampling event combined. Only three soil samples exceeded the chromium screening level of 48 mg/kg out of the 67 soil samples which equals an exceedance frequency of 4.4 percent. The chromium concentrations of the three samples that exceeded the screening level were 49 mg/kg (IAEX-39-20), 57 mg/kg (IAEX-59-5), and 51 mg/kg (SOIL-3-220803). The concentrations of chromium are statistically compliant with the soil cleanup level based on the Puget Sound Basin background, in accordance with WAC 173-340-740(7)(e), because the soil chromium exceedance frequency is less than 10 percent, and the soil sample chromium concentrations are less than two times the screening level (i.e., less than 96 mg/kg). No further action is recommended regarding the chromium exceedance.

## DISCUSSION AND CONCLUSIONS

This memorandum documents the analytical results of the six soil samples collected from the proposed the cul-de-sac area at the Go East Site. Samples were collected from the base of a temporary stormwater detention pond. The purpose of the sampling was to confirm that the temporarily detained construction stormwater did not contaminate the soils beneath the pond. The temporarily detained stormwater did not impact the soils beneath the pond based on our field screening and chemical analytical results. Therefore, no further action is recommended.

## REFERENCES

Ecology, 1994, Natural Background Soil Metals Concentrations in Washington State, Ecology Publication No. 94-115, October 1994.

Ecology, 2022, CLARC data tables and other technical information, updated July 2022, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC/Data-tables.

GeoEngineers, Inc., 2020. *Interim Action Work Plan, Go East Corp Landfill Site Everett, Washington, Ecology Agreed Order No. DE 18121*. August 10, 2020.

GeoEngineers, Inc., 2021. *Final Interim Action Completion Report – Go East Landfill Corp Site, 4430 108th Street SE, Everett, Washington.* November 23, 2021.

We trust the information provided in the memo meets your needs at this time. Please call Garrett Leque at 253.312.7958 with any questions.

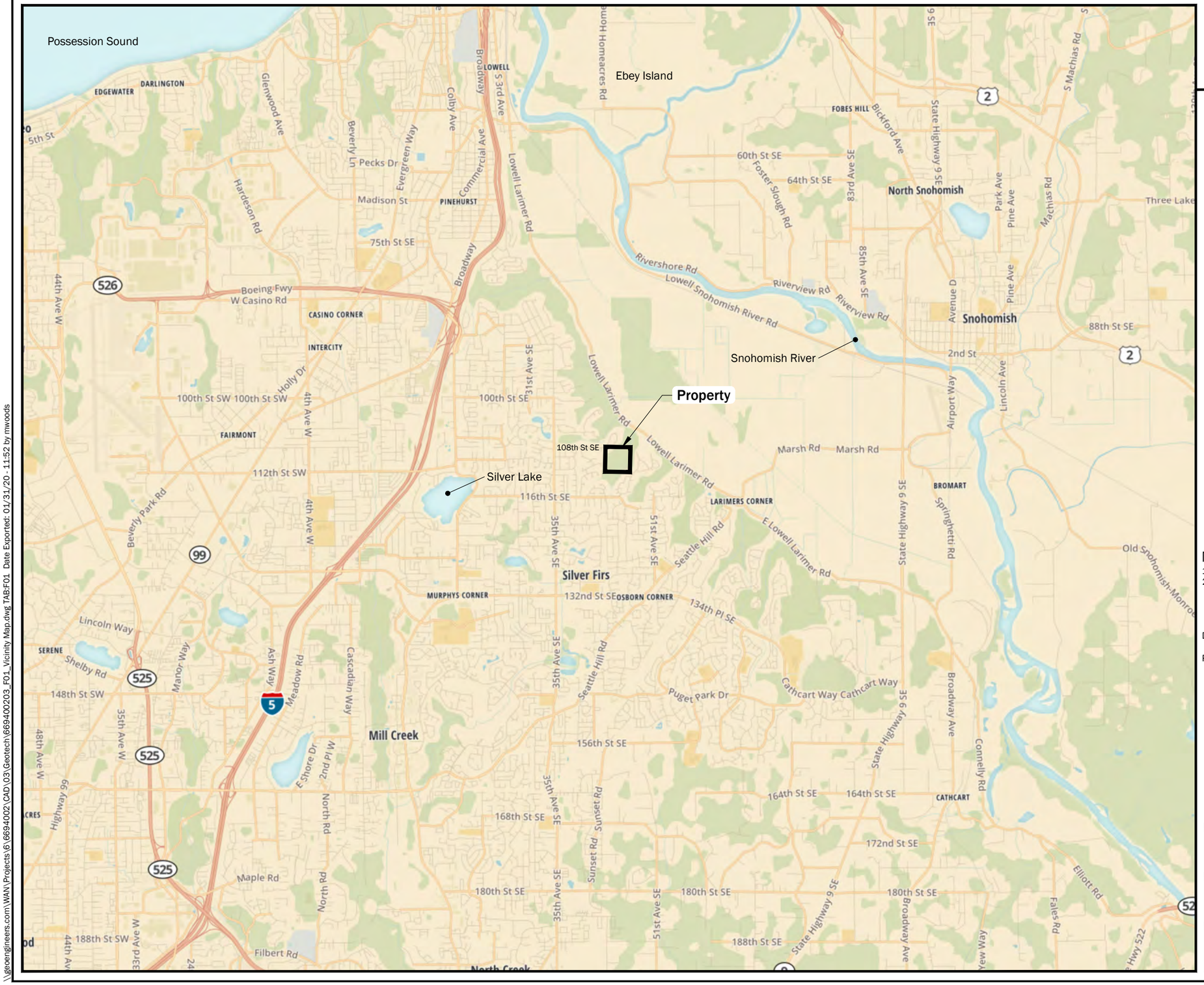
Attachments:

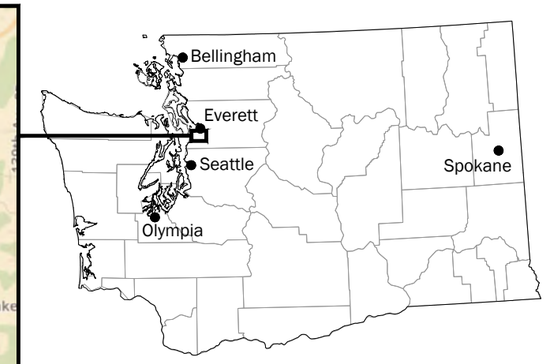
Figure 1. Vicinity Map

Figure 2. Cul de Sac Soil Sampling Locations

Table 1. Cul de Sac Soil Sampling Results

Appendix A. Laboratory Analytical Data




Not To Scale

## Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016.

