Cedar Hills Regional Landfill
Area 9 Development Project

Contaminated Soil Characterization Report

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Natural Resources and Parks
Solid Waste Division

Waste **Prevention** | *Resource* **Recovery** | *Waste* **Disposal**

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December **2021**

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Cedar Hills Regional Landfill

Area 9 Design

CONTAMINATED SOIL

CHARACTERIZATION REPORT

December 3, 2021

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CHRLF AREA 9 CONTAMINATED SOIL CHARACTERIZATION REPORT

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00	9/22/21	Initial Submittal
01	9/27/21	Revision per BHC/UEC comments
02	12/03/21	Revision per KCSWD comments

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CONTAMINATED SOIL CHARACTERIZATION REPORT
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1.0 OBJECTIVES AND SCOPE OF WORK

O'Neill Service Group (OSG) is pleased to present this report documenting the findings of the Contaminated Soil Characterization of the Cedar Hills Regional Landfill Area 9 (Figure 1).

The purpose of this investigation was to assess for the potential presence and extent of soil impacts within the project boundaries, with particular emphasis on characterizing potential soil and groundwater contamination at locations where storage or use of petroleum products or other potential contaminants has occurred.

The scope of work for this environmental investigation is summarized below:

- Review available data.
- Prepare a Sampling and Analysis Plan (SAP).
- Develop a Health and Safety Plan (HASP).
- Advance and sample soil borings at selected areas within the alignment.
- Collect soil and groundwater samples during soil boring activities.
- Submit samples for laboratory analysis.
- Compare soil and groundwater sample analytical results to appropriate regulatory limits.
- Prepare this summary report describing the activities and findings from this assessment.

The SAP was prepared by OSG for BHC on July 29, 2021 (Revised August 18, 2021) and is included as Appendix A.

2.0 BACKGROUND

2.1 Project Description

King County Solid Waste Division (KCSWD) evaluated waste disposal options in the 2019 Solid Waste Comprehensive Plan and recommended further development of the Cedar Hills Regional Landfill (CHRLF). With permitted capacity at the landfill predicted to be used by 2028, the disposal option for beyond 2026 needs to be initiated to provide sufficient lead time to complete financial, operational, and infrastructure preparations, including completion of environmental review under the State Environmental Policy Act (SEPA) to ensure that there is no gap in the County's ability to dispose of waste and meet contractual obligations.

The recommendations are consistent with County policy to maximize the life of the CHRLF within the existing footprint of the landfill. Developing the landfill to the maximum extent feasible has the lowest rate impact of waste disposal options evaluated for the 2019 Solid Waste Comprehensive Plan.

The development of Area 9 (the Site) within the southeast corner of the landfill footprint is currently under design, with construction planned in two stages, beginning in the construction season of 2023 with the second stage completed by December 2026. The schedule may be adjusted during the planning phase in response to alternative approaches to meeting project milestones.

Area 9 will be located adjacent east of Area 8 and will cover the existing CHRLF support facilities and the Area 8 stockpile area (Figure 1).

2.2 Site Underground Storage Tanks (USTs)

2.2.1 Removed USTs, Stores and Vehicle Maintenance Building

Building 7 (Stores and Vehicle Maintenance) consists of a steel-framed building subdivided into six storage and work bays for on-site maintenance of vehicles and heavy equipment. The building subsections, from east to west, include: storage (7A), shipping/receiving (7B), trailer bays (7C), a tire shop (7D), and a weld shop (7E and 7F). The original structure was constructed in the 1990s, with additional elements added on at later times.

Eight USTs were removed from the Site in 1999 (SCS Engineers, 2000). The USTs were located to the north and west of Building 7, and were removed, in part, to allow expansion of the maintenance building to the west. The tanks and their removal dates are as follow: 20,000-gallon and 12,000-gallon diesel tanks, and a 4,000-gallon unleaded gasoline tank on August 12, 1999; a 550-gallon emergency generator tank removed on September 13, 1999; three 2,000-gallon waste oil, hydraulic oil, and new oil tanks were removed on September 23, 1999, and a 4,000-gallon heating oil UST was removed on September 24, 1999.

The fueling station 20,000-gallon and 12,000-gallon diesel tanks and 4,000-gallon unleaded gasoline tank were located adjacent west of the former building extent. Two fueling islands with a total of three dispensers and other associated piping and appurtenances were also removed. The 550-gallon emergency generator UST was located at the northwest corner of the former building extent. The 2,000-gallon waste oil, hydraulic oil, and new oil tanks, and the 4,000-gallon heating oil UST were located north of the maintenance building.

SCS Engineers performed UST site assessments of the three UST locations after removal of the tanks. Soil samples were collected and analyzed for petroleum-range hydrocarbons appropriate for the former tank contents. Information regarding the assessments are provided in the following sections.

Fueling Station Tanks

Sixteen samples were collected after tank removals. Three UST assessment soil samples exceeded the 1999 MTCA Method A cleanup level for diesel and heavy oil range petroleum hydrocarbons (200 mg/kg). These were associated with the 12,000-gallon diesel UST and a fueling dispenser. Three soil samples exceeded the 1999 MTCA Method A cleanup level for gasoline range petroleum hydrocarbons (100 mg/kg). These were associated with the 4,000-gallon gasoline UST. The exceedances were detected along the west sidewall and base of the tank excavation. Two selected samples associated with the gasoline UST and dispenser were also analyzed for lead. Lead was not detected at reporting limits in either sample.

Approximately 900 cubic yards of soil from the tank and dispenser locations were subsequently excavated in December 1999, removing the documented exceedances. SCS collected four additional samples to confirm remediation of the soils. One soil sample, collected from the base of the UST excavation near the southwest corner of the maintenance building contained gasoline range petroleum hydrocarbons at a concentration of 100 mg/kg. The soils were considered to be limited in extent and were left in place due to their proximity to the building foundation. The remaining associated samples either did not contain detectable concentrations of petroleum hydrocarbons, or detections were below the 1999 MCTA Method A cleanup level.

Emergency Generator Tank

Three samples were collected after tank removal. The soil samples were analyzed for diesel and heavy oil range petroleum hydrocarbons. The samples did not contain detectable concentrations of petroleum hydrocarbons. Approximately ten cubic yards of soil associated with the tank removal were consolidated with other excavated soils for disposal, and no further remediation or investigation was conducted at the tank location.

Oil Storage Tanks

Eight samples were collected after tank removals and limited excavation of stained fill soils demonstrating a petroleum odor. The soil samples were analyzed for diesel and heavy oil range petroleum hydrocarbons, and one sample collected from below the waste oil UST was also analyzed for metals. Soil samples associated with the USTs did not contain detectable concentrations of petroleum hydrocarbons. One soil sample collected from a piping trench for the tanks contained petroleum hydrocarbons exceeding the 1999 MTCA Method A cleanup level for diesel and heavy oil range petroleum hydrocarbons. The soils were overexcavated and a confirmation sample did not contain detectable concentrations of petroleum hydrocarbons. Approximately 100 cubic yards of soil associated with the tank removals were consolidated with other excavated soils for disposal, and no further remediation or investigation was conducted at the tank locations.

The excavated and remediated petroleum-contaminated soils were disposed of at on-site in landfill cells.

With the exception of one base of excavation sample with a concentration of 100 mg/kg gasoline-range petroleum hydrocarbons, none of the in-place soils contained documented petroleum hydrocarbons exceeding the 1999 MTCA soil cleanup levels. Building 7 was subsequently expanded to cover the former fueling tank UST locations.

2.2.2 Active USTs

New USTs were installed at the Site to replace the tanks removed in 1999.

Four underground storage tanks were installed at the new fuel dispenser location at the southwest corner of the Maintenance Facility site in 1999. These are comprised of two 20,000-gallon diesel fuel tanks, a 4,000-gallon gasohol tank, and a 4,000-gallon gasoline tank. The fuel is dispensed at two pump islands under a canopy to the southwest of the tanks. The north island has two diesel dispensers, and the south island has two diesel dispensers, one gasoline dispenser, and one combined diesel and gasoline dispenser.

A total of five USTs are located on the northwest side of Building 7 (Figure 3). These are comprised of a 10,000-gallon waste oil tank, a 4,000-gallon heating oil tank, a 2,500-gallon motor oil tank, and a 2,500-gallon hydraulic oil tank located on the northwest side of Building 7B. A 600-gallon diesel fuel UST for emergency generator supply is located on the northwest side of Building 7D. All five USTs were installed in 1999. These tanks were installed in positions similar to their counterparts along the north side of Building 7.

2.3 Investigation Approach, Building 46/Fuel Island

Building 46/Fuel Island and Fuel Control, serves as the on-site fueling station for transfer trucks and heavy equipment refueling trucks. The building was constructed around 1999, includes a small concrete room (Fuel Control), and four underground storage tanks. The four USTs consist of two 20,000-gallon diesel fuel tanks, a 4,000-gallon gasohol tank, and a 4,000-gallon gasoline tank. The fuel is dispensed from six dispensers at two pump islands under a canopy to the west of the tanks. All four USTs were installed in 1999 and are in use.

The investigation areas included the following:

- Soil borings surrounding the four UST locations to assess the potential for releases from the tanks.
- Soil borings at selected locations adjacent to the pump islands and fuel distribution lines.

Borings were completed where feasible based on site access and utilities (Figure 2). Soil borings adjacent to the USTs were completed to 15 feet, groundwater occurrence, or refusal. Soil borings adjacent to the pump islands and fuel distribution lines were completed to a minimum depth of five feet observed.

2.4 Investigation Approach, Building 7/Stores and Vehicle Maintenance

There are a total of five USTs located on the northwest side of the building (Figure 3). These include a 10,000-gallon waste oil tank, a 4,000-gallon heating oil tank, a 2,500-gallon motor oil tank, and a 2,500-gallon hydraulic oil tank located on the northwest side of Building 7B. A 600-gallon diesel fuel tank for emergency generator supply is located on the northwest side of Building 7D. All five USTs were installed in 1999 and are in use. Additionally, the building is used for vehicle repair and maintenance. A fueling

station including two diesel USTs (12,000- and 20,000-gallons) and one 4,000-gallon gasoline UST were removed in 2000 prior to the addition of bays 7D and 7E (SCS Engineers, 2000). Petroleum contaminated soil were removed to a maximum depth of 15 feet below grade between June and December, 1999. Soil samples collected at the time of the UST removal and associated soil remedial action did not exceed current Washington State Department of Ecology MTCA Method A soil cleanup levels. These areas currently underlie 7D and 7E (Figure 3).

The investigation areas will include conducting soil borings in the following locations:

- Surrounding the five UST locations to assess the potential for releases from the tanks.
- Adjacent to selected trench drains in the weld shop to assess the potential for releases from vehicle maintenance or hazardous materials use on site.
- Adjacent to a catch basin northwest of the tire shop that could receive contaminated water associated with tire or brake maintenance.
- Adjacent to the 2000 UST closure area underlying Building 7D/E (southeast corner)

Borings were completed where feasible based on site access and utilities (Figure 3). Soil borings adjacent to the current and former UST locations were completed to 15 feet, groundwater occurrence, or refusal. Soil borings adjacent to trench drains and catch basins were completed to depths of at least five feet below grade, or adjacent to the bottom depth of the catch basins and associated piping.

2.5 Investigation Approach, Building 44/Truck Wash

Building 44 serves as the on-site truck-washing station and includes two pressure washing bays, an automated rinse bay, restrooms, and a remote washdown water recirculation sump approximately 250 feet southeast of the station. The building was constructed in the late 1990s or early 2000s. The investigation areas will include the following:

- Soil borings adjacent to an interior vault/oil-water separator, sewer line southeast of the building, and pressure wash receiving vault to assess the potential for releases from the wash system.

Borings were completed where feasible based on site access and utilities (Figure 4). Soil borings adjacent to trench drains and catch basins were completed to depths of at least 10 feet below grade, or adjacent to the bottom depth of the drains and associated piping.

2.6 Investigation Approach, Miscellaneous Facilities

Borings were completed at selected locations throughout the facility to screen general soil conditions and assess potential historical impacts. Borings were completed where feasible based on site access and utilities (Figure 5). Soil borings will be completed at the north end of the facility (Building 13), adjacent to the Cat shed (Building 45) drains, a catch basin in the center of the site, and in an area of trailer parking with some observed staining along the western edge of the facility. This location also appeared to have potential runoff from paved areas. Soil borings were completed to 15 feet, groundwater occurrence, or refusal.

3.0 SITE GEOLOGY AND HYDROGEOLOGY

3.1 Geology

The project alignment lies within the Puget Sound Lowland, which consists of a broad, low-lying region situated between the Cascade Range to the east and the Olympic Mountains to the west. The Lowland depression is underlain by Tertiary volcanic and sedimentary bedrock and is filled to the present-day land surface with Quaternary glacial and non-glacial sediments. The Puget Sound Lowland's present-day geomorphic features and unconsolidated sedimentary deposits can be attributed to the last continental glacier, the Cordilleran ice sheet, which covered the region during the Fraser Glaciation.

According to the 1:24,000-scale Geologic map of the Maple Valley Quadrangle, King County, Washington by Derek Booth, the surficial geologic unit mapped at the majority of the Site is documented as 'modified' land, or heavily graded or filled deposits that substantially alter the native soil conditions. However, the vicinity surrounding the Site consists of a glacial till upland of the most recent Fraser-age glaciation. Glacial till typically consists of a dense unsorted mixture of silt to gravel-sized materials within a silty matrix compacted by the glacier advance. Till is generally considered an aquitard, although coarse-grained lenses within the till may locally contain perched groundwater.

According to hydrogeologic and geotechnical studies completed at the CHRLF (CH2M Hill, 2003, KCSWD, 2004), minor occurrences of recessional outwash, pre-Vashon outwash and till, and alluvial outwash have also been identified at the Site but are typically outside of the Area 9 area of interest.

Soil descriptions for the investigation are discussed below and are included in the boring logs (Attachment B).

3.2 Groundwater

According to the King County iMap GIS tool (https://gismaps.kingcounty.gov/iMap/), the ground surface of the Site is at an elevation of approximately 560 to 600 feet above mean sea level (msl). The CHRLF slopes down to the south-southeast from the crest of the Main Hill.

Perched groundwater was reported in alluvial soils, till, and outwash throughout the CHRLF area. However, this groundwater is discontinuous and not indicative of regional conditions. Perched groundwater flow direction is anticipated to generally follow the local topography. Groundwater was encountered in 3 of the 23 borings completed, with depths to groundwater ranging between approximately 5.5 to 10.1 feet below ground surface (bgs). However, this groundwater occurrence coincided with fill soils adjacent to USTs (borings CHRL-A9-B4 and -B15) and a stormwater catch basin (boring CHRL-A9-B7). Therefore, this groundwater is not considered to be indicative of local groundwater conditions, but accumulated or perched water within the fill soils. Groundwater levels encountered are included in the boring logs (Attachment B)

Regional groundwater at the site occurs within pre-Vashon deposits underlying the surficial till and other deposits. At the southern side of the CHRLF, regional groundwater flow is in a northerly direction (KCSWD, 2004). Regional aquifer monitoring well MW-60, completed south of Area 9 encountered groundwater during drilling at a depth of about 226 feet bgs.

4.0 SOIL BORINGS

In accordance with the SAP, OSG conducted site preparation and soil boring drilling and sampling between August 20 and 26, 2021. Prior to drilling, OSG met with King County representatives to coordinate site access and conduct a brief assessment of current site activities. The borings were sited at areas of concern, as discussed in the SAP and above.

A total of 23 borings were completed within Area 9 as part of the subsurface investigation (Figures 2 through 5).

The depth of borings for this investigation ranged from 9 to 15 feet bgs. Borings were drilled and installed according to Ecology Minimum Standards for Construction and Maintenance of Wells (Chapter 173-160 WAC).

4.1 Utility Locating

OSG contacted the Washington Utilities Underground Location Center prior to starting the fieldwork to conduct a general locating survey for telephone, gas, water, sewer, and electric service for study areas at the Property. Areas identified as utility corridors by Washington Utilities Underground Location Center were marked and no sampling occurred in these areas. A private utility locator, Mountain View Locating of Buckley, Washington was retained to perform an on-Property utility survey on August 20, 2021, to determine if underground utilities and structures were in proximity of the drilling activities. Mountain View used a combination of electromagnetic and ground-penetrating radar methodologies to identify on-site utilities in the vicinity of selected boring locations.

4.2 Surface Coring and Potholing

Because of the potential for unknown utilities and expected variable surface conditions and thickness (asphalt and concrete), OSG retained Evergreen Concrete Cutting of Pacific, Washington to core selected proposed boring locations on August 23 and 26, 2021. Surface conditions included concrete and asphalt. Concrete at the cored location was approximately 9 to 12 inches thick. Cored asphalt was typically 6 inches thick, although a second layer of asphalt, approximately 3 inches thick, was observed at borings in the vicinity of the fueling station USTs.

OSG retained Pro-Vac Services of Puyallup, Washington to physically clear selected boring locations utilizing a vac truck on August 24, 2021. Shallow soils underlying the surficial asphalt or concrete were removed with a vac truck to confirm that utilities were not present. Locations were cleared to depths of at least three feet bgs and native soils were confirmed in most locations.

4.3 Sampling Locations

On August 25 and 26, 2021, a total of 23 direct push borings were advanced on the Property using a truck-mounted direct push drilling rig. Borings were completed to between 9 and 15 feet bgs. Soil samples were collected for analysis. Perched groundwater was encountered at 3 of the boring locations, discussed in Section 3.2, above. See Figures 2 through 5 for boring locations.

- Six borings (CHRL-A9-B1, -B2, -B20, -B21, -B22, and -B23) were completed at the fueling station USTs and dispensers.

- Ten borings (CHRL-A9-B3, -B4, -B5, -B11, -B12, -B13, -B14, -B-15, -B16, and -B17) were completed at the Building 7 USTs and other selected locations around the building.
- Three borings (CHRL-A9-B7, -B18, and -B19) were completed at the Truck Wash.
- Four borings (CHRL-A9-B6, -B8, -B9, and -B10) were completed at selected locations within Area 9.
- Groundwater samples were collected at borings CHRL-A9-B4, -B8, and -B15

4.4 Soil and Groundwater Sample Collection Methods

Soil and groundwater samples were collected in general accordance with the approved Sampling and Analysis Plan (Appendix A). A total of 48 soil samples were collected, with samples analyzed from multiple depths in most borings. Analyzed samples were selected based on depth of adjacent USTs or other potential contaminant sources, groundwater occurrence, and/or total depth of the boring. A total of three groundwater samples were collected from borings where groundwater was encountered.