Projection: NAD 1983 UTM Zone 10N

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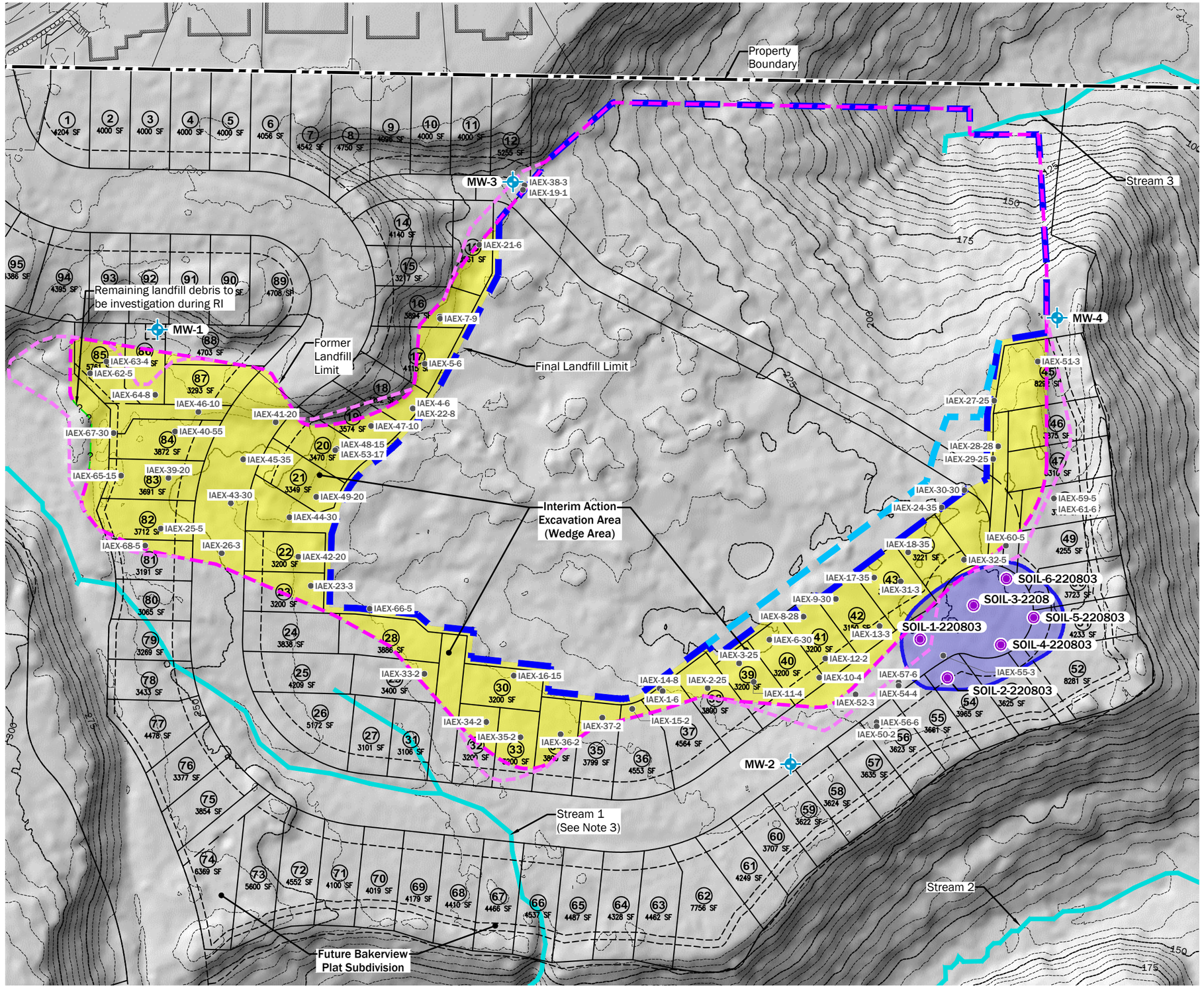
**Vicinity Map**

Go East Corp Landfill Site
Everett, Washington

GeoEngineers

**Figure 1**




## Legend

- Property Boundary
- Interim Action Excavation Area (Wedge Area)
- Former Landfill Limit - Anticipated
- Former Landfill Limit - Actual
- Final Landfill Limit - Anticipated
- Final Landfill Limit - Actual
- Confirmation Soil Sampling Location
- Groundwater Monitoring Well (AESI, 2009)
- Approximate Location of Temporarily Ponded Stormwater
- Cul de Sac Soil Sampling Location

## Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. As of report preparation (August 2021), the stream course has been modified.

Data Source: Property boundary survey from PACE Engineers, dated 1/27/2020. Lidar image and elevation contours from Puget Sound Lidar Consortium dated 2013.

Projection: HPGN (HARN) Washington State Planes, North Zone, US Foot

N W E S

100 0 100
Feet

# Cul de Sac Soil Sampling Locations

Go East Corp Landfill Site
Everett, Washington

GeoEngineers

Figure 2

P:\6\66940002\CAD\05\Cul de sac sampling report addendum\66940020 3_F02_Cul de Sac Soil Samplint Locations.dwg TAB:F02 Date Exported: 09/22/22 - 11:34 by mwoods

# Table 1

## Cul de Sac Soil Sampling Analytical Results

### Go East Corp Landfill Site

### Everett, Washington

| | Location ID | SOIL-1 | SOIL-2 | SOIL-3 | SOIL-4 | SOIL-5 | SOIL-6 |
|---|---|---|---|---|---|---|---|
| | Sample ID | SOIL-1-220803 | SOIL-2-220803 | SOIL-3-220803 | SOIL-4-220803 | SOIL-5-220803 | SOIL-6-220803 |
| | Sample Date | 8/3/2022 | 8/3/2022 | 8/3/2022 | 8/3/2022 | 8/3/2022 | 8/3/2022 |
| | Start Depth | 0 | 0 | 0 | 0 | 0 | 0 |
| | End Depth | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| | Depth Unit | feet bgs | feet bgs | feet bgs | feet bgs | feet bgs | feet bgs |
| **Analyte** | **Soil Screening Level[1]** | | | | | | |
| **Petroleum Hydrocarbons (mg/kg)** | | | | | | | |
| Diesel-range hydrocarbons | NE | 28 U | 30 U | 27 U | 28 U | 27 U | 26 U |
| Lube oil-range hydrocarbons | NE | **66** | 59 U | 54 U | 56 U | 54 U | 53 U |
| Sum of DRO+ORO | 260 | **66** | 59 U | 54 U | 56 U | 54 U | 53 U |
| **Metals (mg/kg)** | | | | | | | |
| Arsenic | 20 | 11 U | 12 U | 11 U | 11 U | 11 U | 11 U |
| Cadmium | 0.80 | 0.55 U | 0.59 U | 0.54 U | 0.56 U | 0.54 U | 0.53 U |
| Chromium | 48 | **26** | **44** | **51** | **29** | **32** | **23** |
| Copper | 36 | **12** | **28** | **21** | **14** | **14** | **11** |
| Iron | 56,000 | **17,000** | **21,000** | **20,000** | **17,000** | **19,000** | **16,000** |
| Lead | 50 | **6.8** | 5.9 U | 5.4 U | 5.6 U | 5.4 U | 5.3 U |
| Magnesium | NE | **7,000** | **8,400** | **8,100** | **6,300** | **6,700** | **6,400** |
| Manganese | 3,700 | **320** | **350** | **380** | **340** | **320** | **280** |
| Mercury | 0.070 | **0.034** | **0.030** | **0.021** | **0.027** | 0.022 U | 0.021 U |
| Nickel | 48 | **54** | **64** | **54** | **48** | **46** | **42** |
| Selenium | 0.80 | 0.28 U | **0.32** | **0.28** | 0.28 U | 0.27 U | 0.26 U |
| Zinc | 86 | **34** | **57** | **38** | **37** | **34** | **28** |
| **Polycyclic Aromatic Hydrocarbons (mg/kg)** | | | | | | | |
| 1-Methylnaphthalene | 34 | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| 2-Methylnaphthalene | 320 | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Acenaphthene | 3.1 | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Acenaphthylene | NE | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Anthracene | 47 | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Benzo(a)anthracene | NE | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Benzo(a)pyrene | NE | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Benzo(b)fluoranthene | NE | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Benzo(g,h,i)perylene | NE | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Benzo(j,k)fluoranthene | NE | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Chrysene | NE | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Dibenzo(a,h)anthracene | NE | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Fluoranthene | 0.020 | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Fluorene | 1.6 | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Indeno(1,2,3-c,d)pyrene | NE | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Naphthalene | 4.5 | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Phenanthrene | NE | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Pyrene | 0.020 | 0.0073 U | 0.0079 U | 0.0071 U | 0.0075 U | 0.0073 U | 0.0070 U |
| Total cPAH TEQ (ND=0.5RL) | 0.084 | 0.00551 U | 0.00596 U | 0.00536 U | 0.00566 U | 0.00551 U | 0.00528 U |

**Notes:**

[1] Soil screening levels shown are from the June 30, 2021 Final Remedial Investigation Workplan.

NE = Screening level not established

BDL = Below detection limit

Sum of DRO+ORO = Sum of diesel-range organics and oil-range organics

U = Not detected at the indicated laboratory reporting limit

bgs = below ground surface

Total cPAH TEQ (ND=0.5RL) = The total cPAH toxic equivalency concentration calculated per WAC 173-340-900 Table 708-2 using non-detects at one half the reporting limit.

**Bold** font indicates analyte was detected.

Gray shading indicates the concentration exceeds the screening level.

# APPENDIX A
## Laboratory Analytical Data

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

August 12, 2022

Garrett Leque
GeoEngineers, Inc.
554 West Bakerview Road
Bellingham, WA 98226

Re: Analytical Data for Project 6694-002-05 T1200
Laboratory Reference No. 2208-054

Dear Garrett:

Enclosed are the analytical results and associated quality control data for samples submitted on August 3, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**Case Narrative**

Samples were collected on August 3, 2022 and received by the laboratory on August 3, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**ANALYTICAL REPORT FOR SAMPLES**

| Client ID | Laboratory ID | Matrix | Date Sampled | Date Received | Notes |
|---|---|---|---|---|---|
| Soil-1-220803 | 08-054-01 | Soil | 8-3-22 | 8-3-22 | |
| Soil-2-220803 | 08-054-02 | Soil | 8-3-22 | 8-3-22 | |
| Soil-3-220803 | 08-054-03 | Soil | 8-3-22 | 8-3-22 | |
| Soil-4-220803 | 08-054-04 | Soil | 8-3-22 | 8-3-22 | |
| Soil-5-220803 | 08-054-05 | Soil | 8-3-22 | 8-3-22 | |
| Soil-6-220803 | 08-054-06 | Soil | 8-3-22 | 8-3-22 | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**DIESEL AND HEAVY OIL RANGE ORGANICS**
**NWTPH-Dx**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **Soil-1-220803** | | | | | |
| Laboratory ID: | 08-054-01 | | | | | |
| Diesel Range Organics | **ND** | 28 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| Lube Oil Range Organics | **66** | 55 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *o-Terphenyl* | *83* | *50-150* | | | | |
| **Client ID:** | **Soil-2-220803** | | | | | |
| Laboratory ID: | 08-054-02 | | | | | |
| Diesel Range Organics | **ND** | 30 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| Lube Oil Range Organics | **ND** | 59 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *o-Terphenyl* | *81* | *50-150* | | | | |
| **Client ID:** | **Soil-3-220803** | | | | | |
| Laboratory ID: | 08-054-03 | | | | | |
| Diesel Range Organics | **ND** | 27 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| Lube Oil Range Organics | **ND** | 54 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *o-Terphenyl* | *92* | *50-150* | | | | |
| **Client ID:** | **Soil-4-220803** | | | | | |
| Laboratory ID: | 08-054-04 | | | | | |
| Diesel Range Organics | **ND** | 28 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| Lube Oil Range Organics | **ND** | 56 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *o-Terphenyl* | *80* | *50-150* | | | | |
| **Client ID:** | **Soil-5-220803** | | | | | |
| Laboratory ID: | 08-054-05 | | | | | |
| Diesel Range Organics | **ND** | 27 | NWTPH-Dx | 8-5-22 | 8-6-22 | |
| Lube Oil Range Organics | **ND** | 54 | NWTPH-Dx | 8-5-22 | 8-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *o-Terphenyl* | *86* | *50-150* | | | | |
| **Client ID:** | **Soil-6-220803** | | | | | |
| Laboratory ID: | 08-054-06 | | | | | |
| Diesel Range Organics | **ND** | 26 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| Lube Oil Range Organics | **ND** | 53 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *o-Terphenyl* | *86* | *50-150* | | | | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**PAHs EPA 8270E/SIM**