Soil samples from the borings were collected in acetate sample liners that were placed inside the soil sampling rod. Soil samples were obtained utilizing the collection, preparation and preservation methods outlined in EPA Method 5035A, as required by Washington Department of Ecology (Ecology). Each soil sample was logged by an OSG geologist for physical properties such as grain size, color, and moisture. After sample collection, a portion was placed into pre-cleaned laboratory prepared glass jars and vials with Teflon lids.

After completion of soil borings where groundwater was encountered, a temporary well was constructed for collection of groundwater grab samples by inserting a decontaminated slotted PVC screen into the saturated zone. Disposable tubing was then extended through the screen, and groundwater samples were collected using a peristaltic pump. New tubing was used for each groundwater sample and temporary wells were purged until turbidity decreased. Groundwater samples were collected in general accordance with the EPA methodology for Low-Flow Purging and Sampling (EPA, 2017). Dissolved metals samples were field-filtered using a dedicated disposable 0.45 mm filter at each sampling location. Groundwater was placed in the appropriate laboratory-supplied, pre-cleaned containers for analysis.

Soil sampling nomenclature identified each soil sample with the boring identification number, followed by a number designating the sample depth. For example, soil sample “CHRL-A9-B1-2” was from soil boring CHRL-A9-B1 and the sample was collected at 2 feet bgs. Groundwater samples from each temporary boring were identified with a “W” following the boring ID. For example, sample “CHRL-A9-B4-W” represents the groundwater sample collected from temporary boring CHRL-A9-B4.

Borings were backfilled, sealed, and patched according to Ecology’s well drilling regulations. No permanent groundwater monitoring wells were installed.

All samples were immediately placed into ice-filled coolers and delivered to Fremont Analytical Laboratory in Seattle, Washington under standard chain-of-custody procedures.

4.5 Borehole Abandonment

Following completion of soil borings and associated sampling, the boreholes were grouted to the ground surface using hydrated granular bentonite and properly decommissioned in general accordance with Washington Department of Ecology (Ecology) well drilling standards (WAC 173-160). The ground surface was restored with either asphalt cold-patch or concrete to match existing conditions.

5.0 FIELD SCREENING

OSG field screened all soil samples for indications of petroleum contamination including strong petroleum related odors or sheens. All soil samples were also field screened with a photoionization detector (PID) calibrated to 100ppm Isobutylene gas to determine areas of potential contamination. Although the PID is not capable of quantifying or identifying specific organic compounds, this instrument is capable of measuring relative concentrations of a variety of organic vapors. PID readings are provided on the boring logs (Appendix B).

6.0 SOIL AND GROUNDWATER ANALYSIS

OSG submitted the soil and groundwater samples to Fremont Analytical, an Ecology-accredited analytical laboratory, for analyses of the following analytes by using the following test methods:

- Diesel and heavy oil-range petroleum hydrocarbons by Washington Method NWTPH-Dx
- Gasoline-range petroleum hydrocarbons and aromatic hydrocarbons (BETX) by Washington Method NWTPH-Gx/EPA Method 8260
- Volatile organic compounds (VOCs) by EPA Method 8260
- Polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270
- Polychlorinated biphenyls (PCBs) by EPA Method 8082
- Total RCRA 8 Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver) by EPA Method 6020/7471
- Dissolved RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver) by EPA Method 6020/7471 (groundwater only)

7.0 QUALITY ASSURANCE/QUALITY CONTROL

Soil samples were collected and analyzed with sufficient quality assurance/quality control (QA/QC) to ensure representative and reliable results. The overall QA objective for this investigation was to ensure that the laboratory and field data on which decisions are to be based are technically sound, statistically valid, and properly documented.

OSG reviewed quality control results of the analytical data. Surrogate recoveries, method blanks, laboratory duplicates, spike blanks, and spike blank duplicates were all within control limits.

Fremont Analytical did not flag any results with qualifiers which would indicate that a given result was suspect. Laboratory method blank analyses were below detection limits.

In conclusion, the results of the laboratory QA/QC programs and OSG field procedures document that the analyses reported by the laboratory are of sufficient quality to allow confidence in the use of the reported chemical concentrations for comparison with the adopted assessment criteria for the site.

8.0 RESULTS

Twenty-three soil borings were completed as part of this environmental investigation.

8.1 Soil Borings and Sampling

Soil boring locations are shown on Figures 2 through 5 and boring logs are included as Appendix B. In general, the soil profiles in borings consisted primarily of yellow-brown to light gray sands and silty sands. Soils were typically dense to very dense, and drilling refusal was met in multiple borings before the target depth of 15 feet bgs. The soil texture and appearance were consistent with glacial till. The thickness of the till deposits was not determined as part of this investigation. Fill soils (typically gravelly sand or pea gravel) were observed in four borings (CHRL-A9-B4, -B7, -B14, and -B15). These fill soils were interpreted to be backfill adjacent to USTs or utilities.

Groundwater was encountered in three of the soil borings. Groundwater was encountered at depths of 5.5 to 10.1 feet bgs in these borings. This groundwater occurrence coincided with fill soils adjacent to USTs (borings CHRL-A9-B4 and -B15) and a stormwater catch basin (boring CHRL-A9-B7). Therefore, this groundwater is not considered to be indicative of local groundwater conditions, but accumulated or perched water within the fill soils.

Soils were field screened for evidence of releases from USTs or other potential contaminant sources. Positive indications of contamination were encountered during field screening. Petroleum-stained soils or petroleum odors were identified in borings CHRL-A9-B3, CHRL-A9-B9, CHRL-A9-B11, and CHRL-A9-B12. Elevated PID readings were also recorded in these soils. Additionally, a slight sheen was noted on water encountered in borings CHRL-A9-B4 and CHRL-A9-B15. Field screening results are included in boring logs (Attachment B).

8.2 Soil Analytical Results

Analytical results are summarized in Table 1, and laboratory analytical reports are included as Appendix C. Soil samples were collected at selected depths in the individual borings, and soil samples collected

from depths of 1.5 and 15 feet bgs were selected for analysis. Soil samples were analyzed by one or more of the following test methods:

- Diesel and heavy oil-range petroleum hydrocarbons by Washington Method NWTPH-Dx.
- Gasoline-range petroleum hydrocarbons by Washington Method NWTPH-Gx.
- Volatile organic compounds (VOCs) by EPA Method 8260.
- Polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270.
- Polychlorinated biphenyls (PCBs) by EPA Method 8082
- Total RCRA 8 Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver) by EPA Method 6020/7471.

Analytical results were compared to MTCA Method A (Ecology, 2013) soil cleanup levels. Where Method A cleanup levels were not available, results were compared to the Method B cleanup levels (Ecology, 2021), where applicable.

8.2.1 Petroleum

Petroleum hydrocarbons were not detected above laboratory reporting limits in soil samples with the following exceptions.

Building 46/Fuel Island and Fuel Control

Heavy oil-range petroleum hydrocarbons were detected in shallow (2 feet bgs) samples in soil borings CHRL-A9-B1 and -B2. These samples were collected adjacent to fuel dispenser lines. The concentrations did not exceed the MTCA Method A cleanup level for heavy oil-range petroleum hydrocarbons (2000 mg/kg). Deeper samples collected from the borings did not contain petroleum hydrocarbons at laboratory reporting limits. Samples collected from other borings in the area did not contain petroleum hydrocarbons above laboratory reporting limits.

Building 7/Stores and Vehicle Maintenance

Heavy oil-range petroleum hydrocarbons were detected in the 1.5-foot bgs soil sample collected from soil boring CHRL-A9-B3. This sample was collected adjacent to dispenser lines. The concentrations exceeded the MTCA Method A cleanup level for heavy oil-range petroleum hydrocarbons. Gasoline range petroleum hydrocarbons (identified as mineral spirits/Stoddard solvent) were also detected at concentrations below the MTCA Method A cleanup level. Samples collected from the boring at 5 and 9 feet bgs did not contain petroleum hydrocarbons above laboratory reporting limits.

Samples collected from other borings adjacent to the building USTs did not contain petroleum hydrocarbons above laboratory reporting limits.

Diesel and heavy oil-range petroleum hydrocarbons were detected at concentrations below the MTCA Method A cleanup level in the 15-foot bgs soil sample collected from boring CHRL-A9-B11, located at the southwest corner of Building 7. The sample location was adjacent to a sanitary sewer structure that was of similar depth. The boring was not advanced past 15 feet bgs because there was no field evidence of

contamination. A shallower sample collected at 10 feet bgs did not contain detectable concentrations of petroleum hydrocarbons.

Diesel and heavy oil-range petroleum hydrocarbons were detected at concentrations below the MTCA Method A cleanup level in the 11-foot bgs soil sample collected from boring CHRL-A9-B12, south of the Building 7 weld shop, and south of the 1999 UST removal location. OSG collected a duplicate (CHRL-A9-DUP) at the sample locations. Diesel range petroleum hydrocarbons were detected in this sample at a concentration exceeding the MTCA Method A cleanup level for petroleum. Although the difference between the primary and duplicate sample is unusual (1,050 mg/kg vs 2,680 mg/kg, respectively), heterogeneity within soil conditions and results does occur. The 12-foot bgs sample collected from the same boring had a low detection of diesel-range petroleum hydrocarbons. The depth of the petroleum detections is consistent with the 1999 UST and petroleum-contaminated soils removal (SCS, 2000).

Gasoline-range petroleum hydrocarbons were detected at concentrations below the MTCA Method A cleanup level in the 9-foot bgs soil sample collected from boring CHRL-A9-B13, south of the Building 7 weld shop, and south of the 1999 UST removal location. The depth of the petroleum detections is consistent with the 1999 UST and petroleum-contaminated soils removal (SCS, 2000).

Building 44/Truck Wash

Heavy oil-range petroleum hydrocarbons were detected in the 4-foot bgs sample collected at soil boring CHRL-A9-B4, located adjacent to the sewer line south of the building. The concentrations did not exceed the MTCA Method A cleanup level for heavy oil-range petroleum hydrocarbons. A deeper sample collected from the boring did not contain petroleum hydrocarbons above laboratory reporting limits. Samples collected from other borings in the area did not contain petroleum hydrocarbons above laboratory reporting limits.

Various locations

Heavy oil-range petroleum hydrocarbons were detected in the 4-foot bgs sample collected at soil boring CHRL-A9-B6, located in the southwest corner of the Area 9. The concentrations did not exceed the MTCA Method A cleanup level for heavy oil-range petroleum hydrocarbons. A deeper sample collected from the boring did not contain petroleum hydrocarbons above laboratory reporting limits.

Diesel-range petroleum hydrocarbons were detected in the 4-foot bgs sample collected at soil boring CHRL-A9-B9, located on the north side of the Cat shed. The concentrations did not exceed the MTCA Method A cleanup level for heavy oil-range petroleum hydrocarbons. A deeper sample collected from the boring did not contain petroleum hydrocarbons at laboratory reporting limits.

Samples collected from other borings did not contain petroleum hydrocarbons above laboratory reporting limits.

8.2.2 Volatile Organic Compounds

VOCs were not detected above laboratory reporting limits in soil samples with the following exceptions.

Building 7/Stores and Vehicle Maintenance

The VOCs ethylbenzene, n-Butylbenzene, n-Propylbenzene, 4-Isopropyltoluene and/or sec-Butylbenzene were detected in borings CHRL-A9-B3 (1.5 feet bgs) CHRL-A9-B12 (11 feet bgs) and CHRL-A9-B13 (9 feet bgs). None of these concentrations exceeded the MTCA Method A or B cleanup levels for the compounds. The detections were consistent with petroleum detections in the same borings (above) and indicative of fuel additives. VOCs were not detected above reporting limits in other samples collected from the three borings.

8.2.3 Polynuclear Aromatic Hydrocarbons

Polynuclear aromatic hydrocarbons (PAHs) were not detected above laboratory reporting limits in soil samples with the following exceptions.

Building 7/Stores and Vehicle Maintenance

Selected samples adjacent to the 10,000-gallon waste oil UST and oil dispenser lines (Boring CHRL-A9-B3) were analyzed for PAHs. The PAHs fluorene and phenanthrene were detected in the sample collected at 1.5 feet bgs, but at concentrations below the MTCA Method B cleanup level. Samples collected from the boring at 5 and 9 feet bgs did not contain PAHs above laboratory reporting limits.

8.2.4 Polychlorinated Biphenyls

Polychlorinated Biphenyls (PCBs) were not detected above laboratory reporting limits in soil samples collected at the following location.

Building 7/Stores and Vehicle Maintenance

Selected samples adjacent to the 10,000-gallon waste oil UST and oil dispenser lines (Boring CHRL-A9-B3) were analyzed for PCBs. PCBs were not detected above laboratory reporting limits in the soil samples.

8.2.5 Metals

The metals arsenic, barium, chromium, lead and selenium were detected in all selected soil samples collected at Building 7, Building 44, and selected locations around Area 9. None of the sample concentrations exceeded MTCA Method A or B cleanup levels. The concentrations generally appeared within the range of background soil concentrations in the Puget Sound region (Ecology, 1994), and did not appear to be elevated due to historic site usage. None of the detected concentrations exceeded Hazardous Waste screening concentrations for soil disposal characterization.

8.3 Groundwater Analytical Results

Analytical results are summarized on Table 2, and laboratory analytical reports are included as Appendix C. Groundwater was encountered in three borings. Groundwater samples were analyzed by one or more of the following test methods:

- Diesel and heavy oil-range petroleum hydrocarbons by Washington Method NWTPH-Dx.
- Gasoline-range petroleum hydrocarbons by Washington Method NWTPH-Gx.
- Volatile organic compounds (VOCs) by EPA Method 8260.
- Polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270.

- Polychlorinated biphenyls (PCBs) by EPA Method 8082
- Dissolved RCRA 8 Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver) by EPA Method 6020/7471.

Analytical results were compared to MTCA Method A (Ecology, 2013) groundwater cleanup levels. Where Method A cleanup levels were not available, results were compared to the Method B cleanup levels (Ecology, 2021), where applicable.

8.2.1 Petroleum

Petroleum hydrocarbons were detected above laboratory reporting limits in groundwater samples collected at the following locations.

Building 7/Stores and Vehicle Maintenance

Diesel and heavy oil-range petroleum hydrocarbons exceeding the MTCA Method A cleanup level were detected in the CHRL-A9-B4 groundwater sample collected from the west end of the 2,500-gallon motor oil and hydraulic oil USTs. Diesel and heavy oil-range petroleum hydrocarbons, as well as gasoline-range petroleum hydrocarbons exceeding the MTCA Method A cleanup level were also detected in the CHRL-A9-B15 groundwater sample collected from the west end of the 4,000-gallon heating oil UST, and adjacent to the 10,000-gallon waste oil UST. As the groundwater associated with this samples appears to be accumulated, perched water within the UST backfill, the source of the petroleum may either be attributed to releases from USTs, either from the tanks or dispenser lines, or as a result of overfill.

Central Maintenance Facility Catch Basin

Heavy oil-range petroleum hydrocarbons exceeding the MTCA Method A cleanup level were detected in the CHRL-A9-B8 groundwater sample collected from the temporary wellpoint adjacent to a catch basin in the center of the facility. As the groundwater associated with this sample appears to be accumulated, perched water within the utility backfill, the source of the petroleum may either be attributed to releases from either the stormwater system, or surficial releases that migrated to the backfill.

8.2.2 Volatile Organic Compounds

VOCs were not detected above laboratory reporting limits in groundwater samples with the following exceptions.

Building 7/Stores and Vehicle Maintenance

The VOCs n-butylbenzene, 2-chlorotoluene, 4-chlorotoluene, 4-isopropyltoluene, naphthalene, n-propylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl-benzene and xylenes were detected in boring CHRL-A9-B15, located west of the 4,000-gallon heating oil UST and adjacent to the 10,000-gallon waste oil UST. None of these concentrations exceeded the MTCA Method A or B cleanup levels for the compounds. The detections were consistent with petroleum detections in the same borings (above) and indicative of fuel additives. VOCs were not detected above reporting limits in other samples collected from the two borings.

Central Maintenance Facility Catch Basin

The VOCs acetone, bromomethane, 2-Butanone, and methyl isobutyl ketone were detected in the boring CHRL-A9-B8 sample collected from adjacent to a catch basin in the center of the facility. Acetone, 2-butanone, and methyl isobutyl ketone are common solvents. As the groundwater associated with this sample appears to be accumulated, perched water within the utility backfill, the source of the VOCs may either be attributed to releases from either the stormwater system, or surficial releases that migrated to the backfill.

8.2.3 Polynuclear Aromatic Hydrocarbons

Polynuclear aromatic hydrocarbons (PAHs) were not detected above laboratory reporting limits in groundwater samples with the following exceptions.

Building 7/Stores and Vehicle Maintenance

The PAHs naphthalene, 2-methylnaphthalene 1-methylnaphthalene, acenaphthene and fluorene the west end of the 4,000-gallon heating oil UST, and adjacent to the 10,000 gallon waste oil UST. None of the detected compounds exceeded their respective MTCA Method A or B cleanup levels. The compounds are associated with petroleum.

8.2.4 Polychlorinated Biphenyls

Polychlorinated Biphenyls (PCBs) were not detected above laboratory reporting limits in groundwater samples collected at the following location.

Building 7/Stores and Vehicle Maintenance

The groundwater sample adjacent to 4,000-gallon heating oil UST, and adjacent to the 10,000 gallon waste oil UST (Boring CHRL-A9-B15) was analyzed for PCBs. PCBs were not detected above laboratory reporting limits in the sample.

8.2.5 Metals

Dissolved metals were not detected above laboratory reporting limits in groundwater samples with the following exceptions.

Building 7/Stores and Vehicle Maintenance

The metals arsenic, barium, and chromium were detected in the groundwater sample collected at boring CHRL-A9-B15. None of the sample concentrations exceeded MTCA Method A or B cleanup levels.

Central Maintenance Facility Catch Basin The metals arsenic, barium, cadmium, chromium, and lead were detected in the groundwater sample collected at boring CHRL-A9-B18. None of the sample concentrations exceeded MTCA Method A or B cleanup levels.

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 Investigation Findings

Soil and groundwater sampling results from the subsurface investigation are consistent with historical impacts from petroleum storage and use at the Site.

Building 46/Fuel Island and Fuel Control
Heavy oil-range petroleum hydrocarbons were detected in shallow soils adjacent to dispenser lines associated with the USTs north of the building (Borings CHRL-A9-B1 and -B2, Figure 2). Deeper samples did not contain detectable hydrocarbons. The detections are consistent with releases from the dispenser lines. Significant petroleum detections in soil were not observed in soils adjacent to the active fueling station USTs.

Building 7/Stores and Vehicle Maintenance
Exceedances of the current MTCA cleanup level were detected in two locations at Building 7. Heavy oil-range petroleum hydrocarbons were detected in shallow soils adjacent to dispenser lines associated with the USTs north of the building (Boring CHRL-A9-B3, Figure 3). Deeper samples did not contain detectable hydrocarbons. The detection is consistent with releases from the lines. Significant petroleum detections in soil were not observed in soils adjacent to the active USTs located north of the building.