Matrix: Soil
Units: mg/Kg

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **Soil-1-220803** | | | | | |
| Laboratory ID: | 08-054-01 | | | | | |
| Naphthalene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 2-Methylnaphthalene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 1-Methylnaphthalene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthylene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluorene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Phenanthrene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Anthracene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluoranthene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Pyrene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]anthracene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Chrysene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[b]fluoranthene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo(j,k)fluoranthene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]pyrene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Indeno(1,2,3-c,d)pyrene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Dibenz[a,h]anthracene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[g,h,i]perylene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *2-Fluorobiphenyl* | *69* | *42 - 116* | | | | |
| *Pyrene-d10* | *77* | *41 - 116* | | | | |
| *Terphenyl-d14* | *66* | *49 - 130* | | | | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**PAHs EPA 8270E/SIM**

Matrix: Soil
Units: mg/Kg

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **Soil-2-220803** | | | | | |
| Laboratory ID: | 08-054-02 | | | | | |
| Naphthalene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 2-Methylnaphthalene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 1-Methylnaphthalene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthylene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluorene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Phenanthrene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Anthracene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluoranthene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Pyrene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]anthracene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Chrysene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[b]fluoranthene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo(j,k)fluoranthene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]pyrene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Indeno(1,2,3-c,d)pyrene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Dibenz[a,h]anthracene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[g,h,i]perylene | **ND** | 0.0079 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *2-Fluorobiphenyl* | *72* | *42 - 116* | | | | |
| *Pyrene-d10* | *74* | *41 - 116* | | | | |
| *Terphenyl-d14* | *68* | *49 - 130* | | | | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**PAHs EPA 8270E/SIM**

Matrix: Soil
Units: mg/Kg

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **Soil-3-220803** | | | | | |
| Laboratory ID: | 08-054-03 | | | | | |
| Naphthalene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 2-Methylnaphthalene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 1-Methylnaphthalene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthylene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluorene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Phenanthrene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Anthracene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluoranthene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Pyrene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]anthracene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Chrysene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[b]fluoranthene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo(j,k)fluoranthene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]pyrene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Indeno(1,2,3-c,d)pyrene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Dibenz[a,h]anthracene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[g,h,i]perylene | **ND** | 0.0071 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *2-Fluorobiphenyl* | *65* | *42 - 116* | | | | |
| *Pyrene-d10* | *68* | *41 - 116* | | | | |
| *Terphenyl-d14* | *60* | *49 - 130* | | | | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**PAHs EPA 8270E/SIM**

Matrix: Soil
Units: mg/Kg

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **Soil-4-220803** | | | | | |
| Laboratory ID: | 08-054-04 | | | | | |
| Naphthalene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 2-Methylnaphthalene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 1-Methylnaphthalene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthylene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluorene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Phenanthrene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Anthracene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluoranthene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Pyrene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]anthracene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Chrysene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[b]fluoranthene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo(j,k)fluoranthene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]pyrene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Indeno(1,2,3-c,d)pyrene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Dibenz[a,h]anthracene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[g,h,i]perylene | **ND** | 0.0075 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *2-Fluorobiphenyl* | *73* | *42 - 116* | | | | |
| *Pyrene-d10* | *69* | *41 - 116* | | | | |
| *Terphenyl-d14* | *71* | *49 - 130* | | | | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**PAHs EPA 8270E/SIM**

Matrix: Soil
Units: mg/Kg

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **Soil-5-220803** | | | | | |
| Laboratory ID: | 08-054-05 | | | | | |
| Naphthalene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 2-Methylnaphthalene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 1-Methylnaphthalene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthylene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluorene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Phenanthrene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Anthracene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluoranthene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Pyrene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]anthracene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Chrysene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[b]fluoranthene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo(j,k)fluoranthene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]pyrene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Indeno(1,2,3-c,d)pyrene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Dibenz[a,h]anthracene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[g,h,i]perylene | **ND** | 0.0073 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *2-Fluorobiphenyl* | *74* | *42 - 116* | | | | |
| *Pyrene-d10* | *76* | *41 - 116* | | | | |
| *Terphenyl-d14* | *66* | *49 - 130* | | | | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**PAHs EPA 8270E/SIM**

Matrix: Soil
Units: mg/Kg

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **Soil-6-220803** | | | | | |
| Laboratory ID: | 08-054-06 | | | | | |
| Naphthalene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 2-Methylnaphthalene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 1-Methylnaphthalene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthylene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluorene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Phenanthrene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Anthracene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluoranthene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Pyrene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]anthracene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Chrysene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[b]fluoranthene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo(j,k)fluoranthene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]pyrene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Indeno(1,2,3-c,d)pyrene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Dibenz[a,h]anthracene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[g,h,i]perylene | **ND** | 0.0070 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *2-Fluorobiphenyl* | *70* | *42 - 116* | | | | |
| *Pyrene-d10* | *71* | *41 - 116* | | | | |
| *Terphenyl-d14* | *65* | *49 - 130* | | | | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**TOTAL METALS**
**EPA 6010D/6020B/7471B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **Soil-1-220803** | | | | | |
| Laboratory ID: | 08-054-01 | | | | | |
| Arsenic | **ND** | 11 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Cadmium | **ND** | 0.55 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Chromium | **26** | 0.55 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Copper | **12** | 1.1 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Lead | **6.8** | 5.5 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Mercury | **0.034** | 0.022 | EPA 7471B | 8-4-22 | 8-4-22 | |
| Nickel | **54** | 2.8 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Selenium | **ND** | 0.28 | EPA 6020B | 8-8-22 | 8-8-22 | |
| Zinc | **34** | 2.8 | EPA 6010D | 8-8-22 | 8-8-22 | |
| **Client ID:** | **Soil-2-220803** | | | | | |
| Laboratory ID: | 08-054-02 | | | | | |
| Arsenic | **ND** | 12 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Cadmium | **ND** | 0.59 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Chromium | **44** | 0.59 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Copper | **28** | 1.2 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Lead | **ND** | 5.9 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Mercury | **0.030** | 0.024 | EPA 7471B | 8-4-22 | 8-4-22 | |
| Nickel | **64** | 3.0 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Selenium | **0.32** | 0.30 | EPA 6020B | 8-8-22 | 8-8-22 | |
| Zinc | **57** | 3.0 | EPA 6010D | 8-8-22 | 8-8-22 | |
| **Client ID:** | **Soil-3-220803** | | | | | |
| Laboratory ID: | 08-054-03 | | | | | |
| Arsenic | **ND** | 11 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Cadmium | **ND** | 0.54 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Chromium | **51** | 0.54 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Copper | **21** | 1.1 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Lead | **ND** | 5.4 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Mercury | **0.021** | 0.021 | EPA 7471B | 8-4-22 | 8-4-22 | |
| Nickel | **54** | 2.7 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Selenium | **0.28** | 0.27 | EPA 6020B | 8-8-22 | 8-8-22 | |
| Zinc | **38** | 2.7 | EPA 6010D | 8-8-22 | 8-8-22 | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**TOTAL METALS**
**EPA 6010D/6020B/7471B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **Soil-4-220803** | | | | | |
| Laboratory ID: | 08-054-04 | | | | | |
| Arsenic | **ND** | 11 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Cadmium | **ND** | 0.56 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Chromium | **29** | 0.56 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Copper | **14** | 1.1 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Lead | **ND** | 5.6 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Mercury | **0.027** | 0.022 | EPA 7471B | 8-4-22 | 8-4-22 | |
| Nickel | **48** | 2.8 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Selenium | **ND** | 0.28 | EPA 6020B | 8-8-22 | 8-8-22 | |
| Zinc | **37** | 2.8 | EPA 6010D | 8-8-22 | 8-8-22 | |
| **Client ID:** | **Soil-5-220803** | | | | | |
| Laboratory ID: | 08-054-05 | | | | | |
| Arsenic | **ND** | 11 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Cadmium | **ND** | 0.54 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Chromium | **32** | 0.54 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Copper | **14** | 1.1 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Lead | **ND** | 5.4 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Mercury | **ND** | 0.022 | EPA 7471B | 8-4-22 | 8-4-22 | |
| Nickel | **46** | 2.7 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Selenium | **ND** | 0.27 | EPA 6020B | 8-8-22 | 8-8-22 | |
| Zinc | **34** | 2.7 | EPA 6010D | 8-8-22 | 8-8-22 | |
| **Client ID:** | **Soil-6-220803** | | | | | |
| Laboratory ID: | 08-054-06 | | | | | |
| Arsenic | **ND** | 11 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Cadmium | **ND** | 0.53 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Chromium | **23** | 0.53 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Copper | **11** | 1.1 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Lead | **ND** | 5.3 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Mercury | **ND** | 0.021 | EPA 7471B | 8-4-22 | 8-4-22 | |
| Nickel | **42** | 2.6 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Selenium | **ND** | 0.26 | EPA 6020B | 8-8-22 | 8-8-22 | |
| Zinc | **28** | 2.6 | EPA 6010D | 8-8-22 | 8-8-22 | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**DIESEL AND HEAVY OIL RANGE ORGANICS**
**NWTPH-Dx**
**QUALITY CONTROL**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB0805S1 | | | | | |
| Diesel Range Organics | **ND** | 25 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| Lube Oil Range Organics | **ND** | 50 | NWTPH-Dx | 8-5-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *o-Terphenyl* | *101* | *50-150* | | | | |

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **DUPLICATE** | | | | | | | | | | | |
| Laboratory ID: | SB0805S1 | | | | | | | | | | |
| | ORIG | DUP | | | | | | | | | |
| Diesel Fuel #2 | **106** | **98.8** | NA | NA | | NA | | NA | 7 | NA | |
| *Surrogate:* | | | | | | | | | | | |
| *o-Terphenyl* | | | | | | *106* | *99* | *50-150* | | | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**PAHs EPA 8270E/SIM**
**QUALITY CONTROL**

Matrix: Soil
Units: mg/Kg

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB0804S1 | | | | | |
| Naphthalene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 2-Methylnaphthalene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| 1-Methylnaphthalene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthylene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Acenaphthene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluorene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Phenanthrene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Anthracene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Fluoranthene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Pyrene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]anthracene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Chrysene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[b]fluoranthene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo(j,k)fluoranthene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[a]pyrene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Indeno(1,2,3-c,d)pyrene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Dibenz[a,h]anthracene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| Benzo[g,h,i]perylene | **ND** | 0.0067 | EPA 8270E/SIM | 8-4-22 | 8-5-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *2-Fluorobiphenyl* | *68* | *42 - 116* | | | | |
| *Pyrene-d10* | *66* | *41 - 116* | | | | |
| *Terphenyl-d14* | *69* | *49 - 130* | | | | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**PAHs EPA 8270E/SIM**
**QUALITY CONTROL**