Perched groundwater accumulated in the UST backfill contained petroleum hydrocarbons exceeding cleanup levels (Borings CHRL-A9-B4 and CHRL-A9-B15, Figure 3). Diesel, heavy oil and gasoline-range petroleum hydrocarbons were detected in the analyzed water samples. The exceedances are consistent with releases from USTs, either from the tanks or dispenser lines, or as a result of overfill.

Diesel-range petroleum hydrocarbons were detected in soils adjacent south of the building (Boring CHRL-A9-B12, Figure 3). The location of the boring is adjacent to the 1999 UST removal and soil remediation and may be associated with residual contaminated soils associated with that location. A deeper sample collected from the boring did not contain petroleum hydrocarbons exceeding cleanup levels.

Building 44/Truck Wash
Heavy oil-range petroleum hydrocarbons were detected in shallow soils adjacent to the sewer line adjacent south of the building and associated with truck wash wastewater (Boring CHRL-A9-B7, Figure 4). The concentrations did not exceed MTCA cleanup levels. Deeper samples did not contain detectable hydrocarbons. The detections are consistent with site use and releases from the wastewater line.

Various Locations
Heavy oil-range petroleum hydrocarbons were detected in shallow soils along the west side of Area 9 (Boring CHRL-A9-B6, Figure 5). The concentrations did not exceed MTCA cleanup levels. Deeper samples did not contain detectable hydrocarbons. The detections are consistent with site use, incidental releases, and runoff from paved areas.

Diesel range petroleum hydrocarbons were detected in shallow soils along the north side of the Cat shed (Boring CHRL-A9-B9, Figure 5). The concentrations did not exceed MTCA cleanup levels. Deeper samples did not contain detectable hydrocarbons. The detections are consistent with site use and incidental releases.

Perched groundwater accumulated in the central maintenance facility catch basin backfill contained petroleum hydrocarbons exceeding cleanup levels (Boring CHRL-A9-B8, Figure 5). Heavy oil-range petroleum hydrocarbons were detected in the analyzed water sample. The exceedance is consistent with site use and releases from the stormwater system.

None of the analyzed samples contained contaminant concentrations exceeding Hazardous Waste screening concentrations for soil disposal characterization and supplemental determination analyses were not performed.

None of the analyzed samples contained VOCs, PAHs, PCBs, or metals in exceedance of MTCA cleanup levels. Metals concentrations were generally within background concentrations typical of the Puget Sound region (Ecology, 1994).

9.2 Further Investigations

Soil petroleum exceedances in the vicinity of Building 7 and petroleum detections at other boring locations were not delineated as part of this scope of work. Further investigations in the vicinity of the boring CHRL-A9-B3 and CHRL-A9-B12 would assist in delineation of these areas, depending upon site access limitations. Further investigation of the former UST location and other areas of interest underlying Building 7 may be accomplished after building vacation or demolition, as well.

Likewise, areas surrounding soil borings containing petroleum concentrations below MTCA cleanup levels may be further delineated for planning purposes.

9.3 Construction-Phase Soil Remediation and Handling

UST Site Assessments

All Site USTs should be decommissioning in accordance with Washington UST regulations (WAC 173-360) and the Ecology *Guidance for Site Checks and Site Assessments for Underground Storage Tanks* (2003). A UST Removal Work Plan will be prepared under separate cover.

If any further evidence of petroleum releases associated with the USTs is documented at the time of removal, these soils should be remediated and otherwise managed in accordance with MTCA regulations and Ecology's "Guidance for the Remediation of Petroleum-Contaminated Soils" (Ecology, 2016).

Soil Remediation

Based on the soil sampling analytical results, soils exceeding the MTCA Method A cleanup level will be encountered during site demolition and grading activities associated with redevelopment of Area 9 as a future waste cell. Soils with petroleum concentrations exceeding MTCA Method A cleanup levels for petroleum were identified in shallow soils adjacent to dispenser lines associated with the USTs north of

Building 7, and adjacent to the 1999 UST removal south of Building 7. There is the potential for other soil exceedances to be present within the Area 9 work area, as well.

OSG recommends remediation by soil excavation and documentation of these soils as part of the Site grading and redevelopment activity. A portion of the known soils containing petroleum concentrations in exceedance of MTCA cleanup levels are likely associated with a former UST installation at the Site, which was previously remediated in 1999. Although the prior UST site assessment and remedial action report (SCS, 2000) did not document significant residual contaminated soils, there is the potential that the detected petroleum concentrations adjacent south of Building 7 are associated with releases from these USTs. Likewise, a limited soil exceedance was identified adjacent to dispenser lines from the north USTs at Building 7 (Figure 3). Other occurrences of petroleum-contaminated soils that exceed cleanup levels may be present on the site but were not identified during this investigation.

Soil excavation should be conducted vertically and laterally until confirmation sample results determine that soils exceeding MTCA cleanup levels have been removed. A representative number of soil samples should be collected from areas where remedial excavation has occurred. Sampling analysis will be consistent with known contaminants and prior characterization sampling. The extent of the remedial action will be documented for reporting to King County and Ecology.

Other Site soils containing detectable concentrations of petroleum hydrocarbons or other contaminants should also be segregated for proper handling and reuse or disposal. Known soils containing petroleum hydrocarbons below the MTCA soil cleanup levels were identified at the Building 46 dispensers (Figure 2), Building 7 southwest corner (Figure 3), Building 44 wastewater discharge line (Figure 4), the west side of the Area 9 area of interest, and on the north side of the Cat shed (Figure 5). Other occurrences of petroleum-contaminated soils may be present on the site but were not identified during this investigation.

According to Landfill acceptance criteria (King County Solid Waste Division, 2017), the landfill may accept contaminated soils not listed as Hazardous Waste. These acceptable wastes include petroleum-contaminated soils as documented during this subsurface investigation. Petroleum-contaminated soils associated with on-site remediations or segregation of soils containing detectable concentrations of petroleum hydrocarbons or other contaminants must go through the KCSWD approval process prior to disposal at CHRLF.

Soil Handling

In general, soil analyses and management during site demolition and grading will be in accordance with Ecology's "Guidance for the Remediation of Petroleum-Contaminated Soils" (Ecology, 2016). Tables 12.1 and 12.2 of the Ecology document outlines the recommended best management practices for reuse and/or disposal of soils contaminated with petroleum hydrocarbons and associated compounds. The tables are included as an attachment to this report for reference (Appendix D).

On-site reuse of soils, if feasible, may be a preferred option. Soils classified as Ecology Category 1, 2, and 3 using Tables 12.1 and 12.2 (Ecology, 2016) may be reused at the project site if they meet site permit limits, structural suitability, or other geotechnical requirements. Additionally, excavated Category 1 and

2 soils may also be reused on-site as non-structural fill, as appropriate (e.g. as potential capping material). Per the Ecology guidance, soils with detectable concentrations of contaminants (petroleum hydrocarbons, PAHs) should not be used in locations where they may be in contact with surface water or groundwater.

Surficial fill soils requiring excavation may be characterized for handling, reuse, and/or disposal. OSG recommends field screening of shallow (generally less than 10 feet bgs, or based on utility depth or prior laboratory data) excavated soils underlying maintenance facility structures and utilities for odors and staining. If field screening indicates potential contamination, soils should be characterized by laboratory analyses for petroleum hydrocarbons in accordance with MTCA Table 830-1 (Ecology, 2013), to confirm that the soils meet on-site disposal requirements, or require further characterization in the event that off-site disposal is necessary.

9.4 Construction-Phase Groundwater Handling and Treatment

Detections of petroleum hydrocarbons in perched groundwater samples are indicative of potential releases from the adjacent USTs or utilities. Because the groundwater is accumulated within backfill, and not associated with regional groundwater occurrence, the exceedances are not considered to be a significant impact. Any construction dewatering plan associated with site demolition, UST removal, utilities decommissioning, and/or site excavation should include processes for managing, treating, and disposing of this and other potentially contaminated water encountered on site. This water is not suitable for discharge to surface water treatment facilities designed to remove turbidity only.

10.0 LIMITATIONS

The scope of services described herein was intended to provide additional information regarding the presence of potential contamination from chemicals of concern within the project alignment. This work was not designed to identify all potential concerns or to eliminate all risk associated with the project. Even the most rigorous of professional assessments may fail to identify all existing conditions. This work will not provide a guarantee regarding site contamination and may not generate sufficient data to accurately define the lateral and vertical extent of contamination. This work does not include other services not specifically described in the scope of services presented above.

Property activities and regulations beyond OSG's control could change at any time after the completion of our environmental investigation. Therefore, OSG observations, findings and opinions can be considered valid only as of the date of the property visit and at the locations where samples were collected and tested.

Our report may be used only by the client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use the generated report shall notify OSG of such intended use. Based on the intended use of the report, OSG may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release OSG from any liability resulting from the use of the report by any unauthorized party.

No warranty, express or implied, is made.

11.0 REFERENCES

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FIGURES



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CEDAR HILLS REGIONAL LANDFILL
MAPLE VALLEY, WASHINGTON

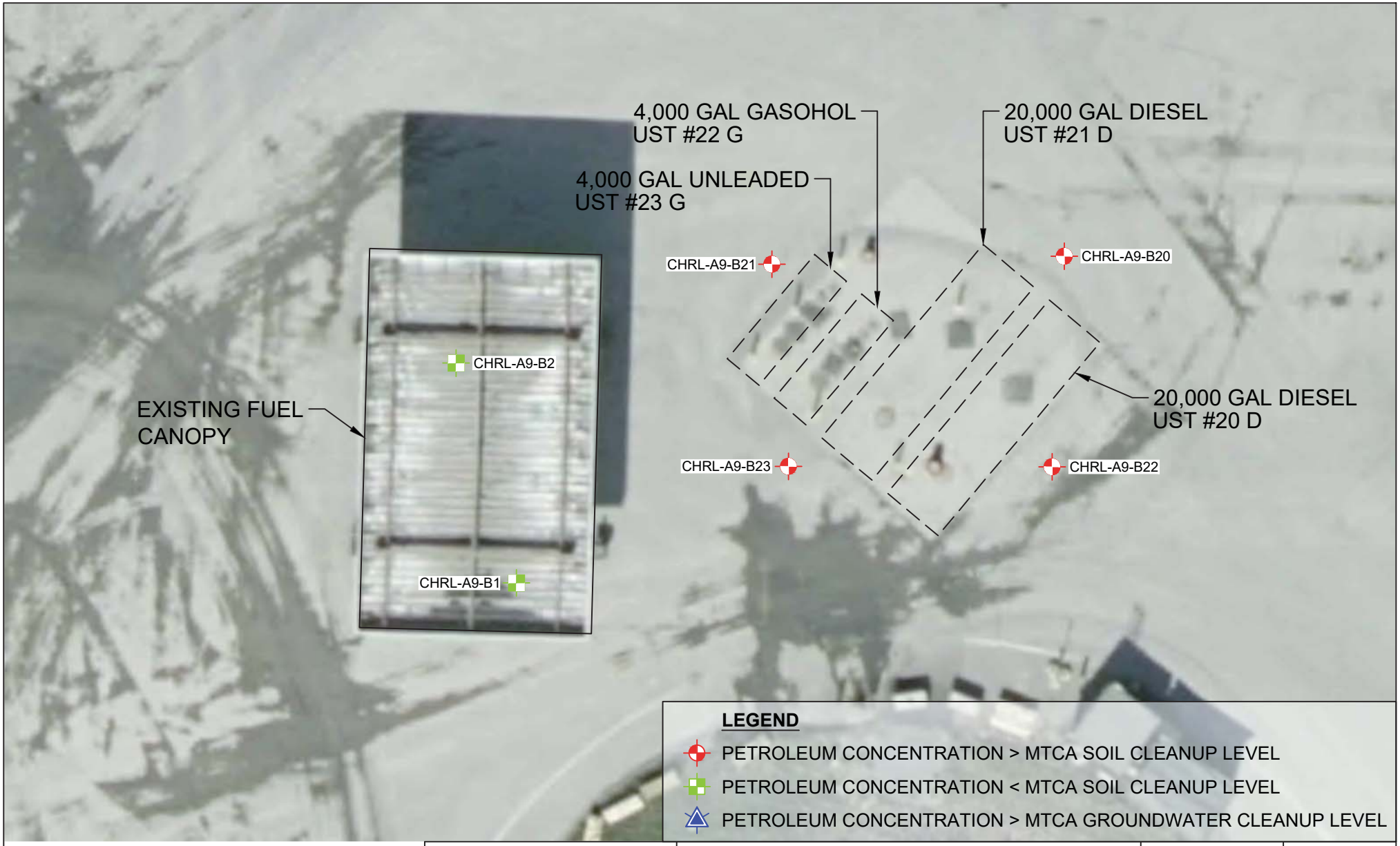
SITE MAP

Drawn By:	J. Stewart
Reviewed By:	V. Atkins
Approved By:	M. Foster
Date:	September 2021
Project No.:	3023

FIGURE 1

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SCALE IN FEET

O'Neill Service Group

CEDAR HILLS REGIONAL LANDFILL
MAPLE VALLEY, WASHINGTON

BORING LOCATIONS
FUELING DISPENSER, BLDG 46
CHRL AREA 9

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Reviewed By:	V. Atkins
Approved By:	M. Foster
Date:	September 2021
Project No.:	3023

FIGURE
2

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SCALE IN FEET

O'Neill Service Group

CEDAR HILLS REGIONAL LANDFILL
MAPLE VALLEY, WASHINGTON

BORING LOCATIONS
MAINTENANCE FACILITY, BLDG 7
CHRL AREA 9

Drawn By:	J. Stewart
Reviewed By:	V. Atkins
Approved By:	M. Foster
Date:	September 2021
Project No.:	3023

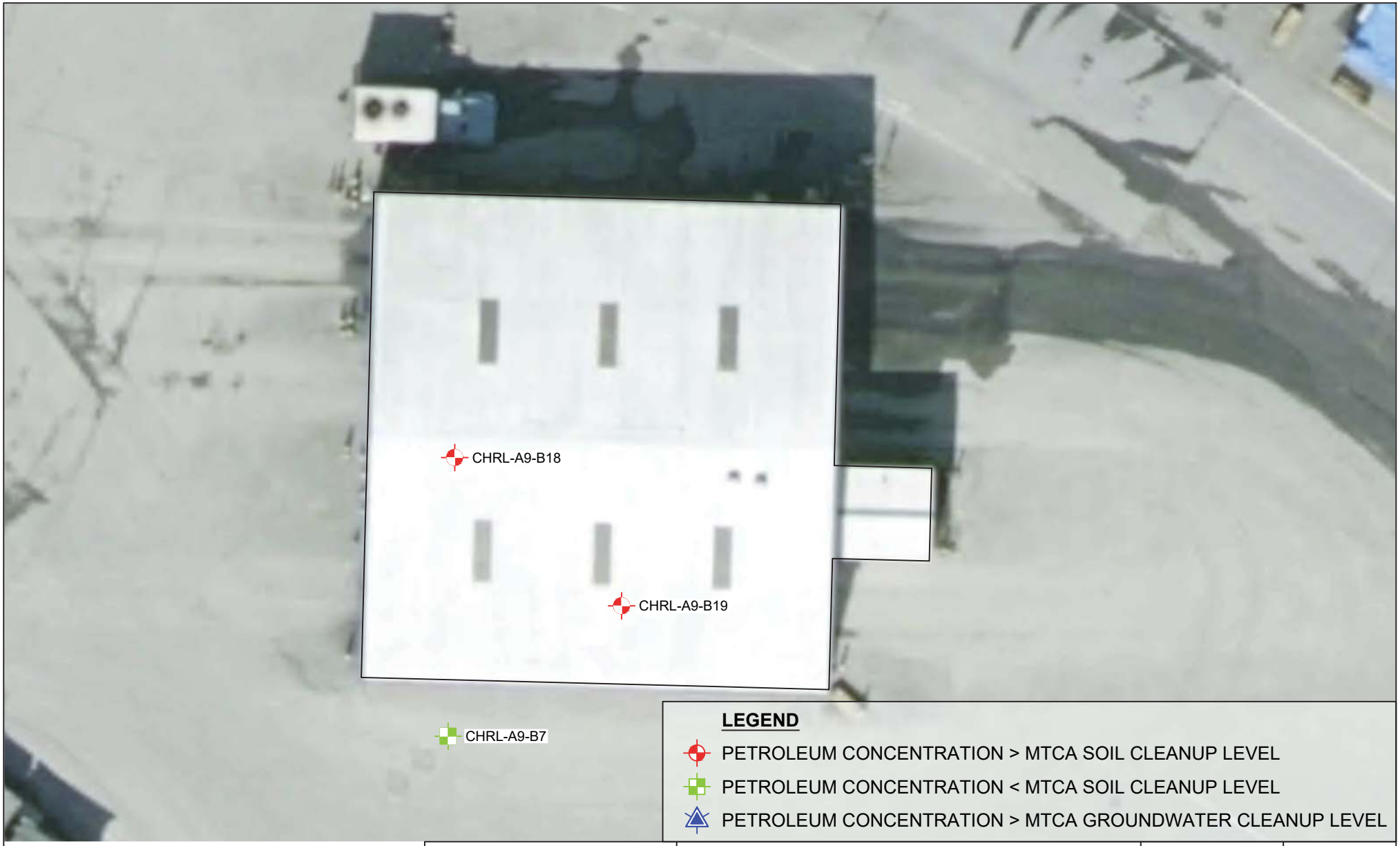
FIGURE

3

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SCALE IN FEET

O'Neill Service Group

CEDAR HILLS REGIONAL LANDFILL
MAPLE VALLEY, WASHINGTON

BORING LOCATIONS
TRUCK WASH, BLDG 44
CHRL AREA 9

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Reviewed By:	V. Atkins
Approved By:	M. Foster
Date:	September 2021
Project No.:	3023

FIGURE

4

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O'Neill Service Group

CEDAR HILLS REGIONAL LANDFILL
MAPLE VALLEY, WASHINGTON

BORING LOCATIONS
MISCELLANEOUS FACILITIES
CHRL AREA 9

Drawn By:	J. Stewart
Reviewed By:	V. Atkins
Approved By:	M. Foster
Date:	September 2021
Project No.:	3023

FIGURE 5

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TABLES

Table 1
Soil Analytical Results (mg/kg)
Cedar Hills Regional Landfill
Area 9 Contaminated Soil Characterization Report
Maple Valley, Washington

Area	Area of Interest	Lab Report ID	Date	Sample ID	Sample Depth (ft bgs)	NWTPH-Dx		NWTPH-Gx	VOCs (mg/kg)								PAHs		PCBs	Metals				
						Diesel	Heavy Oil	Gasoline	Benzene	Ethylbenzene	n-Butylbenzene	4-Isopropyl-toluene	n-Propylbenzene	sec-Butylbenzene	Toluene	Total Xylenes	Fluorene	Phenan-threne		As	Ba	Cr	Pb	Se
46	Gasoline & Diesel Dispensers, south	2108342	8/24/2021	CHRL-A9-B1-2	2	<52.7	**762**	<4.92	<0.0197	<0.0246					<0.0295	<0.0492								
		2108362	8/25/2021	CHRL-A9-B1-10	10	<58.9	<118	<7.07	<0.0283	<0.0353					<0.0424	<0.0707								
	Diesel Dispensers, north	2108342	8/24/2021	CHRL-A9-B2-2	2	<48.4	**823**																	
		2108362	8/25/2021	CHRL-A9-B2-8	8	<53.7	<107																	
	20k Diesel USTs, NE ends	2108393	8/26/2021	CHRL-A9-B20-5	5	<54.8	<110																	
		2108393	8/26/2021	CHRL-A9-B20-15	15	<49.5	<99.1																	
	4k Gasoline USTs, NW side	2108393	8/26/2021	CHRL-A9-B21-5	5			<7.66	<0.0306	<0.0383					<0.0460	<0.0766								
		2108393	8/26/2021	CHRL-A9-B21-15	15			<7.70	<0.0308	<0.0385					<0.0462	<0.0770								
	20k Diesel UST, SE side	2108393	8/26/2021	CHRL-A9-B22-5	5	<50.9	<102																	
		2108393	8/26/2021	CHRL-A9-B22-12	12	<52.3	<105																	
		2108393	8/26/2021	CHRL-A9-B23-5	5	<51.5	<102	<5.4	<0.0216	<0.0270					<0.0324	<0.0540								
	20k Diesel & 4k gasoline USTs, SW ends	2108393	8/26/2021	CHRL-A9-B23-12	12	<46.5	<92.9	<5.52	<0.0221	<0.0276					<0.0331	<0.0552								
7	10k Waste Oil UST, S side, dispenser lines	2108342	8/24/2021	CHRL-A9-B3-1.5	1.5	<52.1	**2,600**	**60.9***	<0.0197	<0.0246	<0.0394	**0.0703**	**0.0528**	<0.0296	<0.0296	<0.0493	**0.0239**	**0.0759**	<0.0578	**3.62**	**91.6**	**34.5**	**3.42**	**1.21**
		2108393	8/26/2021	CHRL-A9-B3-5	5	<49.9	<99.7	<6.59	<0.0264	<0.0330	<0.0527	<0.0395	<0.0395	<0.0395	<0.0395	<0.0659	<0.0229	<0.0458	<0.0530	**3.2**	**73.8**	**30.4**	**3.14**	**1.66**
		2108393	8/26/2021	CHRL-A9-B3-9	9	<49.6	<99.2	<4.34	<0.0174	<0.0217	<0.0347	<0.0260	<0.0260	<0.0260	<0.0260	<0.0434	<0.195	<0.0390	<0.0508	**4.01**	**65.8**	**30.2**	**2.31**	**1.15**
	2.5k motor oil and hydraulic oil USTs, W end	2108393	8/26/2021	CHRL-A9-B4-5	5	**81.1**	<91.6																	
		2108393	8/26/2021	CHRL-A9-B4-15	15	<47.3	<94.6																	
	600-gallon diesel UST, E end	2108393	8/26/2021	CHRL-A9-B5-5	5	<54.1	<108																	
		2108393	8/26/2021	CHRL-A9-B5-10	10	<51.3	<103																	
	Southwest building corner, sanitary sewer manhole	2108362	8/26/2021	CHRL-A9-B11-10	10	<52.1	<104	<5.53	<0.0221	<0.0276					<0.0332	<0.0553								
		2108362	8/26/2021	CHRL-A9-B11-15	15	**99.2**	**144**	<5.11	<0.0204	<0.0256					<0.0307	<0.0511								
	Weld shop trench drain, Approximate 1999 UST remediation, south end	2108362	8/25/2021	CHRL-A9-B12-11	11	**1,050**	**137**	<5.16	<0.0207	<0.0258	<0.0413	<0.0310	<0.0310	**0.0478**	<0.0310	<0.0516				**3.12**	**62.3**	**26.6**	**2.13**	**0.972**
		2108362	8/25/2021	CHRL-A9-DUP	11	**2,680**	**433**	<53.7	<0.0215	<0.0269	<0.0430	<0.0322	<0.0322	**1.21**	<0.0322	<0.0537				**3.27**	**62.5**	**25.4**	**2.19**	**1.28**
		2108362	8/25/2021	CHRL-A9-B12-12	12	**77.7**	<102	<4.88	<0.0195	<0.0244	<0.0390	<0.0293	<0.0293	<0.0293	<0.0293	<0.0488				**4.20**	**61.3**	**25.5**	**2.26**	**1.04**
	Weld shop trench drain, Approximate 1999 UST remediation, south end	2108362	8/25/2021	CHRL-A9-B13-7	7	<49.8	<99.6	<4.73	<0.0189	<0.0237	<0.0379	<0.0284	<0.0284	<0.0284	<0.0284	<0.0473				**2.98**	**91.1**	**27.7**	**2.45**	**1.46**
		2108362	8/25/2021	CHRL-A9-B13-9	9	<46.8	<93.5	**42.8**	<0.0232	**0.0304**	**0.269**	<0.0348	**0.117**	<0.0348	<0.0348	<0.0581				**5.41**	**84.2**	**29.0**	**2.53**	**1.31**
	Truck shop trench drain	2108393	8/26/2021	CHRL-A9-B14-5	5	<58.3	<117	<6.47	<0.0259	<0.0324	<0.0518	<0.0388	<0.0388	<0.0388	<0.0388	<0.0647				**3.91**	**70.1**	**21.7**	**2.5**	**1.21**
		2108393	8/26/2021	CHRL-A9-B14-10	10	<56.8	<114	<6.33	<0.0253	<0.0316	<0.0506	<0.0380	<0.0380	<0.0380	<0.0380	<0.0633				**5.46**	**73.5**	**28.1**	**2.44**	**1.33**
	4k heating oil UST, W end	2108393	8/26/2021	CHRL-A9-B15-12	12	<53.7	<107																	
		2108393	8/26/2021	CHRL-A9-B15-15	15	<53.3	<107																	
	2.5k motor oil UST, E end	2108393	8/26/2021	CHRL-A9-B16-5	5	<53.3	<107																	
		2108393	8/26/2021	CHRL-A9-B16-10	10	<46.6	<93.1																	
		2108393	8/26/2021	CHRL-A9-B17-5	5	<50.9	<102	<6.80	<0.0272	<0.0340	<0.0544		<0.0408	<0.0408	<0.0408	<0.0680				**4.22**	**84.3**	**32.5**	**3.2**	**1.72**
	Tire shop catchbasin	2108393	8/26/2021	CHRL-A9-B17-10	10	<50.0	<100	<6.22	<0.0249	<0.0311	<0.0497		<0.0373	<0.0373	<0.0373	<0.0622				**4.08**	**67.3**	**31.0**	**2.51**	**1.33**
44	Truck Wash wastewater line	2108362	8/25/2021	CHRL-A9-B7-4	4	<53.0	**311**	<7.97																
		2108362	8/25/2021	CHRL-A9-B7-9	9	<52.0	<104	<5.34																
	Truck Wash pressure wash bay	2108393	8/26/2021	CHRL-A9-B18-5	5	<48.9	<97.7	<5.35	<0.0214	<0.0267					<0.0321	<0.0535				**5.07**	**55.5**	**29.0**	**3.29**	**1.25**
		2108393	8/26/2021	CHRL-A9-B18-10	10	<49.6	<99.2	<5.67	<0.0227	<0.0283					<0.0340	<0.0567				**3.33**	**53.2**	**25.5**	**2.09**	**1.24**
		2108393	8/26/2021	CHRL-A9-B19-5	2	<51.3	<103	<7.35	<0.0294	<0.0368					<0.0441	<0.0735				**5.80**	**69.7**	**39.0**	**5.50**	**1.66**
	Truck Wash oil-water separator	2108393	8/26/2021	CHRL-A9-B19-10	10	<50.4	<101	<5.95	<0.0238	<0.0298					<0.0357	<0.0595				**3.25**	**55.4**	**29.7**	**2.33**	**1.15**
Various	West side maintenance facility	2108362	8/25/2021	CHRL-A9-B6-4	4	<48.3	**129**	<5.80	<0.0232	<0.0290	<0.0464		<0.0348	<0.0348	<0.0348	<0.0580				**2.84**	**30.8**	**23.4**	**2.62**	**0.522**
		2108362	8/25/2021	CHRL-A9-B6-10	10	<53.5	<107	<5.33	<0.0213	<0.0266	<0.0426		<0.0320	<0.0320	<0.0320	<0.0533				**3.70**	**88.7**	**30.0**	**3.13**	**1.05**
	Central maintenance facility catchbasin	2108362	8/25/2021	CHRL-A9-B8-5	5	<47.6	<95.1	<7.14	<0.0286	<0.0357	<0.0571		<0.0428	<0.0428	<0.0428	<0.0714				**5.92**	**58.0**	**18.6**	**2.58**	**1.17**
		2108362	8/25/2021	CHRL-A9-B8-10	10	<55.4	<111	<5.90	<0.0236	<0.0295	<0.0472		<0.0354	<0.0354	<0.0354	<0.0590				**3.12**	**65.9**	**33.0**	**8.19**	**0.814**
	North central, Cat shed	2108362	8/25/2021	CHRL-A9-B9-4	4	**1,020**	<98.9	<5.44	<0.0218	<0.0272					<0.0327	<0.0544				**3.94**	**85.3**	**32.4**	**4.64**	**1.08**
		2108362	8/25/2021	CHRL-A9-B9-8	8	<64.2	<128	<7.67	<0.0307	<0.0384					<0.0460	<0.0767				**5.16**	**140**	**35.6**	**4.87**	**3.30**
	North End, building 13	2108362	8/25/2021	CHRL-A9-B10-5	5	<56.1	<112	<5.97	<0.0239	<0.0299					<0.0358	<0.0597				**5.36**	**93.6**	**31.3**	**3.43**	**0.882**
		2108362	8/25/2021	CHRL-A9-B10-10	10	<51.0	<102	<5.52	<0.0221	<0.0276					<0.0331	<0.0552				**4.38**	**67.6**	**26.9**	**2.59**	**0.762**
	MTCA Method A or B Soil Cleanup Level for Unrestricted Land Use (Ecology, 2013, 2021)					2000	2000	100/30[1]	0.03	6	4000 (B)	NE	8000 (B)	8000 (B)	7	9	3200	NE	1 (total)	20	16000 (B)	16/2000[2]	250	400 (B)

Notes:
ft bgs - Feet Below Ground Surface
mg/kg - milligrams per kilogram
< - Not detected at listed laboratory reporting limit
Bold - Analyte detected
Bold/Highlighted - Analyte exceeds MTCA Method A or B Cleanup Level
NA - Not analyzed
NE - Cleanup level Not Established
* - Reported as mineral spirits/Stoddard solvent
Detected analytes reported. See laboratory report for complete list of analytes.
1 - Gasoline mixtures without benzene and the total of ethyl benzene, toluene and xylene are less than 1% of the gasoline mixture/All other mixtures
2 - Chromium VI/Chromium III - Site usage and geochemical conditions are unlikely to create Cr+6.
Total chromium is assumed to be Cr+3.

Table 2
Groundwater Analytical Results (ug/l)
Cedar Hills Regional Landfill
Area 9 Contaminated Soil Characterization Report
Maple Valley, Washington

Area	Area of Interest	Lab Report ID	Date	Sample ID	Depth to Groundwater (ft bgs)	Field Parameters				NWTPH-Dx		NWTPH-Gx	VOCs (mg/kg)												
						Temp (°C)	pH	Dissolved Oxygen (mg/l)	Conductivity (µS/cm)	Diesel	Heavy Oil	Gasoline	Acetone	Benzene	Bromomethane	2-Butanone (MEK)	n-Butyl-benzene	2-Chloro-toluene	4-Chloro-toluene	Ethyl-benzene	4-Isopropyl-toluene	Methyl Isobutyl Ketone (MIBK)	Napthalene	n-Propyl-benzene	sec-Butyl-benzene	1,2,4-Trimethyl-benzene
7	2.5k motor oil and hydraulic oil USTs, W end	2108393	8/26/2021	CHRL-A9-B4-W	5.45	21.7	6.4	0.35	474	**1,430**	**611**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4k heating oil UST, W end	2108393	8/26/2021	CHRL-A9-B15-W	5.55	20.5	6.34	0.38	458	**2,050**	**1,100**	**12,300**	<6.00	<0.440	<1.20	<1.50	**20.9**	**7.33**	**3.99**	<0.400	**4.13**	<1.25	**4.47**	**1.62**	**2.00**	**34.30**
Various	Central maintenance facility catchbasin	2108362	8/25/2021	CHRL-A9-B8-W	10.1	20.5	6.0	0.80	377	<99.6	**4,210**	<50.0	**10.6**	<0.440	**1.83**	**1.59**	<0.500	<0.500	<0.500	<0.500	<0.500	**10**	<1.25	<0.500	<0.500	<0.250
				MTCA Method A or BGroundwater Cleanup Level (Ecology, 2013, 2021)						500	500	1000/800[1]	7200	5	11.2 (B)	4800 (B)	4000 (B)	NE	NE	700	NE	6400 (B)	160	8000 (B)	8000 (B)	NE

Notes:
ft bgs - Feet Below Ground Surface
ug/l - micrograms per liter
< - Not detected at listed laboratory reporting limit
Bold - Analyte detected
Bold/Highlighted - Analyte exceeds MTCA Method A or B Groundwater Cleanup Level
NA - Not analyzed
NE - Cleanup level Not Established
Detected analytes reported. See laboratory report for complete list of analytes.
1 - Gasoline mixtures without benzene and the total of ethyl benzene, toluene and xylene are less than 1% of the gasoline mixture/All other mixtures

Table 2
Groundwater Analytical Results (ug/l)
Cedar Hills Regional Landfill
Area 9 Contaminated Soil Characterization Report
Maple Valley, Washington

Area	Area of Interest	Lab Report ID	Date	Sample ID				PAHs					PCBs	Metals (Dissolved)					
					1,3,5-Trimethyl-benzene	Toluene	Total Xylenes	Naphthalene	2-Methyl-naphthalene	1-Methyl-naphthalene	Acenaphthene	Fluorene		As	Ba	Cd	Cr	Pb
7	2.5k motor oil and hydraulic oil USTs, W end	2108393	8/26/2021	CHRL-A9-B4-W	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4k heating oil UST, W end	2108393	8/26/2021	CHRL-A9-B15-W	**38.6**	<0.750	**15.1**	**4.31**	**4.48**	**4.38**	**0.299**	**0.283**	<0.0693	**3.33**	**8.39**	<0.125	**0.774**	<0.500
Various	Central maintenance facility catchbasin	2108362	8/25/2021	CHRL-A9-B8-W	<0.250	**0.850**	<1.00	NA	NA	NA	NA	NA	NA	**4.6**	**9.4**	**0.698**	**0.942**	**1.68**
				MTCA Me	800 (B)	1000	1000	160	160 (as napthalene)		4800 (B)	3200(B)	0.1	5	16000 (B)	5	50	15

Notes:
ft bgs - Feet Below Ground Surface
ug/l - micrograms per liter
< - Not detected at listed laboratory reporting limit
Bold - Analyte detected
Bold/Highlighted - Analyte exceeds MTCA Method A or B Groundwater Cleanup Level
NA - Not analyzed
NE - Cleanup level Not Established
Detected analytes reported. See laboratory report for complete list of analytes.
1 - Gasoline mixtures without benzene and the total of ethyl benzene, toluene and xylene are less than 1% of the gasoline mixture/All other mixtures

Appendix A:
Sampling and Analysis Plan

OSG O'Neill Service Group

Cedar Hills Regional Landfill

Area 9 Design

ENVIRONMENTAL INVESTIGATION

Sampling and Analysis Plan

August 18, 2021

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CHRLF AREA 9 ENVIRONMENTAL INVESTIGATION
Sampling and Analysis Plan

Revision History

Revision Number	Revision Date	Description of Changes
00	7/29/21	Initial Submittal
01	8/18/21	Revision based on King County comments

Name of Plan

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1.0 OBJECTIVES AND SCOPE OF WORK

The purpose of this investigation is to assess the potential presence and extent of soil impacts within the project boundaries, with particular emphasis on characterizing potential soil and groundwater contamination at locations where storage or use of petroleum products or other potential contaminants has occurred.

The scope of work for this environmental assessment is summarized below:

1. Review available data
2. Prepare this Sampling & Analysis Plan (SAP)
3. Develop the Health and Safety Plan (HASP)
4. Advance and sample soil borings at selected areas within the project boundary
5. Collect soil and groundwater samples during soil boring activities
6. Submit samples for laboratory analysis
7. Compare soil and groundwater analytical results to appropriate regulatory limits
8. Prepare a summary report describing the activities and findings from this assessment

2.0 BACKGROUND

2.1 Project Description

King County Solid Waste Division evaluated waste disposal options in the 2019 Solid Waste Comprehensive Plan and recommended further development of the Cedar Hills Regional Landfill (CHRLF). With permitted capacity at the landfill predicted to be used by 2028, the disposal option for beyond 2026 needs to be initiated to provide sufficient lead time to complete financial, operational, and infrastructure preparations, including completion of environmental review under the State Environmental Policy Act (SEPA) to ensure that there is no gap in the County's ability to dispose of waste and meet contractual obligations.

The recommendations are consistent with County policy to maximize the life of the CHRLF within the existing footprint of the landfill. Developing the landfill to the maximum extent feasible has the lowest rate impact of waste disposal options evaluated for the 2019 Solid Waste Comprehensive Plan.

The development of Area 9 within the southeast corner of the landfill footprint is currently under design, with construction planned in two stages , beginning in the construction season of 2023 with the second stage completed by December 2026. The schedule may be adjusted during the planning phase in response to alternative approaches to meeting project milestones.

Area 9 will be located adjacent east of Area 8 and will cover the existing CHRLF support facilities and the Area 8 stockpile area (Figure 1).

2.2 Investigation Approach, Building 46/Fuel Island

Building 46/Fuel Control, Fuel Island and Fuel Control, serves as the on-site fueling station for transfer trucks and heavy equipment refueling trucks. The building was constructed in approximately 1999 and also includes a small concrete room (Fuel Control). Four underground storage tanks are installed at the location. These are comprised of two 20,000-gallon diesel fuel tanks, a 4,000-gallon gasohol tank, and a 4,000-gallon gasoline tank. The fuel is dispensed from six dispensers at two pump islands under a canopy to the west of the tanks. All four USTs were installed in 1999 and are in use.