Matrix: Soil
Units: mg/Kg

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MATRIX SPIKES** | | | | | | | | | | | |
| Laboratory ID: | 08-054-01 | | | | | | | | | | |
| | MS | MSD | MS | MSD | | MS | MSD | | | | |
| Naphthalene | **0.0530** | **0.0582** | 0.0833 | 0.0833 | ND | 64 | 70 | 43 - 118 | 9 | 28 | |
| Acenaphthylene | **0.0628** | **0.0671** | 0.0833 | 0.0833 | ND | 75 | 81 | 51 - 127 | 7 | 29 | |
| Acenaphthene | **0.0633** | **0.0682** | 0.0833 | 0.0833 | ND | 76 | 82 | 46 - 128 | 7 | 28 | |
| Fluorene | **0.0598** | **0.0614** | 0.0833 | 0.0833 | ND | 72 | 74 | 49 - 128 | 3 | 24 | |
| Phenanthrene | **0.0660** | **0.0667** | 0.0833 | 0.0833 | ND | 79 | 80 | 44 - 135 | 1 | 32 | |
| Anthracene | **0.0692** | **0.0697** | 0.0833 | 0.0833 | ND | 83 | 84 | 49 - 135 | 1 | 26 | |
| Fluoranthene | **0.0718** | **0.0734** | 0.0833 | 0.0833 | ND | 86 | 88 | 48 - 139 | 2 | 32 | |
| Pyrene | **0.0752** | **0.0754** | 0.0833 | 0.0833 | ND | 90 | 91 | 46 - 143 | 0 | 32 | |
| Benzo[a]anthracene | **0.0666** | **0.0684** | 0.0833 | 0.0833 | ND | 80 | 82 | 49 - 137 | 3 | 33 | |
| Chrysene | **0.0649** | **0.0653** | 0.0833 | 0.0833 | ND | 78 | 78 | 48 - 136 | 1 | 30 | |
| Benzo[b]fluoranthene | **0.0687** | **0.0677** | 0.0833 | 0.0833 | ND | 82 | 81 | 48 - 141 | 1 | 32 | |
| Benzo(j,k)fluoranthene | **0.0603** | **0.0616** | 0.0833 | 0.0833 | ND | 72 | 74 | 48 - 141 | 2 | 32 | |
| Benzo[a]pyrene | **0.0656** | **0.0668** | 0.0833 | 0.0833 | ND | 79 | 80 | 48 - 140 | 2 | 32 | |
| Indeno(1,2,3-c,d)pyrene | **0.0604** | **0.0623** | 0.0833 | 0.0833 | ND | 73 | 75 | 47 - 139 | 3 | 28 | |
| Dibenz[a,h]anthracene | **0.0586** | **0.0592** | 0.0833 | 0.0833 | ND | 70 | 71 | 51 - 133 | 1 | 24 | |
| Benzo[g,h,i]perylene | **0.0585** | **0.0584** | 0.0833 | 0.0833 | ND | 70 | 70 | 47 - 136 | 0 | 29 | |
| *Surrogate:* | | | | | | | | | | | |
| *2-Fluorobiphenyl* | | | | | | *63* | *70* | *42 - 116* | | | |
| *Pyrene-d10* | | | | | | *68* | *73* | *41 - 116* | | | |
| *Terphenyl-d14* | | | | | | *60* | *63* | *49 - 130* | | | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**TOTAL METALS**
**EPA 6010D/6020B/7471B**
**QUALITY CONTROL**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB0808SM2 | | | | | |
| Arsenic | **ND** | 10 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Cadmium | **ND** | 0.50 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Chromium | **ND** | 0.50 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Copper | **ND** | 1.0 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Lead | **ND** | 5.0 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Nickel | **ND** | 2.5 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Zinc | **ND** | 2.5 | EPA 6010D | 8-8-22 | 8-8-22 | |
| Laboratory ID: | MB0804S1 | | | | | |
| Mercury | **ND** | 0.020 | EPA 7471B | 8-4-22 | 8-4-22 | |
| Laboratory ID: | MB0808SM1 | | | | | |
| Selenium | **ND** | 0.50 | EPA 6020B | 8-8-22 | 8-8-22 | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**TOTAL METALS**
**EPA 6010D/6020B/7471B**
**QUALITY CONTROL**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **DUPLICATE** | | | | | | | | | | | |
| Laboratory ID: | 07-298-01 | | | | | | | | | | |
| | ORIG | DUP | | | | | | | | | |
| Arsenic | **ND** | **ND** | NA | NA | | NA | | NA | NA | 20 | |
| Cadmium | **ND** | **ND** | NA | NA | | NA | | NA | NA | 20 | |
| Chromium | **27.4** | **26.3** | NA | NA | | NA | | NA | 4 | 20 | |
| Copper | **26.6** | **25.8** | NA | NA | | NA | | NA | 3 | 20 | |
| Lead | **6.95** | **5.25** | NA | NA | | NA | | NA | 28 | 20 | C |
| Nickel | **38.0** | **35.0** | NA | NA | | NA | | NA | 8 | 20 | |
| Zinc | **76.7** | **68.2** | NA | NA | | NA | | NA | 12 | 20 | |
| Laboratory ID: | 07-298-01 | | | | | | | | | | |
| Mercury | **0.0306** | **0.0246** | NA | NA | | NA | | NA | 22 | 20 | C |
| Laboratory ID: | 08-061-03 | | | | | | | | | | |
| | ORIG | DUP | | | | | | | | | |
| Selenium | **0.550** | **0.565** | NA | NA | | NA | | NA | 3 | 20 | |
| **MATRIX SPIKES** | | | | | | | | | | | |
| Laboratory ID: | 07-298-01 | | | | | | | | | | |
| | MS | MSD | MS | MSD | | MS | MSD | | | | |
| Arsenic | **94.7** | **97.1** | 100 | 100 | ND | **95** | **97** | 75-125 | 3 | 20 | |
| Cadmium | **47.3** | **48.8** | 50.0 | 50.0 | ND | **95** | **98** | 75-125 | 3 | 20 | |
| Chromium | **116** | **118** | 100 | 100 | 27.4 | **89** | **91** | 75-125 | 1 | 20 | |
| Copper | **76.8** | **81.1** | 50.0 | 50.0 | 26.6 | **100** | **109** | 75-125 | 5 | 20 | |
| Lead | **251** | **259** | 250 | 250 | 6.95 | **98** | **101** | 75-125 | 3 | 20 | |
| Nickel | **130** | **133** | 100 | 100 | 38.0 | **92** | **95** | 75-125 | 2 | 20 | |
| Zinc | **164** | **187** | 100 | 100 | 76.7 | **87** | **111** | 75-125 | 13 | 20 | |
| Laboratory ID: | 07-298-01 | | | | | | | | | | |
| Mercury | **0.503** | **0.502** | 0.500 | 0.500 | 0.0306 | **95** | **94** | 80-120 | 0 | 20 | |
| Laboratory ID: | 08-061-03 | | | | | | | | | | |
| | MS | MSD | MS | MSD | | MS | MSD | | | | |
| Selenium | **108** | **103** | 100 | 100 | 0.550 | **107** | **102** | 75-125 | 5 | 20 | |

Date of Report: August 12, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054
Project: 6694-002-05 T1200

**% MOISTURE**

| Client ID | Lab ID | % Moisture | Date Analyzed |
|---|---|---|---|
| **Soil-1-220803** | 08-054-01 | **9** | 8-4-22 |
| **Soil-2-220803** | 08-054-02 | **15** | 8-4-22 |
| **Soil-3-220803** | 08-054-03 | **7** | 8-4-22 |
| **Soil-4-220803** | 08-054-04 | **11** | 8-4-22 |
| **Soil-5-220803** | 08-054-05 | **8** | 8-4-22 |
| **Soil-6-220803** | 08-054-06 | **5** | 8-4-22 |

OnSite Environmental Inc.

**Data Qualifiers and Abbreviations**

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

# Chain of Custody



**OnSite Environmental Inc.**
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GEI
Project Number: 6694-002-05-T1200
Project Name: Go East
Project Manager: Garett Lequc
Sampled by: JDE

**Turnaround Request (in working days)**
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

**Laboratory Number:** 08-054

| Lab ID | Sample Identification | Date Sampled | Time Sampled | Matrix | Number of Containers | NWTPH-HCID | NWTPH-Gx/BTEX (8021☐ 8260☐) | NWTPH-Gx | NWTPH-Dx (Acid / SG Clean-up☐) | Volatiles 8260 | Halogenated Volatiles 8260 | EDB EPA 8011 (Waters Only) | Semivolatiles 8270/SIM (with low-level PAHs) | PAHs 8270/SIM (low-level) | PCBs 8082 | Organochlorine Pesticides 8081 | Organophosphorus Pesticides 8270/SIM | Chlorinated Acid Herbicides 8151 | Total RCRA Metals | Total MTCA Metals | TCLP Metals | HEM (oil and grease) 1664 | Metals see list | | | | % Moisture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | So.1-1-220803 | 8/3/22 | 1140 | S | 1 | | | | X | | | | | X | | | | | | | | | X | | | | X |
| 2 | So.1-2-220803 | | 1143 | | | | | | X | | | | | X | | | | | | | | | X | | | | X |
| 3 | So.1-3-220803 | | 1145 | | | | | | X | | | | | X | | | | | | | | | X | | | | X |
| 4 | So.1-4-220803 | | 1147 | | | | | | X | | | | | X | | | | | | | | | X | | | | X |
| 5 | So.1-5-220803 | | 1150 | | | | | | X | | | | | X | | | | | | | | | X | | | | X |
| 6 | Soil-6-220803 | | 1154 | | | | | | X | | | | | X | | | | | | | | | X | | | | X |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | Signature | Company | Date | Time |
|---|---|---|---|---|
| Relinquished | [signature] | GEI | 8/3/22 | 1345 |
| Received | | | | |
| Relinquished | | | | |
| Received | | | | |
| Relinquished | | | | |
| Received | | | | |
| Reviewed/Date | | Reviewed/Date | | |

**Comments/Special Instructions**
Metals: As Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn
Call Garett w/questions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

August 29, 2022

Garrett Leque
GeoEngineers, Inc.
554 West Bakerview Road
Bellingham, WA 98226

Re: Analytical Data for Project 6694-002-05 T1200
Laboratory Reference No. 2208-054B

Dear Garrett:

Enclosed are the analytical results and associated quality control data for samples submitted on August 3, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 29, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054B
Project: 6694-002-05 T1200

**Case Narrative**

Samples were collected on August 3, 2022 and received by the laboratory on August 3, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

Due to the high concentration of Iron and Magnesium in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 105% for Iron and 100% for Magnesium.

Total Manganese EPA 6010D Analysis

Due to the high concentration of Manganese in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 107%.

**Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.**

Date of Report: August 29, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054B
Project: 6694-002-05 T1200

**ANALYTICAL REPORT FOR SAMPLES**

| Client ID | Laboratory ID | Matrix | Date Sampled | Date Received | Notes |
|---|---|---|---|---|---|
| Soil-1-220803 | 08-054-01 | Soil | 8-3-22 | 8-3-22 | |
| Soil-2-220803 | 08-054-02 | Soil | 8-3-22 | 8-3-22 | |
| Soil-3-220803 | 08-054-03 | Soil | 8-3-22 | 8-3-22 | |
| Soil-4-220803 | 08-054-04 | Soil | 8-3-22 | 8-3-22 | |
| Soil-5-220803 | 08-054-05 | Soil | 8-3-22 | 8-3-22 | |
| Soil-6-220803 | 08-054-06 | Soil | 8-3-22 | 8-3-22 | |

Date of Report: August 29, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054B
Project: 6694-002-05 T1200

**TOTAL METALS**
**EPA 6010D**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **Soil-1-220803** | | | | | |
| Laboratory ID: | 08-054-01 | | | | | |
| Iron | **17000** | 1100 | EPA 6010D | 8-24-22 | 8-24-22 | |
| Magnesium | **7000** | 1100 | EPA 6010D | 8-24-22 | 8-24-22 | |
| **Client ID:** | **Soil-2-220803** | | | | | |
| Laboratory ID: | 08-054-02 | | | | | |
| Iron | **21000** | 1200 | EPA 6010D | 8-24-22 | 8-24-22 | |
| Magnesium | **8400** | 1200 | EPA 6010D | 8-24-22 | 8-24-22 | |
| **Client ID:** | **Soil-3-220803** | | | | | |
| Laboratory ID: | 08-054-03 | | | | | |
| Iron | **20000** | 1100 | EPA 6010D | 8-24-22 | 8-24-22 | |
| Magnesium | **8100** | 1100 | EPA 6010D | 8-24-22 | 8-24-22 | |
| **Client ID:** | **Soil-4-220803** | | | | | |
| Laboratory ID: | 08-054-04 | | | | | |
| Iron | **17000** | 1100 | EPA 6010D | 8-24-22 | 8-24-22 | |
| Magnesium | **6300** | 1100 | EPA 6010D | 8-24-22 | 8-24-22 | |
| **Client ID:** | **Soil-5-220803** | | | | | |
| Laboratory ID: | 08-054-05 | | | | | |
| Iron | **19000** | 1100 | EPA 6010D | 8-24-22 | 8-24-22 | |
| Magnesium | **6700** | 1100 | EPA 6010D | 8-24-22 | 8-24-22 | |
| **Client ID:** | **Soil-6-220803** | | | | | |
| Laboratory ID: | 08-054-06 | | | | | |
| Iron | **16000** | 2600 | EPA 6010D | 8-24-22 | 8-24-22 | |
| Magnesium | **6400** | 2600 | EPA 6010D | 8-24-22 | 8-24-22 | |

Date of Report: August 29, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054B
Project: 6694-002-05 T1200