The investigation areas will include the following:

- Soil borings surrounding the four UST locations to assess the potential for releases from the tanks.
- Soil borings at selected locations adjacent to the pump islands and fuel distribution lines.

Borings will be completed where feasible based on site access and utilities (Figure 2). Soil borings adjacent to the USTs will be completed to 15 feet, groundwater occurrence, or refusal. Soil borings adjacent to the pump islands and fuel distribution lines will be completed to a minimum depth of five feet, although the boring depth may be extended if field evidence of contamination is observed. The proposed soil and groundwater analyses are summarized on Table 1. If it is determined that supplemental sampling and characterization is necessary, OSG will conduct additional sampling in the area(s) of interest as approved by King County.

2.3 Investigation Approach, Building 7

Building 7 consists of a steel-framed building subdivided into six storage and work bays for on-site maintenance of vehicles and heavy equipment. The building subsections, from east to west, include: storage (7A), shipping/receiving (7B), trailer bays (7C), a tire shop (7D), and a weld shop (7E and 7F). The original structure was constructed in the 1990s, with additional elements added on at later times.

There are a total of five USTs located on the northwest side of the building (Figure 3). These are comprised of a 10,000-gallon waste oil UST, a 4,000-gallon heating oil UST, a 2,500-gallon motor oil UST, and a 2,500-gallon hydraulic oil UST located on the northwest side of Building 7B. A 600-gallon diesel fuel UST for emergency generator supply is located on the northwest side of Building 7D. All five USTs were installed in 1999 and are in use. Additionally, the building is used for vehicle repair and maintenance. A fueling station including two diesel USTs (12,000 and 20,000 gallons) and one 4,000 gallon gasoline UST were removed in 2000 prior to the addition of bays 7D and 7E (SCS Engineers, 2000). Petroleum contaminated soil were removed to a maximum depth of 15 feet below grade between June and December, 1999. Soil samples collected at the time of the UST removal and associated soil remedial action did not exceed current Washington State Department of Ecology MTCA Method A soil cleanup levels. These areas currently underlie 7D and 7E (Figure 3).

The investigation areas will include conducting soil borings in the following locations:

- Surrounding the five UST locations to assess the potential for releases from the tanks.
- Adjacent to selected trench drains in the weld shop to assess the potential for releases from vehicle maintenance or hazardous materials use on site.
- Adjacent to a catch basin northwest of the tire shop that could receive contaminated water associated with tire or brake maintenance.
- Adjacent to the 2000 UST closure area underlying Building 7D/E (southeast corner)

Borings will be completed where feasible based on site access and utilities (Figure 3). Soil borings adjacent to the current and former UST locations will be completed to 15 feet, groundwater occurrence, or refusal. Soil borings adjacent to trench drains and catch basins will be completed to depths of at least five feet below grade, or adjacent to the bottom depth of the catch basins and associated piping. The proposed soil and groundwater analyses are summarized on Table 1. If it is determined that supplemental sampling and characterization is necessary, OSG will conduct additional sampling in the area(s) of interest as approved by King County.

2.4 Investigation Approach, Building 44/Truck Wash

The building serves as the on-site truck-washing station and includes two pressure washing bays, an automated rinse bay, restrooms, and a remote washdown water recirculation sump approximately 250 feet southeast of the station. The building was constructed in the late 1990s or early 2000s.The investigation areas will include the following:

- Soil borings adjacent to an interior vault/oil-water separator, sewer line southeast of the building, and pressure wash receiving vault to assess the potential for releases from the wash system.

Borings will be completed where feasible based on site access and utilities (Figure 4). Soil borings adjacent to trench drains and catch basins will be completed to depths of at least 10 feet below grade, or adjacent to the bottom depth of the drains and associated piping. The proposed soil and groundwater analyses are summarized on Table 1. If it is determined that supplemental sampling and characterization is necessary, OSG will conduct additional sampling in the area(s) of interest as approved by King County.

2.5 Investigation Approach, Miscellaneous Facilities

Borings will also be completed at selected locations throughout the facility to screen general soil conditions and assess potential historical impacts. Borings will be completed where feasible based on site access and utilities (Figure 5). Soil borings will be completed at the north end of the facility (Building 13), adjacent to the Cat shed (Building 45) drains, a catch basin in the center of the site, and in an area of trailer parking with some observed staining along the western edge of the facility. This location also appeared to have potential runoff from paved areas. Soil borings will be completed to 15 feet, groundwater occurrence, or refusal. The proposed soil and groundwater analyses are summarized on Table 1. If it is determined that supplemental sampling and characterization is necessary, OSG will conduct additional sampling in the area(s) of interest as approved by King County.

3.0 SAMPLING AND ANALYSIS PLAN

3.1 Subsurface Investigation

OSG will coordinate field activities with the project team and King County during subsurface investigations for the project. Approximately 24 borings are proposed for this subsurface investigation, as described above. OSG will conduct subsurface investigations with a direct push drilling rig and collect soil and groundwater samples for field screening and analysis. Based on the field screening and proposed excavations, OSG will select representative samples of soils to assess the potential for releases from on-site petroleum and hazardous materials storage and use, and for waste characterization purposes, if necessary.

Sampling methodologies and field screening are described in the following sections.

3.2 Field Documentation And Chain-Of-Custody

The following sections describe the recording system for documenting all site field activities, and the sample chain-of-custody program.

Field Logbook

An accurate chronological recording of all field activities is vital to the documentation of any environmental investigation. To accomplish this, field team members will maintain field logbooks providing a daily record of significant events, observations, deviations from the sampling plan and measurements collected during the field activities.

Sample Identification

Following sample collection, field personnel will affix labels to each sample container. Samplers will use waterproof ink, plastic bags, or clear tape to ensure labels remain legible even when wet. Samplers will record the following information on the labels:

- Project name and number
- Sample identification number
- Date and time of collection
- Required analytical methods
- Name of sample collector

Chain-Of-Custody Record

The objective of the chain-of-custody program is to allow the tracking of possession and handling of individual samples from the time of field collection through laboratory analysis. Once a sample is collected, it becomes part of the chain-of-custody process. A sample is "in custody" when (1) it is in someone's possession, (2) it is within visual proximity of that person, (3) it is in that person's possession, but locked up and sealed (e.g., during transport), or (4) it is in a designated secure sample storage area. Sampling staff will complete a chain-of-custody record which will accompany each batch of samples.

The Chain-Of-Custody Record will contain the following information:

- Project name and number
- Names of sampling team members
- Requested analyses
- Required turnaround time
- Sample number
- Date and time collected
- Sample type
- Number of containers
- Special Instructions
- Signatures of persons involved in the chain of possession

When sample custody is transferred to another individual, the samples must be relinquished by the present custodian and received by the new custodian. This will be recorded at the bottom of the chain-of-custody report where the persons involved will sign, date and note the time of transfer.

Sampling team members will keep sample coolers in locked vehicles while not in active use or visual range. If couriers are used to transport samples, chain of custody seals will be affixed to sample coolers.

3.3 Soil Borings

All borings will be drilled and installed according to Ecology Minimum Standards for Construction and Maintenance of Wells (Chapter 173-160 WAC). Permanent monitoring wells are not planned as part of this scope of work.

Underground Utilities/Site Access

OSG will attempt to locate underground utilities by calling the Utilities Underground Location Center before drilling. On the King County property, OSG will also subcontract a private locating service to attempt to locate and mark underground utilities at proposed boring locations. PVC and concrete utilities cannot be located. This scope assumes OSG will have access to the site. Physical utility clearance using hand methods, or a vacuum truck may be utilized in areas where borings are adjacent to known utilities or the potential for unknown or unlocated utilities exists. Impermeable surfaces at drilling locations (asphalt or concrete) will be cored of a sufficient diameter to allow vacuum truck clearance.

The explorations will require access for a truck-mounted soil probe to selected locations of the sites for five days (several hours at each location).

Soil Boring and Sample Designation

Soil borings have been assigned temporary designations for preliminary planning purposes (Figures 2 through 4, Table 1). Soil borings will be assigned final designations in the field. This will allow flexibility in boring designation to prevent out-of-sequence designations, and in the event that borings are added or removed from the work plan during the course of the investigation. Soil borings will be numbered sequentially throughout the entire investigation.

Soil borings completed in conjunction with geotechnical subsurface investigations, if necessary, will use the same identifier as selected by the geotechnical engineer.

Samples will be numbered in numerical order using the following designations:

Investigation Area	Sample Designation
Cedar Hills Regional Landfill borings	CHRLFA9-BX

where 'X' is the boring ID number. The boring ID number shall be recorded on in field notebooks and on all field logs.

Soil samples will be designated with the boring number followed by the sample depth. For example, CHRLF-B2-10 would indicate the soil sample collected at 10 feet below ground surface (bgs) at soil boring CHRLF-B2. The depth designation is for the top of the sample, and the sample interval shall be denoted in the field logs.

Groundwater samples, if collected, would follow a similar designation, with the boring number followed by 'GW' (e.g., CHRLF-B2-GW).

Soil Borings and Sampling

OSG will employ a subcontracted mobile direct-push sampling device (e.g., Geoprobe) to collect soil and ground water samples.

Under subcontract to OSG, a Washington-licensed well drilling contractor will drill soil borings at the selected locations. The device consists of a hydraulic drive assembly mounted on either a pickup truck or tractor. Steel pipe (1.25-2-inch diameter) is driven into the ground using a hydraulic impact driver, then withdrawn. Soil cores within a glycol modified polyethylene terephthalate (PETG) inner sleeve can then be retrieved from the sampler and removed for logging and sampling.

Soil cuttings and all investigation-derived waste will be disposed of off-site. Proposed boring depth will be 15 feet, groundwater occurrence, or refusal. Boring depths may be adjusted based on the depths of features of interest (e.g. UST diameter, depth of catch basins), or field screening evidence of contamination. We will collect continuous soil core samples. We will submit soil samples to a laboratory for analysis. If borings do not reach proposed depths, the project team will be notified. The boring location may be adjusted and re-attempted, or alternate equipment proposed.

All field work will be supervised by an OSG geologist or environmental scientist. OSG field staff will collect continuous soil samples. At each sampling interval, OSG will log the soil samples and obtain and record pertinent information including soil sample depths, stratigraphy, ground water occurrence, and any visual or olfactory observations regarding the presence of contamination. OSG will log the sample for lithology and field screen the samples for organic vapors by headspace analysis using a photoionization detector (PID). For each boring, samples with the highest level of organic vapors and/or most discernible visual/olfactory contamination will be shipped to the laboratory for chemical analysis. In the absence of field screening indications, the sample immediately above ground water will be submitted for analysis.

OSG will deliver samples to the laboratory within 24 hours of sampling and will employ full chain-of-custody procedures to allow tracking and handling of the samples.

Groundwater Sampling

If encountered, groundwater samples will be collected from selected temporary borings. Groundwater will be sampled using a peristaltic pump, collected from a temporary plastic PVC pipe or a stainless-steel screen placed in each temporary boring. Water levels will be allowed to stabilize for at least 15 minutes to confirm the presence of saturated conditions. Groundwater samples will be collected in general accordance with the EPA methodology for Low-Flow Purging and Sampling (EPA, 2017).

Depth to groundwater in each well or boring will be measured with a decontaminated electric water interface probe. The probe will be cleaned with Alconox™ or similar detergent and rinsed with de-ionized water between sampling activities.

Groundwater collected from borings will be sampled using a peristaltic pump with new polyethylene tubing (for groundwater depths of less than 20 feet below ground surface) or other appropriate pump methods. Sampling will be conducted in general accordance with United States Environmental Protection Agency (USEPA, 2017) low-flow groundwater sampling guidelines. Wells will be purged at a rate of 500 milliliter per minute or less and allowed to stabilize for the last three readings prior to sampling. Field parameters included pH, temperature, conductivity, and dissolved oxygen, summarized below:

Parameter	Stabilization criteria
Turbidity	10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if three Dissolved Oxygen values are less than 0.5 mg/L, consider the values as stabilized
Specific Conductance	3%
Temperature	3%
pH	+/- 0.1 unit

Borehole Abandonment

After all soil borings reach their maximum depth and are sampled, the holes will be grouted to the ground surface using hydrated granular or powdered bentonite. The drillers will also use concrete or asphalt to patch any boreholes installed through paved surfaces. No permanent monitoring wells are planned as part of this investigation.

Borehole Surveying

After completion of soil borings, boring locations will be surveyed by the project team to document the locations for design documents and re-location after structure and other landmark alteration or demolition.

Decontamination Procedures

To prevent potential cross-contamination of samples, OSG will maintain appropriate decontamination procedures. Disposable nitrile gloves will be used during sample collection to minimize any opportunity for cross sample contamination.

If re-useable sampling equipment is used for sample collection, it will be thoroughly decontaminated between samples. Between sampling intervals in each boring, all sampling devices will be washed in a detergent solution, rinsed with tap water and then rinsed again with deionized water. Drillers will steam clean all probe rods and other downhole tooling between boring locations.

3.4 Field Screening

OSG will screen soil samples by photoionization detector (PID) headspace analysis. The PID will be calibrated daily using 100 ppm isobutylene standard calibration gas. Although the PID is not capable of quantifying or identifying specific organic compounds, this instrument is capable of measuring relative concentrations of a variety of organic vapors. The geologist/ environmental scientist collecting samples will place approximately two ounces of soil in a resealable (i.e. zip-lock) plastic bag with ample air headspace.

After a minimum of five minutes at ambient temperature, the sampler will agitate the sample for ten seconds, insert the PID probe through a small opening in the plastic bag, and record the highest reading within ten seconds.

3.5 Soil and Groundwater Analysis

Proposed soil and groundwater analyses are summarized on Table 1. OSG will submit the soil and ground water samples to Fremont Analytical, a Washington Department of Ecology-accredited analytical laboratory, for analyses for one or more of the following analytes (based on provided petroleum storage documentation and MTCA Table 830-1 (Ecology, 2007)) by using the following test methods:

- Diesel and heavy oil-range petroleum hydrocarbons by Washington Method NWTPH-Dx
- Gasoline-range petroleum hydrocarbons and aromatic hydrocarbons (BETX) by Washington Method NWTPH-Gx/EPA Method 8260
- Volatile organic compounds (VOCs) by EPA Method 8260
- Polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270
- Polychlorinated biphenyls (PCBs) by EPA Method 8082
- Total RCRA 8 Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver) by EPA Method 6020/7471
- TCLP Metals follow-up if necessary by EPA 1311/1312

OSG will distribute the analytical testing based on visual and field screening results. OSG will submit the samples for standard turnaround time analysis (5-10 days).

Follow-up analyses, based on initial analytical results (e.g., TCLP testing requested after total metals results) may result in a total turnaround time of up to 1.5 weeks.

Field staff will determine the number, depth and location of samples in the field, based on field screening results. The soil sample bottle requirements are as follows:

Bottle Type	Method	Holding Time
4 oz. Glass (2)	NWTPH-Dx	14 days
	NWTPH-Gx*	14 days
	EPA Method 8270	14 days (extraction), 40 days (analysis)
		N/A
	EPA Method 8082	6 months (Hg: 28 days)
	EPA Method 6020/7471	128 days (Hg: 28 days)
	EPA Method 1311/1312	

* - See Below

After collection, the samples will be labeled, placed in a cooler with ice, and shipped to Fremont Analytical, a Washington Department of Ecology-accredited analytical laboratory, for analysis.

* Method 5035A for Collection of VOC Soil Samples

Bottle Type	Method	Holding Time
(2) tared VOA (Methanol-preserved)	NWTPH-Gx EPA 8260	14 days 14 days

Collect 5 grams of soil per VOA

VOAs are pre-weighed (tared) at the lab

- Do not add any labels, tape, etc.
- Keep the same cap with each VOA
- Minimize methanol loss: check cap tightness, minimize open times, etc.
- Visual check for methanol loss - check all VOAs prior to sampling for consistency
- Discard any suspect VOAs

Collect Core Sample

- Hand auger, in-place soils, surficial or excavation sidewall (<4' deep) - scrape off to fresh soils w/ clean stainless-steel spoon, take core sample
- Split spoon - core immediately after opening split spoon. If using liners, core from middle liner or inside end of outer liners (top one is usually slough)
- Geoprobe liner - slice open acetate liner, core immediately after opening

Soil types:

- Cohesive granular - use core
- Cemented (e.g. till) - break up with stainless steel spoon, place in VOA & cap as soon as possible
- Non-cohesive (won't stay in core) - place in VOA & cap as soon as possible

Extrude core into VOA

- Wipe threads with clean tissue or dry wipe
- Cap VOA
- Label - ball point pen (e.g., write in the rain) only, no markers

Note in field notebook:

- Soil type, moisture
- Any bias e.g., gravels, organics (avoid both in core sample)
- Weather (temp, humidity, wind)
- Coring method used
- Preservation and storage method used

Health and Safety - Methanol is toxic and flammable

- Skin contact (use nitrile or equivalent gloves), inhalation hazards (ensure adequate ventilation)
- Check shipping restrictions

Cross contamination: Methanol has a high affinity for VOCs (hence its use as a preservative and extraction solvent) and will adsorb VOCs from other sources, e.g., exhaust fumes, spray paint, sharpie, markers, etc.

The groundwater sample bottle requirements are as follows:

Method	Bottle Type	Holding Time
NWTPH-Dx	1 L Amber Glass / HCl	14 days (extraction), 40 days (analysis)
NWTPH-Gx/EPA Method 8260	(3) x 40 mL Glass VOA Vial / HCl	14 days
EPA Method 8270	1 L Amber Glass	7 days (extraction), 40 days (analysis)
EPA Method 8082	1 L Amber Glass	N/A
EPA Method 6020/7471 (dissolved)	500 mL Polyethylene / HNO3	6 months (Hg: 28 days)

Groundwater samples collected for metals analysis will be field-filtered using dedicated disposable 0.45 micron filters prior to collection.

After collection, the samples will be labeled, chilled in a cooler to 4°C, and shipped to Fremont Analytical for analysis. Samples will be submitted for standard laboratory turnaround time (5-10 days).

3.6 Quality Assurance/Quality Control

Samples will be collected and analyzed with sufficient quality assurance/quality control (QA/QC) to ensure representative and reliable results. The overall QA objective for this investigation is to ensure that all laboratory and field data on which decisions are based are technically sound, statistically valid, and properly documented. There are two parts to the QA/QC program for this project: field and laboratory.