**TOTAL MANGANESE**
**EPA 6010D**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **Soil-1-220803** | | | | | |
| Laboratory ID: | 08-054-01 | | | | | |
| Manganese | **320** | 5.5 | EPA 6010D | 8-26-22 | 8-26-22 | |
| **Client ID:** | **Soil-2-220803** | | | | | |
| Laboratory ID: | 08-054-02 | | | | | |
| Manganese | **350** | 5.9 | EPA 6010D | 8-26-22 | 8-26-22 | |
| **Client ID:** | **Soil-3-220803** | | | | | |
| Laboratory ID: | 08-054-03 | | | | | |
| Manganese | **380** | 5.4 | EPA 6010D | 8-26-22 | 8-26-22 | |
| **Client ID:** | **Soil-4-220803** | | | | | |
| Laboratory ID: | 08-054-04 | | | | | |
| Manganese | **340** | 5.6 | EPA 6010D | 8-26-22 | 8-26-22 | |
| **Client ID:** | **Soil-5-220803** | | | | | |
| Laboratory ID: | 08-054-05 | | | | | |
| Manganese | **320** | 5.4 | EPA 6010D | 8-26-22 | 8-26-22 | |
| **Client ID:** | **Soil-6-220803** | | | | | |
| Laboratory ID: | 08-054-06 | | | | | |
| Manganese | **280** | 5.3 | EPA 6010D | 8-26-22 | 8-26-22 | |

Date of Report: August 29, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054B
Project: 6694-002-05 T1200

**TOTAL METALS**
**EPA 6010D**
**QUALITY CONTROL**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB0824SHA1 | | | | | |
| Iron | **ND** | 50 | EPA 6010D | 8-24-22 | 8-24-22 | |
| Magnesium | **ND** | 50 | EPA 6010D | 8-24-22 | 8-24-22 | |

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **DUPLICATE** | | | | | | | | | | | |
| Laboratory ID: | 08-054-06 | | | | | | | | | | |
| | ORIG | DUP | | | | | | | | | |
| Iron | **15100** | **16000** | NA | NA | | NA | | NA | 5 | 20 | |
| Magnesium | **6100** | **6660** | NA | NA | | NA | | NA | 9 | 20 | |
| **MATRIX SPIKES** | | | | | | | | | | | |
| Laboratory ID: | 08-054-06 | | | | | | | | | | |
| | MS | MSD | MS | MSD | | MS | MSD | | | | |
| Iron | **16300** | **17300** | 1000 | 1000 | 15100 | **115** | **215** | 75-125 | 6 | 20 | A |
| Magnesium | **6860** | **7760** | 1000 | 1000 | 6100 | **76** | **166** | 75-125 | 12 | 20 | A |

Date of Report: August 29, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054B
Project: 6694-002-05 T1200

**TOTAL MANGANESE**
**EPA 6010D**
**QUALITY CONTROL**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB0826SHL1 | | | | | |
| Manganese | **ND** | 0.50 | EPA 6010D | 8-26-22 | 8-26-22 | |

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **DUPLICATE** | | | | | | | | | | | |
| Laboratory ID: | 08-054-06 | | | | | | | | | | |
| | ORIG | DUP | | | | | | | | | |
| Manganese | **268** | **259** | NA | NA | | NA | | NA | 4 | 20 | |
| **MATRIX SPIKES** | | | | | | | | | | | |
| Laboratory ID: | 08-054-06 | | | | | | | | | | |
| | MS | MSD | MS | MSD | | MS | MSD | | | | |
| Manganese | **284** | **292** | 25.0 | 25.0 | 268 | **62** | **96** | 75-125 | 3 | 20 | A |

Date of Report: August 29, 2022
Samples Submitted: August 3, 2022
Laboratory Reference: 2208-054B
Project: 6694-002-05 T1200

**% MOISTURE**

| Client ID | Lab ID | % Moisture | Date Analyzed |
|---|---|---|---|
| **Soil-1-220803** | 08-054-01 | **9** | 8-4-22 |
| **Soil-2-220803** | 08-054-02 | **15** | 8-4-22 |
| **Soil-3-220803** | 08-054-03 | **7** | 8-4-22 |
| **Soil-4-220803** | 08-054-04 | **11** | 8-4-22 |
| **Soil-5-220803** | 08-054-05 | **8** | 8-4-22 |
| **Soil-6-220803** | 08-054-06 | **5** | 8-4-22 |

OnSite Environmental Inc.

**Data Qualifiers and Abbreviations**

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

# Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com



Company: GEI
Project Number: 6694-002-05-T1200
Project Name: Go East
Project Manager: Garrett Lequr
Sampled by: JDE

**Turnaround Request (in working days)**
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

**Laboratory Number:** 08-054

| Lab ID | Sample Identification | Date Sampled | Time Sampled | Matrix | Number of Containers | NWTPH-HCID | NWTPH-Gx/BTEX (8021☐ 8260☐) | NWTPH-Gx | NWTPH-Dx (Acid / SG Clean-up☐) | Volatiles 8260 | Halogenated Volatiles 8260 | EDB EPA 8011 (Waters Only) | Semivolatiles 8270/SIM (with low-level PAHs) | PAHs 8270/SIM (low-level) | PCBs 8082 | Organochlorine Pesticides 8081 | Organophosphorus Pesticides 8270/SIM | Chlorinated Acid Herbicides 8151 | Total RCRA Metals | Total MTCA Metals | TCLP Metals | HEM (oil and grease) 1664 | Metals See List | | Metals-Fe, Mg | Metals-Mn | % Moisture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | So.1-1-220803 | 8/3/22 | 1140 | S | 1 | | | | X | | | | | X | | | | | | | | | X | | (X) | 0 | X |
| 2 | So.1-2-220803 | | 1143 | | | | | | X | | | | | X | | | | | | | | | X | | (X) | 0 | X |
| 3 | So.1-3-220803 | | 1145 | | | | | | X | | | | | X | | | | | | | | | X | | (X) | 0 | X |
| 4 | So.1-4-220803 | | 1147 | | | | | | X | | | | | X | | | | | | | | | X | | (X) | 0 | X |
| 5 | So.1-5-220803 | | 1150 | | | | | | X | | | | | X | | | | | | | | | X | | (X) | 0 | X |
| 6 | So.1-6-220803 | | 1154 | | | | | | X | | | | | X | | | | | | | | | X | | (X) | 0 | X |

| | Signature | Company | Date | Time |
|---|---|---|---|---|
| Relinquished | | GEI | 8/3/22 | 1345 |
| Received | | | | |
| Relinquished | | | | |
| Received | | | | |
| Relinquished | | | | |
| Received | | | | |
| Reviewed/Date | | Reviewed/Date | | |

**Comments/Special Instructions**
Metals: As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn
Call Garrett w/questions
(X) Added 8/23/22. DB (STA)
(X) Added 8/24/22. DB

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