Field QA/QC includes proper documentation of field activities and sampling/handling procedures, as described in Section 2.0, above. Field QA/QC samples will consist of the following:

Soil

- Field Duplicates

Groundwater

- Trip Blanks

Field Duplicates are used to confirm analytical results from a given sample point. Duplicate samples are collected in the field using a matching set of laboratory-supplied bottles and sampling from the selected well, as requested. Each duplicate should be sampled by alternating between the regular and the duplicate sample bottles, proceeding in the designated sampling order (VOCs first). The location where the duplicate is collected must be identified on the field sampling data sheet. All duplicates shall be blind-labeled (i.e., the well designation is not listed on the sample bottle or Chain-of- Custody form). Once a duplicate is collected, it is handled and shipped in the same manner as the rest of the samples. Duplicate results will be reported in the laboratory results as separate samples, using the designation DUP-(#).

Split samples are usually collected when a location is sampled with a third party. Split samples are not anticipated for this investigation.

Trip blanks are used to detect contamination that may be introduced in bottle preparation, in transit to or from the sampling site, or in the field. Trip blanks are samples of volatile- organic-free, laboratory-quality water (Type II reagent grade) that are prepared at the laboratory. They remain with the sample bottles while in transit to the site, during sampling, and during the return trip to the laboratory. Trip blank sample bottles are not opened at any time during this process. Trip blanks are to be reported in the laboratory results as separate samples, using the designation TB-(#). Each sample cooler that includes bottles for VOC analysis must include a trip blank, whether it was requested or not.

Field blanks are used to detect contamination that may be introduced in the field. Field blanks are not anticipated for this investigation.

Equipment blanks are used to detect residue from decontaminated equipment. Equipment blanks are not anticipated for this investigation.

Laboratory QA/QC analyses provide information about accuracy, precision, and detection limits. Method-specific QA/QC samples may include the following, depending on the analysis:

- Method blanks
- Duplicates
- Instrument calibration verification standards
- Laboratory control samples
- Surrogate spiked samples
- Performance evaluation QC check samples

Data Quality Review

Quality Assurance/Quality Control (QA/QC) procedures will be performed in general accordance with the requirements of MTCA, Ecology, 2011 (Guidance for Remediation of Petroleum Contaminated Sites) and disposal facility requirements. An accredited laboratory (Fremont Analytical) will be used for all sample analyses.

OSG considers that adequate QA/QC has been achieved if the following procedures have been met:

- Sample integrity is maintained including sampling and using dedicated equipment, analytical equipment decontamination when dedicated equipment is not plausible, minimization of cross contamination of samples, cross checking of sample identities, duplicate sampling, trip blank and trip spike sampling when necessary and evaluation of analytical data.
- Field and laboratory procedures are followed to assure laboratory method accuracy.
- Data precision is maintained through laboratory instrumentation checks and record review and laboratory quality control analysis.
- Field QC procedures for the present investigation included standard sample collection, decontamination, handling and transfer protocols.

- Fremont Analytical performed their normal internal QA/QC testing in accordance with industry standards.

Fremont Analytical's QA/QC procedures include:

- Sample receipt and registration documentation
- Instrument blank analyses
- Surrogate spike and matrix spike analyses
- Laboratory duplicates
- Sample handling and decontamination procedures.

Data Quality Validation

The internal quality control review and summary provided by Fremont Analytical indicates that the laboratory has met the essential criteria for data quality established by MTCA, Ecology, 2016 (Guidance for Remediation of Petroleum Contaminated Sites) and disposal facility requirements.

The following comments can be viewed as an overall summary of the quality of the analytical component for this project:

- Sample integrity and container requirements were documented as acceptable
- Samples were received within appropriate hold times
- Laboratory control sample recovery %R values indicate that laboratory accuracy was acceptable
- Laboratory QA/QC procedures have documented the laboratory systems and results as being acceptable, which supports the quality of data produced for this project.

QA/QC Conclusions

In conclusion, the results of the laboratory QA/QC programs and OSG field procedures document that the analyses reported by the laboratory are of sufficient quality to allow confidence in the use of the reported chemical concentrations for comparison with the adopted assessment criteria for the site.

Data Evaluation

Data evaluation will include checking holding times, method blank results, surrogate recovery results, field and laboratory duplicate results, completeness, detection limits, laboratory control sample results, and Chain-of-Custody forms.

3.7 Equipment Decontamination

To prevent potential cross-contamination of samples, OSG will maintain appropriate decontamination procedures. Between sampling intervals, we will wash all non-dedicated sampling devices in a detergent solution, rinse with tap water and then rinse again with deionized water.

3.8 Health And Safety

OSG personnel conducting this field program are required to follow the health and safety protocol presented in the OSG site specific Health and Safety Plan.

Subcontractors and other authorized visitors to the site are responsible for their own health and safety. The Health and Safety Plan will be made available to subcontractors and other site visitors who request it. Health and Safety precautions will be communicated to subcontractors by OSG personnel in site safety briefings at the beginning of each field day. To acknowledge review and comprehension of this plan, OSG personnel must sign the appropriate section included in the back of the document.

4.0 REPORTING

The findings of the project investigation will be compiled in a formal written report for project team review and use in design considerations. The report will include:

- Discussion of project area
- Discussion and findings of King County site documentation
- Subsurface observations and soil boring logs
- Tabulated analytical results
- Figures with sampling locations and summary results. Electronic files will be provided that are compatible with engineering team document requirements and data reporting needs.
- Interpretation of results with respect to Ecology, 2016 (Guidance for Remediation of Petroleum Contaminated Sites) and disposal facility requirements
- Recommendations for additional subsurface investigations, as needed
- Recommendations for soil handling, disposal, and/or reuse
- Preliminary volume estimates for soils determined to be impacted and/or contaminated

All reports and supporting documentation will be reviewed by OSG senior project managers prior to submittal to the project team. The report will be submitted in draft format for team review and comments prior to finalization.

FIGURES



O'Neill Service Group

CEDAR HILLS REGIONAL LANDFILL
MAPLE VALLEY, WASHINGTON

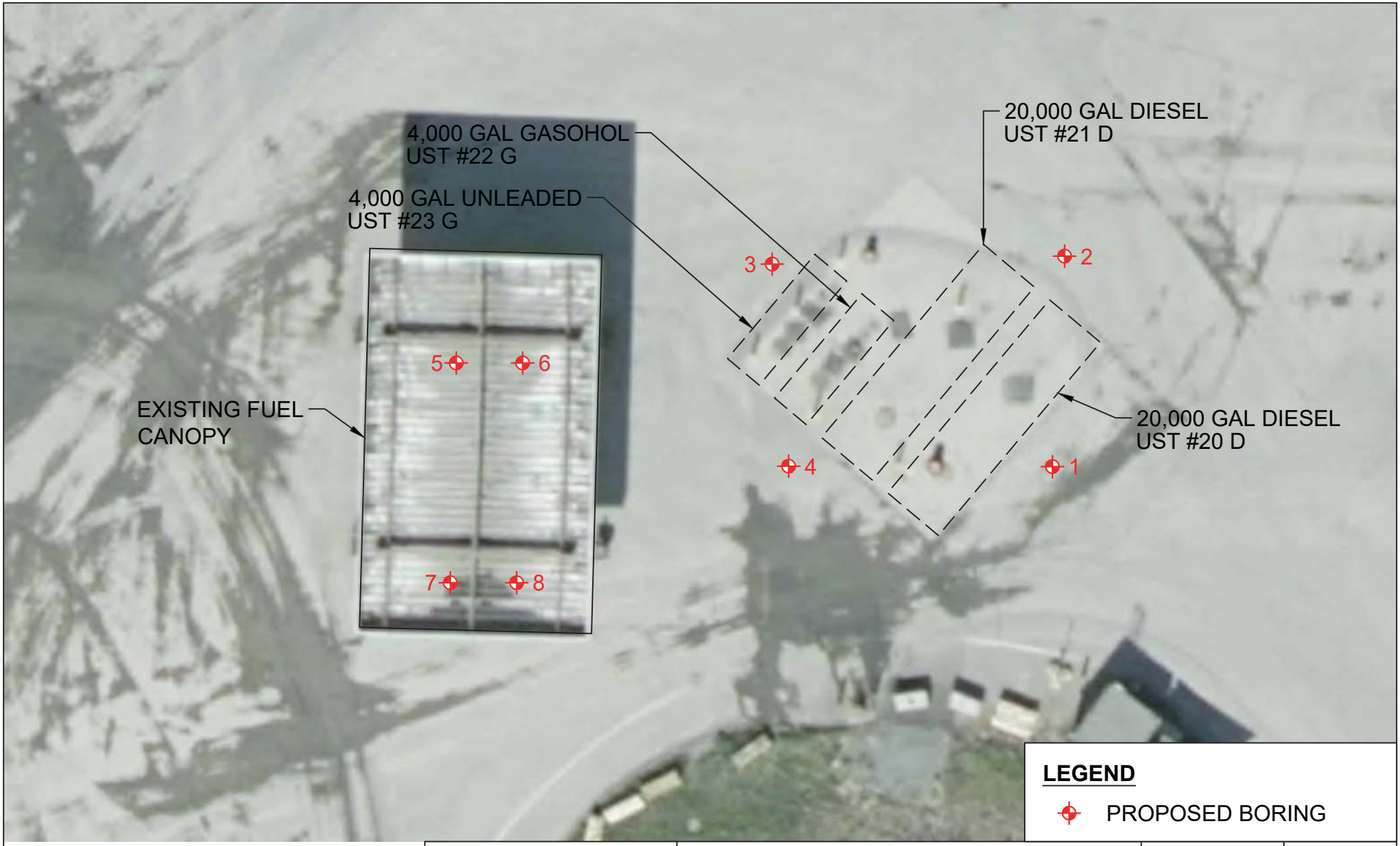
SITE MAP

Drawn By:	J. Stewart
Reviewed By:	V. Atkins
Approved By:	M. Foster
Date:	July 2021
Project No.:	3023

FIGURE 1

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LEGEND

PROPOSED BORING

N

10 0 10 20

SCALE IN FEET

O'Neill Service Group

CEDAR HILLS REGIONAL LANDFILL
MAPLE VALLEY, WASHINGTON

PROPOSED BORING LOCATIONS
FUELING DISPENSER, BLDG 46
CHRL AREA 9

Drawn By:	J. Stewart
Reviewed By:	V. Atkins
Approved By:	M. Foster
Date:	July 2021
Project No.:	3023

FIGURE

2

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LEGEND

PROPOSED BORING

N

15 0 15 30

SCALE IN FEET

O'Neill Service Group

CEDAR HILLS REGIONAL LANDFILL
MAPLE VALLEY, WASHINGTON

PROPOSED BORING LOCATIONS
MAINTENANCE FACILITY, BLDG 7
CHRL AREA 9

Drawn By:	J. Stewart
Reviewed By:	V. Atkins
Approved By:	M. Foster
Date:	July 2021
Project No.:	3023

FIGURE 3

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LEGEND

PROPOSED BORING

N

10 0 10 20

SCALE IN FEET

O'Neill Service Group

CEDAR HILLS REGIONAL LANDFILL
MAPLE VALLEY, WASHINGTON

PROPOSED BORING LOCATIONS
TRUCK WASH, BLDG 44
CHRL AREA 9

Drawn By:	J. Stewart
Reviewed By:	V. Atkins
Approved By:	M. Foster
Date:	July 2021
Project No.:	3023

FIGURE

4



LEGEND

PROPOSED BORING

O'Neill Service Group

CEDAR HILLS REGIONAL LANDFILL
MAPLE VALLEY, WASHINGTON

PROPOSED BORING LOCATIONS
MISCELLANEOUS FACILITIES
CHRL AREA 9

Drawn By:	J. Stewart
Reviewed By:	V. Atkins
Approved By:	M. Foster
Date:	July 2021
Project No.:	3023

FIGURE

5

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TABLES

Table 1
Proposed Analytical Suite
Cedar Hills Regional Landfill
Area 9
Maple Valley, Washington

Area	Temporary Boring ID*	Area of Interest	Analyses					
			NWTPH-Dx	NWTPH-Gx/BETX	VOCs	PAHs	PCBs	Metals
46	1	20k Diesel UST, SE side	S, GW					
	2	20k Diesel USTs, NE ends	S, GW					
	3	4k Gasoline USTs, NW side		S, GW				
	4	20k Diesel & 4k gasoline USTs, SW ends	S, GW	S, GW				
	5	Diesel Dispensers, north	S, GW					
	6	Diesel Dispensers, north	S, GW					
	7	Gasoline & Diesel Dispensers, south	S, GW	S, GW				
	8	Gasoline & Diesel Dispensers, south	S, GW	S, GW				
7	1	10k Waste Oil UST, E end	S, GW	S, GW	S, GW	S, GW	S, GW	S, GW
	2	2.5k motor oil UST, E end	S, GW					
	3	2.5k motor oil and hydraulic oil USTs, W end	S, GW					
	4	4k heating oil UST, W end	S, GW					
	5	600-gallon diesel UST, E end	S, GW					
	6	Tire shop catchbasin	S, GW	S, GW	S, GW			S, GW
	7	Approximate 2000 UST remediation	S, GW	S, GW				
	8	Weld shop trench drain	S, GW	S, GW	S, GW			S, GW
	9	Weld shop trench drain	S, GW	S, GW	S, GW			S, GW
	10	Truck shop trench drain	S, GW	S, GW	S, GW			S, GW
44	1	Truck Wash oil-water separator	S, GW	S, GW				S, GW
	2	Truck Wash sewer line	S, GW	S, GW				S, GW
	3	Truck Wash pressure wash bay	S, GW	S, GW				S, GW
various	1	North End, building 13	S, GW	S, GW				S, GW
	2	north central, Cat shed	S, GW	S, GW				S, GW
	3	central maintenance facility catchbasin	S, GW	S, GW	S, GW			S, GW
	4	west side maintenance facility	S, GW	S, GW	S, GW			S, GW
	5	Emergency generator building, former UST	S, GW					

Notes:
* -Temporary designations for preliminary planning purposes. Soil borings will be assigned final sequential designations in the field.

Appendix B:
Soil Boring Logs

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FIELD BORING LOG

LOCATION OF BORING: GASOLINE & DIESEL DISPENSERS, SOUTH	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B1
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/24/21	8/25/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/25/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							CONCRETE	
						GP	ANGULAR GRAVEL (FILL)	
2							(HAND AUGER SAMPLE 8/24/21)	
	60/24						DENSE RED-BROWN TO GRAY SILTY SAND WITH GRAVEL	
				0			MOIST - NO APPARENT ODOR / STAINING	
					5			
	60/60			0			VERY DENSE BROWN GRADING GRAY SILTY SAND WITH GRAVEL, MOIST	
						SM		
							MOTTLED RED-BROWN SILTY SAND, TRACE GRAVEL	
10				0			MOIST, NO APPARENT ODOR / STAINING BROWN VERY	
					10		DENSE SILTY SAND, TRACE GRAVEL, MOIST	
	36/36			0			NO APPARENT ODOR / STAINING	
							REFUSAL @ 13'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: DIESEL DISPENSERS, NORTH	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B2
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

				DRILLING	
WATER LEVEL:					
TIME				START	FINISH
DATE				8/24/21	8/25/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/25/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							CONCRETE	
2						GP	ANGULAR GRAVEL (FILL) (HAND AUGER SAMPLE 8/24/21)	
						SP	BROWN GRAVELLY SAND	
		60/24						
				0	5	SM/ML	MOTTLED GRAY - BROWN SILT AND FINE SAND, TRACE GRAVEL	
		48/48						
8				0		SM	BROWN GRADING GRAY, VERY DENSE SILTY FINE SAND WITH GRAVEL	
							MOIST - NO APPARENT ODOR / STAINING	
							VERY DENSE GRAY SILTY FINE SAND WITH TRACE GRAVEL	
				0	10		MOIST - NO APPARENT ODOR / STAINING	
							REFUSAL @ 11'	
					15		GROUNDWATER NOT ENCOUNTERED	
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: 10K WASTE OIL UST, SOUTH SIDE, DISPENSER LINES	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B3
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

				DRILLING	
WATER LEVEL:					
TIME				START	FINISH
DATE				8/24/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT	
1.5							BROWN TO GRAY SILTY SAND WITH GRAVEL, TRACE COBBLES	
							HYDROCARBON ODOR @ 1' BGS (HAND AUGER SAMPLE 8/24/21)	
	60/15							
5				0		SM	YELLOW - BROWN GRADING LIGHT GRAY SILTY FINE SAND WITH GRAVEL, DRY	
					5		TO MOIST - NO APPARENT ODOR / STAINING	
	48/48						AS ABOVE, YELLOW - BROWN TO LIGHT GRAY LAYERS, DRY	
9				0			VERY DENSE, NO APPARENT ODOR / STAINING	
							REFUSAL @ 9'	
					10		GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: 2.5K MOTOR OIL AND HYDRAULIC OIL USTs, WEST END	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B4
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/24/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							CONCRETE	
	60/12							
					5			
				0			PEA GRAVEL BACK FILL - MOIST	
						GP		
	60/24			0	10		PEA GRAVEL BACK FILL - GRADING WET	
	60/36							
				3	15	SM	GRAY SILTY SAND WITH GRAVEL, VERY DENSE	
							WET TO MOIST, TRACE HYDROCARBON ODOR	
							TOTAL DEPTH = 15'	
							GROUNDWATER (BACKFILL) ENCOUNTERED AT 5.45' BGS, TRACE SHEEN	
							SET TEMPORARY SCREEN @ 5-15' BGS	
					20		COLLECT WATER SAMPLE CHRL-A9-B4-W	
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: 600-GALLON DIESEL UST, EAST END	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B5
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/24/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							CONCRETE	
2							HAND AUGER SAMPLE	
	60/0						NO RECOVERY	
5								
	60/60			0	5		LIGHT YELLOW - BROWN TO GRAY SILTY SAND WITH GRAVEL	
							TRACE OXIDATION, DENSE, DRY	
				0				
							LIGHT GRAY LAYERS, TRACE MOTTLING, VERY DENSE, DRY	
10				0				
					10		REFUSAL @ 10'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: WEST SIDE MAINTENANCE FACILITY	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B6
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/25/21	8/25/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/25/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT	
				0		SP/SM		
3	60/60						GRAY BROWN SAND WITH SILT AND GRAVEL	
4							MEDIUM DENSE, DRY WITH NO APPARENT ODOR / STAINING	
				0				
	60/48				5		AS ABOVE	
				0.1		SM	GRADING RED-BROWN MOTTLED SILTS AND SANDS WITH	
							GRAVEL, MEDIUM DENSE, MOIST	
10								
	60/48				10		AS ABOVE - RED BROWN, TRACE SAND SEAMS, MOIST,	
				0			NO APPARENT ODOR / STAINING	
				0				
					15		TOTAL DEPTH = 15'	
							GROUNDWATER NOT ENCOUNTERED	
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: TRUCK WASH SEWER LINE	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B7
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/25/21	8/25/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/25/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT	
	60/36			0		SP/SM	GRAY SAND WITH SILT, GRAVEL DRY TO MOIST	
4				0.1				
					5		RED BROWN SILTY SAND GRADING OLIVE-GRAY SILT	
							WITH FINE SAND, TRACE GRAVEL, DRY TO MOIST	
	48/24							
9						SM		
							MEDIUM DENSE OLIVE BROWN - SILT SAND, TRACE	
	36/36			0	10		GRAVEL, VERY DENSE, DRY	
							REFUSAL @ 12'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: CENTRAL MAINTENANCE FACILITY CATCHBASIN	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B8
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

				DRILLING	
WATER LEVEL:					
TIME				START	FINISH
DATE				8/25/21	8/25/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/25/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT	
	60/36			0			RED BROWN SAND WITH SILT GRAVEL, TRACE OXIDATION,	
							MEDIUM DENSE, DRY - NO APPARENT ODOR / STAINING	
5				0		SP/SM		
					5			
	60/24							
10							RED BROWN SILT WITH SAND, TRACE GRAVEL, MOTTLING	
					10		GRAY SILTY SAND, WITH SANDY LAYERS, SATURATED	
	60/48						MOTTLED GRAY SILTY SAND WITH SANDY LAYERS, SATURATED	
						SM	GRADING GRAY SILT WITH SAND, DENSE, MOIST	
					15		TOTAL DEPTH = 15'	
							GROUNDWATER ENCOUNTERED @ 10.1' BGS	
							SET SCREEN @ 5-15'	
							COLLECT WATER SAMPLE CHRL-A9-B8-W	
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: NORTH CENTRAL, CAT SHED	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B9
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/25/21	8/25/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/25/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT	
	60/24						BROWN SILTY SAND WITH GRAVEL,	
4				7.6		SM	DRY TO MOIST, TRACE HYDROCARBON ODOR	
				6				
					5			
	60/54							
8				0.4		SM	DARK RED - BROWN SILTY / GRAVELLY SAND, TRACE ORGANIC MATTER	
				0.2		SM/ML	GRADING GRAY, SILT AND SAND, DENSE, TRACE GRAVEL,	
					10		MOIST, NO APPARENT ODOR OR STAINING	
12	60/60			0.1				
				0.1				
					15		TOTAL DEPTH = 15'	
							GROUNDWATER NOT ENCOUNTERED	
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: NORTH END, BUILDING 13	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B10
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/25/21	8/25/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/25/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							TOP SOIL	
	60/24					SP/SM	LIGHT YELLOW - BROWN FINE SAND WITH SILTY GRAVEL, DRY	
5				0				
					5		INCREASING SILT - LIGHT YELLOW BROWN TO YELLOW GRAY,	
	60/48			0			SILT AND FINE SAND WITH GRAVEL, TRACE MOTTLING,	
						SM	INCREASED DENSITY, DRY	
10				0				
					10		REFUSAL @ 10'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: SANITARY SEWER, APPROXIMATE 1999 UST REMEDIATION, SOUTHWEST CORNER	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B11
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/25/21	8/25/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/25/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT	
	60/36			0			YELLOW - BROWN SAND WITH SILTY GRAVEL	
							TRACE OXIDATION, DRY TO MOIST	
5				0		SP/SM	NO ADDITIONAL ODOR / STAINING	
					5			
	60/36			0				
							GRAY SILT AND SAND TRACE GRAVEL, MOIST	
10							DENSE - NO APPARENT ODOR / STAINING	
					10			
						SM		
	60/36						GRAY SILT AND SAND TRACE GRAVEL, TRACE CLAY, MOIST	
							NO APPARENT ODOR / STAINING	
15				0				
					15		TOTAL DEPTH = 15'	
							GROUNDWATER NOT ENCOUNTERED	
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: WELD SHOP TRENCH DRAIN, APPROXIMATE 1999 UST REMEDIATION, SOUTH END	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B12
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/25/21	8/25/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/25/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT	
						SP	BROWN SAND WITH SILT / GRAVEL FILL	
							ASPHALT SLAB	
4	60/30			0.3			GRAY SILTY SAND AND GRAVEL (FILL)	
				0.1			DRY GRADING YELLOW - BROWN SILT SAND WITH GRAVEL, MOTTLED, MOIST	
					5			
8	60/36			19		SM	GRAY SILT AND FINE SAND WITH GRAVEL DRY	
							HYDROCARBON ODOR @ 8'	
				28				
11				30	10		GRAY SILT AND FINE SAND WITH GRAVEL DRY	
12	24/24			8			HYDROCARBON ODOR (DUPLICATE SAMPLE @ 11')	
							REFUSAL @ 12'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: WELD SHOP TRENCH DRAIN, APPROXIMATE 1999 UST REMEDIATION, SOUTH END	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B13
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/25/21	8/25/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST
CHECKED BY:
DATE: 8/25/21
LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT	
						SM	BROWN RED - BROWN SILT & SAND WITH GRAVEL, TRACE MOTTLING	
	60/24			4.5			GRADING GRAY SILT AND SAND WITH GRAVEL MOIST,	
				0.5			HYDROCARBON ODOR	
					5			
7						SM		
	48/48			200				
9				3.1				
							REFUSAL @ 9'	
					10		GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: TRUCK SHOP TRENCH DRAIN	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B14
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

				DRILLING	
WATER LEVEL:					
TIME				START	FINISH
DATE				8/26/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							CONCRETE	
							SEWER LING ADJACENT TO BORING, 1.5' BGS WITH SAND AND	
						SP	GRAVEL FILL	
	60/0							
5				0			NO RECOVERY	
					5			
	60/60						GRAY BROWN SILT AND FINE SAND WITH GRAVEL DENSE, TRACE	
							MOTTLING, MOIST, - NO APPARENT ODOR / STAINING	
						SM		
10				0			GRAY BROWN SILT AND FINE SAND WITH GRAVEL, VERY DENSE, MOIST	
					10			
	24/24			0				
							REFUSAL @ 12'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: 4K HEATING OIL UST, WEST END	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B15
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/26/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							NO RECOVERY	
					5			
							POSSIBLE PEA GRAVEL (BACKFILL)	
8	60/24			6		GP	WET, TRACE HYDROCARBON ODOR /	
							SHEEN	
					10			
12				14				
	60/60							
15				0	15		GRAY SILTY SAND AND GRAVEL WET TO MOIST / DENSE	
							TOTAL DEPTH = 15'	
							GROUNDWATER ENCOUNTERED @ 5.5' BGS	
							SET TEMPORARY SCREEN 5-15'	
							COLLECT WATER SAMPLE CHRL-A9-B15-W	
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: 2.5K MOTOR OIL UST, EAST END	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B16
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/26/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT	
	60/12							
5				0			LIGHT YELLOW BROWN SILTY FINE SAND WITH GRAVEL, SLIGHT	
					5		OXIDATION, DENSE, DRY	
				0				
	60/60						YELLOW - BROWN SILTY FINE SAND WITH GRAVEL	
							VERY DENSE , DRY	
10				0				
					10		REFUSAL @ 10'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: TIRE SHOP CATCHBASIN	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B17
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/26/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT	
							NO RECOVERY	
	60/0					SM		
				0	5		LIGHT RED - BROWN SILTY FINE SAND WITH GRAVEL	
	60/60						LIGHT YELLOW - GRAY TO LIGHT BROWN SILT	
				0		SM	FINE SAND WITH GRAVEL, VERY DENSE, DRY TO MOIST	
							NO APPARENT ODOR / STAINING	
				0				
					10		REFUSAL @ 10'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: TRUCK WASH PRESSURE WASH BAY	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B18
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/26/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							CONCRETE	
						GP	PEA GRAVEL FILL	
				0				
	60/24						YELLOW - BROWN SILTY SAND WITH GRAVEL, DENSE,	
5				0	5		MOIST, NO APPARENT ODOR / STAINING	
						SM		
							AS ABOVE - WITH FINE GRAVEL, INCREASING DENSITY, MOIST	
	60/60			0				
10				0	10			
							REFUSAL @ 10'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: TRUCK WASH OIL-WATER SEPARATOR	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B19
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/26/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							CONCRETE	
						GP	PEA GRAVEL FILL	
				0				
	60/24						LIGHT RED BROWN SILTY FINE SAND WITH GRAVEL, TRACE OXIDATION	
				0	5			
						SM		
	60/60			0			GRADING LIGHT OLIVE - GRAY SILTY FINE SAND,	
							TRACE GRAVEL, DENSE TO VERY DENSE, DRY	
				0				
					10		REFUSAL @ 10'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: 20K DIESEL USTs, NORTH EAST ENDS	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B20
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/26/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT (2 LAYERS)	
						SM	LIGHT YELLOW - BROWN SILTY SAND WITH GRAVEL	
	60/36			0			DARK RED - BROWN LAYER	
						SM		
				0	5		YELLOW - RED GRADING YELLOW - BROWN SILTY	
							SAND AND GRAVEL, MOTTLED, DENSE	
	60/60							
				0		SM	LIGHT YELLOW - GRAY, SILTY FINE SAND WITH GRAVEL, VERY DENSE, DRY	
							NO APPARENT ODOR / STAINING	
				0	10			
	48/48							
				0				
					15		REFUSAL @ 14'	
							GROUNDWATER NOT ENCOUNTERED	
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: 4K GASOLINE USTs, NORTH WEST SIDE	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B21
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/26/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

DATE: 8/26/21

LOGGED BY: V. ATKINS

CHECKED BY:

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT (2 LAYERS)	
				0			LIGHT YELLOW - BROWN TO YELLOW - RED SILTY FINE SAND WITH	
	60/48						MOTTLING, MEDIUM DENSE, DRY TO MOIST, NO APPARENT ODOR /	
							STAINING	
5				0				
					5		YELLOW - GRAY SILTY FINE SAND WITH GRAVEL MOIST, VERY DENSE	
							NO APPARENT ODOR / STAINING	
	60/60					SM		
				0				
					10		AS ABOVE	
				0				
					15		REFUSAL @ 14'	
							GROUNDWATER NOT ENCOUNTERED	
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: 20K DIESEL UST, SOUTH EAST SIDE	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B22
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/26/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT	
				0				
	60/30						LIGHT OLIVE - GRAY, SILTY SAND WITH GRAVEL, DRY, DENSE	
5				0				
	60/60				5		GRADING YELLOW - BROWN SILTY SAND TRACE GRAVEL, VERY	
						SM	DENSE, MOIST, NO APPARENT ODOR / STAINING	
				0				
10								
					10		AS ABOVE, VERY DENSE	
12	24/24			0				
							REFUSAL @ 12'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

OSG O'Neill Service Group

FIELD BORING LOG

LOCATION OF BORING: 20K DIESEL & 4K GASOLINE USTs, SOUTH WEST ENDS	PROJECT NO: 3023	CLIENT: BHC	BORING NO: CHRL-A9-B23
	DRILLING METHOD: GEOPROBE DIRECT-PUSH		SHEET: 1 OF 1
	SAMPLING METHOD: 5' MACROCORE W/ PFTE LINER		

WATER LEVEL:				DRILLING	
TIME				START	FINISH
DATE				8/26/21	8/26/21
CASING DEPTH					

DRILLING CONTRACTOR: ESN NORTHWEST

CHECKED BY:

DATE: 8/26/21

LOGGED BY: V. ATKINS

SAMPLE TYPE / SAMPLE NO.	INCHES DRIVEN / RECOVERED	SAMPLE DEPTH INTERVAL	BLOWS PER 6 INCHES	PID (PPM)	DEPTH IN FEET	LITHOLOGY	SURFACE CONDITIONS: / ELEVATION: / SOIL DESCRIPTION	GROUNDWATER / WELL DIAGRAM
							ASPHALT (2 LAYERS)	
	60/12							
5				0			LIGHT YELLOW - BROWN SILTY SAND WITH GRAVEL, TRACE	
					5		MOTTLING, DENSE, DRY, NO APPARENT ODOR / STAINING	
	60/60							
				0		SM	GRADING YELLOW - GRAY SILTY FINE SAND WITH GRAVEL,	
							DENSE TO VERY DENSE, MOIST	
10							NO APPARENT ODOR / STAINING	
				0	10			
	24/24							
13				0				
							REFUSAL @ 13'	
							GROUNDWATER NOT ENCOUNTERED	
					15			
					20			
					25			
					30			
					35			

Appendix C:
Laboratory Analytical Reports

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

O'Neill Service Group
Vance Atkins
17619 NE 67th Court, Suite 100
Redmond, WA 98052

RE: Cedar Hills Reg Landfill
Work Order Number: 2108342

September 15, 2021

Attention Vance Atkins:

Fremont Analytical, Inc. received 5 sample(s) on 8/24/2021 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Gasoline by NWTPH-Gx
Mercury by EPA Method 7471B
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Polychlorinated Biphenyls (PCB) by EPA 8082
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020B
Volatile Organic Compounds by EPA Method 8260D

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

Date: *09/15/2021*

CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill
Work Order: 2108342

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2108342-001	CHRL-A9-B1-2	08/24/2021 8:30 AM	08/24/2021 5:12 PM
2108342-002	CHRL-A9-B2-2	08/24/2021 8:50 AM	08/24/2021 5:12 PM
2108342-003	CHRL-A9-B3-1.5	08/24/2021 10:00 AM	08/24/2021 5:12 PM
2108342-004	CHRL-A9-B4-2	08/24/2021 10:20 AM	08/24/2021 5:12 PM
2108342-005	CHRL-A9-B5-2	08/24/2021 10:40 AM	08/24/2021 5:12 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2108342**
Date: **9/15/2021**

CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

9/15/2021: Revision 1 includes additional analysis requested by client.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2108342**
Date Reported: **9/15/2021**

Client: O'Neill Service Group
Project: Cedar Hills Reg Landfill
Lab ID: 2108342-001
Client Sample ID: **CHRL-A9-B1-2**

Collection Date: 8/24/2021 8:30:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33501		Analyst: MM
Diesel (Fuel Oil)	ND	52.7		mg/Kg-dry	1	8/30/2021 9:16:24 AM
Heavy Oil	762	105		mg/Kg-dry	1	8/30/2021 9:16:24 AM
Total Petroleum Hydrocarbons	762	158		mg/Kg-dry	1	8/30/2021 9:16:24 AM
Surr: 2-Fluorobiphenyl	127	50 - 150		%Rec	1	8/30/2021 9:16:24 AM
Surr: o-Terphenyl	141	50 - 150		%Rec	1	8/30/2021 9:16:24 AM
Gasoline by NWTPH-Gx				Batch ID: 33496		Analyst: KT
Gasoline	ND	4.92		mg/Kg-dry	1	8/26/2021 12:32:34 PM
Surr: Toluene-d8	97.2	65 - 135		%Rec	1	8/26/2021 12:32:34 PM
Surr: 4-Bromofluorobenzene	88.8	65 - 135		%Rec	1	8/26/2021 12:32:34 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33496		Analyst: KT
Benzene	ND	0.0197		mg/Kg-dry	1	8/26/2021 12:32:34 PM
Toluene	ND	0.0295		mg/Kg-dry	1	8/26/2021 12:32:34 PM
Ethylbenzene	ND	0.0246		mg/Kg-dry	1	8/26/2021 12:32:34 PM
m,p-Xylene	ND	0.0492		mg/Kg-dry	1	8/26/2021 12:32:34 PM
o-Xylene	ND	0.0246		mg/Kg-dry	1	8/26/2021 12:32:34 PM
Surr: Dibromofluoromethane	100	75.5 - 119		%Rec	1	8/26/2021 12:32:34 PM
Surr: Toluene-d8	96.3	82.4 - 115		%Rec	1	8/26/2021 12:32:34 PM
Surr: 1-Bromo-4-fluorobenzene	91.7	78.5 - 118		%Rec	1	8/26/2021 12:32:34 PM
Sample Moisture (Percent Moisture)				Batch ID: R69497		Analyst: MCH
Percent Moisture	9.72	0.500		wt%	1	8/26/2021 9:48:17 AM

Analytical Report

Work Order: **2108342**
Date Reported: **9/15/2021**

Client: O'Neill Service Group
Project: Cedar Hills Reg Landfill
Lab ID: 2108342-002
Client Sample ID: **CHRL-A9-B2-2**

Collection Date: 8/24/2021 8:50:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33501		Analyst: MM
Diesel (Fuel Oil)	ND	48.4		mg/Kg-dry	1	8/30/2021 9:29:02 AM
Heavy Oil	823	96.9		mg/Kg-dry	1	8/30/2021 9:29:02 AM
Total Petroleum Hydrocarbons	823	145		mg/Kg-dry	1	8/30/2021 9:29:02 AM
Surr: 2-Fluorobiphenyl	135	50 - 150		%Rec	1	8/30/2021 9:29:02 AM
Surr: o-Terphenyl	147	50 - 150		%Rec	1	8/30/2021 9:29:02 AM
Sample Moisture (Percent Moisture)				Batch ID: R69497		Analyst: MCH
Percent Moisture	8.30	0.500		wt%	1	8/26/2021 9:48:17 AM

Client: O'Neill Service Group
Collection Date: 8/24/2021 10:00:00 AM
Project: Cedar Hills Reg Landfill
Lab ID: 2108342-003
Matrix: Soil
Client Sample ID: **CHRL-A9-B3-1.5**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polychlorinated Biphenyls (PCB) by EPA 8082				Batch ID: 33689		Analyst: SB
Aroclor 1016	ND	0.0578		mg/Kg-dry	1	9/14/2021 12:51:58 PM
Aroclor 1221	ND	0.0578		mg/Kg-dry	1	9/14/2021 12:51:58 PM
Aroclor 1232	ND	0.0578		mg/Kg-dry	1	9/14/2021 12:51:58 PM
Aroclor 1242	ND	0.0578		mg/Kg-dry	1	9/14/2021 12:51:58 PM
Aroclor 1248	ND	0.0578		mg/Kg-dry	1	9/14/2021 12:51:58 PM
Aroclor 1254	ND	0.0578		mg/Kg-dry	1	9/14/2021 12:51:58 PM
Aroclor 1260	ND	0.0578		mg/Kg-dry	1	9/14/2021 12:51:58 PM
Aroclor 1262	ND	0.0578		mg/Kg-dry	1	9/14/2021 12:51:58 PM
Aroclor 1268	ND	0.0578		mg/Kg-dry	1	9/14/2021 12:51:58 PM
Total PCBs	ND	0.0578		mg/Kg-dry	1	9/14/2021 12:51:58 PM
Surr: Decachlorobiphenyl	78.9	20.6 - 142		%Rec	1	9/14/2021 12:51:58 PM
Surr: Tetrachloro-m-xylene	84.1	22 - 157		%Rec	1	9/14/2021 12:51:58 PM
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33501		Analyst: MM
Diesel (Fuel Oil)	ND	52.1		mg/Kg-dry	1	8/30/2021 9:41:42 AM
Heavy Oil	2,600	104		mg/Kg-dry	1	8/30/2021 9:41:42 AM
Total Petroleum Hydrocarbons	2,600	156		mg/Kg-dry	1	8/30/2021 9:41:42 AM
Surr: 2-Fluorobiphenyl	115	50 - 150		%Rec	1	8/30/2021 9:41:42 AM
Surr: o-Terphenyl	138	50 - 150		%Rec	1	8/30/2021 9:41:42 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33646		Analyst: SB
Naphthalene	ND	21.8	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
2-Methylnaphthalene	ND	21.8	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
1-Methylnaphthalene	ND	21.8	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Acenaphthylene	ND	21.8	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Acenaphthene	ND	21.8	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Fluorene	23.9	21.8	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Phenanthrene	75.9	43.7	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Anthracene	ND	43.7	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Fluoranthene	ND	43.7	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Pyrene	ND	43.7	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Benz(a)anthracene	ND	21.8	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Chrysene	ND	43.7	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Benzo(b)fluoranthene	ND	21.8	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Benzo(k)fluoranthene	ND	21.8	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Benzo(a)pyrene	ND	21.8	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Indeno(1,2,3-cd)pyrene	ND	43.7	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM

Client: O'Neill Service Group
Collection Date: 8/24/2021 10:00:00 AM
Project: Cedar Hills Reg Landfill
Lab ID: 2108342-003
Matrix: Soil
Client Sample ID: **CHRL-A9-B3-1.5**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 33646		Analyst: SB
Dibenz(a,h)anthracene	ND	43.7	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Benzo(g,h,i)perylene	23.3	21.8	H	µg/Kg-dry	1	9/10/2021 10:25:22 AM
Surr: 2-Fluorobiphenyl	95.2	27.9 - 129	H	%Rec	1	9/10/2021 10:25:22 AM
Surr: Terphenyl-d14 (surr)	99.2	39.1 - 145	H	%Rec	1	9/10/2021 10:25:22 AM
Gasoline by NWTPH-Gx				Batch ID: 33651		Analyst: CR
Gasoline	ND	4.93	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Stoddard Solvent/Mineral Spirits	60.9	4.93	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Surr: Toluene-d8	96.0	65 - 135	H	%Rec	1	9/9/2021 10:35:21 PM
Surr: 4-Bromofluorobenzene	111	65 - 135	H	%Rec	1	9/9/2021 10:35:21 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33651		Analyst: CR
Dichlorodifluoromethane (CFC-12)	ND	0.0493	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Chloromethane	ND	0.0788	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Vinyl chloride	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Bromomethane	ND	0.148	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Trichlorofluoromethane (CFC-11)	ND	0.0493	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Chloroethane	ND	0.118	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,1-Dichloroethene	ND	0.0985	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Acetone	ND	0.493	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Methylene chloride	ND	0.0148	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
trans-1,2-Dichloroethene	ND	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Methyl tert-butyl ether (MTBE)	ND	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,1-Dichloroethane	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
cis-1,2-Dichloroethene	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
(MEK) 2-Butanone	ND	0.443	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Chloroform	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,1,1-Trichloroethane (TCA)	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,1-Dichloropropene	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Carbon tetrachloride	ND	0.0739	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,2-Dichloroethane (EDC)	ND	0.0227	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Benzene	ND	0.0197	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Trichloroethene (TCE)	ND	0.0197	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,2-Dichloropropane	ND	0.0197	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Bromodichloromethane	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Dibromomethane	ND	0.0197	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
cis-1,3-Dichloropropene	ND	0.0788	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM

Client: O'Neill Service Group
Collection Date: 8/24/2021 10:00:00 AM
Project: Cedar Hills Reg Landfill
Lab ID: 2108342-003
Matrix: Soil
Client Sample ID: **CHRL-A9-B3-1.5**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33651		Analyst: CR
Toluene	ND	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Trans-1,3-Dichloropropylene	ND	0.0493	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Methyl Isobutyl Ketone (MIBK)	ND	0.0739	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,1,2-Trichloroethane	ND	0.0167	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,3-Dichloropropane	ND	0.0197	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Tetrachloroethene (PCE)	ND	0.0394	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Dibromochloromethane	ND	0.0197	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,2-Dibromoethane (EDB)	ND	0.00985	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
2-Hexanone (MBK)	ND	0.0591	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Chlorobenzene	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,1,1,2-Tetrachloroethane	ND	0.0197	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Ethylbenzene	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
m,p-Xylene	ND	0.0493	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
o-Xylene	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Styrene	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Isopropylbenzene	ND	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Bromoform	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,1,2,2-Tetrachloroethane	ND	0.0148	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
n-Propylbenzene	0.0528	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Bromobenzene	ND	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,3,5-Trimethylbenzene	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
2-Chlorotoluene	ND	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
4-Chlorotoluene	ND	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
tert-Butylbenzene	ND	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,2,3-Trichloropropane	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,2,4-Trichlorobenzene	ND	0.0394	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
sec-Butylbenzene	ND	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
4-Isopropyltoluene	0.0703	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,3-Dichlorobenzene	ND	0.0345	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,4-Dichlorobenzene	ND	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
n-Butylbenzene	ND	0.0394	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,2-Dichlorobenzene	ND	0.0296	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,2-Dibromo-3-chloropropane	ND	0.0591	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,2,4-Trimethylbenzene	ND	0.0246	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Hexachloro-1,3-butadiene	ND	0.0493	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Naphthalene	ND	0.0985	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
1,2,3-Trichlorobenzene	ND	0.0493	H	mg/Kg-dry	1	9/9/2021 10:35:21 PM
Surr: Dibromofluoromethane	98.8	75.5 - 119	H	%Rec	1	9/9/2021 10:35:21 PM
Surr: Toluene-d8	97.8	82.4 - 115	H	%Rec	1	9/9/2021 10:35:21 PM

Analytical Report

Work Order: **2108342**
Date Reported: **9/15/2021**

Client: O'Neill Service Group
Project: Cedar Hills Reg Landfill
Lab ID: 2108342-003
Client Sample ID: **CHRL-A9-B3-1.5**

Collection Date: 8/24/2021 10:00:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33651		Analyst: CR
Surr: 1-Bromo-4-fluorobenzene	107	78.5 - 118	H	%Rec	1	9/9/2021 10:35:21 PM
Mercury by EPA Method 7471B				Batch ID: 33644		Analyst: CH
Mercury	ND	0.275		mg/Kg-dry	1	9/9/2021 3:13:21 PM
Total Metals by EPA Method 6020B				Batch ID: 33658		Analyst: EH
Arsenic	3.62	0.110		mg/Kg-dry	1	9/10/2021 10:16:23 PM
Barium	91.6	0.549		mg/Kg-dry	1	9/10/2021 10:16:23 PM
Cadmium	ND	0.183		mg/Kg-dry	1	9/10/2021 10:16:23 PM
Chromium	34.5	0.366		mg/Kg-dry	1	9/10/2021 10:16:23 PM
Lead	3.42	0.183		mg/Kg-dry	1	9/10/2021 10:16:23 PM
Selenium	1.21	0.183		mg/Kg-dry	1	9/10/2021 10:16:23 PM
Silver	ND	0.137		mg/Kg-dry	1	9/10/2021 10:16:23 PM
Sample Moisture (Percent Moisture)				Batch ID: R69497		Analyst: MCH
Percent Moisture	16.0	0.500		wt%	1	8/26/2021 9:48:17 AM

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **MB-33658** SampType: **MBLK** Units: **mg/Kg** Prep Date: **9/10/2021** RunNo: **69858**
Client ID: **MBLKS** Batch ID: **33658** Analysis Date: **9/10/2021** SeqNo: **1416392**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0896									
Barium	ND	0.448									
Cadmium	ND	0.149									
Chromium	ND	0.299									
Lead	ND	0.149									
Selenium	ND	0.149									
Silver	ND	0.112									

Sample ID: **LCS-33658** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/10/2021** RunNo: **69858**
Client ID: **LCSS** Batch ID: **33658** Analysis Date: **9/10/2021** SeqNo: **1416393**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	40.2	0.0923	38.46	0	104	80	120				
Barium	40.4	0.462	38.46	0	105	80	120				
Cadmium	1.82	0.154	1.923	0	94.7	80	120				
Chromium	37.2	0.308	38.46	0	96.7	80	120				
Lead	19.4	0.154	19.23	0	101	80	120				
Selenium	3.65	0.154	3.846	0	94.9	80	120				
Silver	1.94	0.115	1.923	0	101	80	120				

Sample ID: **2109107-002AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **9/10/2021** RunNo: **69858**
Client ID: **BATCH** Batch ID: **33658** Analysis Date: **9/10/2021** SeqNo: **1416396**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	53.4	0.108	45.15	5.060	107	75	125				
Barium	148	0.542	45.15	115.1	74.0	75	125				S
Cadmium	2.46	0.181	2.257	0.2401	98.2	75	125				
Chromium	79.4	0.361	45.15	25.65	119	75	125				
Lead	89.4	0.181	22.57	95.98	-28.9	75	125				S

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **2109107-002AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **9/10/2021** RunNo: **69858**
Client ID: **BATCH** Batch ID: **33658** Analysis Date: **9/10/2021** SeqNo: **1416396**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	5.20	0.181	4.515	0.8904	95.4	75	125				
Silver	2.09	0.135	2.257	0.09501	88.6	75	125				

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Sample ID: **2109107-002AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **9/10/2021** RunNo: **69858**
Client ID: **BATCH** Batch ID: **33658** Analysis Date: **9/10/2021** SeqNo: **1416397**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	54.5	0.108	45.15	5.060	109	75	125	53.44	1.94	20	
Barium	154	0.542	45.15	115.1	87.0	75	125	148.5	3.88	20	
Cadmium	2.49	0.181	2.257	0.2401	99.5	75	125	2.457	1.15	20	
Chromium	80.1	0.361	45.15	25.65	121	75	125	79.44	0.844	20	
Lead	153	0.181	22.57	95.98	251	75	125	89.45	52.3	20	ERS
Selenium	5.43	0.181	4.515	0.8904	100	75	125	5.197	4.32	20	
Silver	2.09	0.135	2.257	0.09501	88.2	75	125	2.094	0.378	20	

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).
R - High RPD due to high analyte concentration. In this range, high RPD's may be expected.

Sample ID: **2109107-002APDS** SampType: **PDS** Units: **mg/Kg-dry** Prep Date: **9/10/2021** RunNo: **69858**
Client ID: **BATCH** Batch ID: **33658** Analysis Date: **9/10/2021** SeqNo: **1416398**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	127	0.178	22.2	96.0	138	75	125				ES

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Mercury by EPA Method 7471B

Sample ID: **MB-33644**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **9/9/2021**			RunNo: **69808**		
Client ID: **MBLKS**	Batch ID: **33644**					Analysis Date: **9/9/2021**			SeqNo: **1415505**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-33644**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **9/9/2021**			RunNo: **69808**		
Client ID: **LCSS**	Batch ID: **33644**					Analysis Date: **9/9/2021**			SeqNo: **1415506**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.481	0.250	0.5000	0	96.2	80	120				

Sample ID: **2109107-030ADUP**	SampType: **DUP**			Units: **mg/Kg-dry**		Prep Date: **9/9/2021**			RunNo: **69808**		
Client ID: **BATCH**	Batch ID: **33644**					Analysis Date: **9/9/2021**			SeqNo: **1415519**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.261						0		20	

Sample ID: **2109107-030AMS**	SampType: **MS**			Units: **mg/Kg-dry**		Prep Date: **9/9/2021**			RunNo: **69808**		
Client ID: **BATCH**	Batch ID: **33644**					Analysis Date: **9/9/2021**			SeqNo: **1415520**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.496	0.261	0.5212	0.02573	90.3	70	130				

Sample ID: **2109107-030AMSD**	SampType: **MSD**			Units: **mg/Kg-dry**		Prep Date: **9/9/2021**			RunNo: **69808**		
Client ID: **BATCH**	Batch ID: **33644**					Analysis Date: **9/9/2021**			SeqNo: **1415521**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.518	0.261	0.5212	0.02573	94.5	70	130	0.4962	4.32	20	

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **MB-33501**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **8/26/2021**		RunNo: **69563**			
Client ID: **MBLKS**	Batch ID: **33501**					Analysis Date: **8/26/2021**		SeqNo: **1410088**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Total Petroleum Hydrocarbons	ND	150									
Surr: 2-Fluorobiphenyl	9.46		10.00		94.6	50	150				
Surr: o-Terphenyl	10.5		10.00		105	50	150				

Sample ID: **LCS-33501**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **8/26/2021**		RunNo: **69563**			
Client ID: **LCSS**	Batch ID: **33501**					Analysis Date: **8/26/2021**		SeqNo: **1410089**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	542	150	500.0	0	108	77.2	122				
Surr: 2-Fluorobiphenyl	9.22		10.00		92.2	50	150				
Surr: o-Terphenyl	12.2		10.00		122	50	150				

Sample ID: **2108212-001ADUP**	SampType: **DUP**			Units: **mg/Kg-dry**		Prep Date: **8/26/2021**		RunNo: **69563**			
Client ID: **BATCH**	Batch ID: **33501**					Analysis Date: **8/26/2021**		SeqNo: **1410091**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	53.6						0		30	
Heavy Oil	ND	107						0		30	
Total Petroleum Hydrocarbons	ND	161						0		30	
Surr: 2-Fluorobiphenyl	9.55		10.71		89.1	50	150		0		
Surr: o-Terphenyl	10.5		10.71		97.7	50	150		0		

Sample ID: **2108212-004AMS**	SampType: **MS**			Units: **mg/Kg-dry**		Prep Date: **8/26/2021**		RunNo: **69563**			
Client ID: **BATCH**	Batch ID: **33501**					Analysis Date: **8/26/2021**		SeqNo: **1410093**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	568	151	502.8	0	113	68	132				

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **2108212-004AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69563**
Client ID: **BATCH** Batch ID: **33501** Analysis Date: **8/26/2021** SeqNo: **1410093**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	8.23		10.06		81.8	50	150				
Surr: o-Terphenyl	10.6		10.06		105	50	150				

Sample ID: **2108212-004AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69563**
Client ID: **BATCH** Batch ID: **33501** Analysis Date: **8/26/2021** SeqNo: **1410094**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	692	157	522.7	0	132	68	132	568.0	19.6	30	
Surr: 2-Fluorobiphenyl	9.38		10.45		89.7	50	150		0		
Surr: o-Terphenyl	11.8		10.45		113	50	150		0		

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **MB-33646** SampType: **MBLK** Units: **µg/Kg** Prep Date: **9/9/2021** RunNo: **69843**
Client ID: **MBLKS** Batch ID: **33646** Analysis Date: **9/10/2021** SeqNo: **1416121**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	20.0									
2-Methylnaphthalene	ND	20.0									
1-Methylnaphthalene	ND	20.0									
Acenaphthylene	ND	20.0									
Acenaphthene	ND	20.0									
Fluorene	ND	20.0									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Fluoranthene	ND	40.0									
Pyrene	ND	40.0									
Benz(a)anthracene	ND	20.0									
Chrysene	ND	40.0									
Benzo(b)fluoranthene	ND	20.0									
Benzo(k)fluoranthene	ND	20.0									
Benzo(a)pyrene	ND	20.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Benzo(g,h,i)perylene	ND	20.0									
Surr: 2-Fluorobiphenyl	936		1,000		93.6	27.9	129				
Surr: Terphenyl-d14 (surr)	1,120		1,000		112	39.1	145				

Sample ID: **LCS-33646** SampType: **LCS** Units: **µg/Kg** Prep Date: **9/9/2021** RunNo: **69843**
Client ID: **LCSS** Batch ID: **33646** Analysis Date: **9/10/2021** SeqNo: **1416122**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,780	20.0	2,000	0	88.8	61	110				
2-Methylnaphthalene	1,650	20.0	2,000	0	82.7	60	115				
1-Methylnaphthalene	1,760	20.0	2,000	0	87.9	63	112				
Acenaphthylene	1,800	20.0	2,000	0	90.0	57.4	113				
Acenaphthene	1,730	20.0	2,000	0	86.7	58.7	108				

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCS-33646** SampType: **LCS** Units: **µg/Kg** Prep Date: **9/9/2021** RunNo: **69843**
Client ID: **LCSS** Batch ID: **33646** Analysis Date: **9/10/2021** SeqNo: **1416122**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluorene	1,840	20.0	2,000	0	92.0	63	110				
Phenanthrene	1,740	40.0	2,000	0	87.1	60.3	111				
Anthracene	1,760	40.0	2,000	0	88.0	60.4	110				
Fluoranthene	1,820	40.0	2,000	0	91.0	62.3	115				
Pyrene	1,740	40.0	2,000	0	87.2	59.7	115				
Benz(a)anthracene	1,900	20.0	2,000	0	94.9	64.4	113				
Chrysene	1,760	40.0	2,000	0	87.9	57.3	113				
Benzo(b)fluoranthene	1,780	20.0	2,000	0	89.0	58.2	115				
Benzo(k)fluoranthene	1,870	20.0	2,000	0	93.6	53.4	121				
Benzo(a)pyrene	1,970	20.0	2,000	0	98.7	64.7	125				
Indeno(1,2,3-cd)pyrene	1,770	40.0	2,000	0	88.7	61.6	113				
Dibenz(a,h)anthracene	1,860	40.0	2,000	0	93.1	62.1	116				
Benzo(g,h,i)perylene	1,810	20.0	2,000	0	90.3	55.4	111				
Surr: 2-Fluorobiphenyl	839		1,000		83.9	27.9	129				
Surr: Terphenyl-d14 (surr)	912		1,000		91.2	39.1	145				

Sample ID: **2108342-003AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69843**
Client ID: **CHRL-A9-B3-1.5** Batch ID: **33646** Analysis Date: **9/10/2021** SeqNo: **1416124**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	2,100	22.3	2,232	0	94.2	35.2	107				H
2-Methylnaphthalene	2,100	22.3	2,232	0	93.9	43.9	106				H
1-Methylnaphthalene	2,100	22.3	2,232	0	94.2	46.4	105				H
Acenaphthylene	2,100	22.3	2,232	0	94.0	42.7	104				H
Acenaphthene	2,020	22.3	2,232	0	90.6	43.7	102				H
Fluorene	2,180	22.3	2,232	23.94	96.5	46.8	106				H
Phenanthrene	2,130	44.6	2,232	75.93	91.8	43.8	109				H
Anthracene	2,070	44.6	2,232	7.373	92.2	45.2	107				H
Fluoranthene	2,130	44.6	2,232	15.79	94.8	44.9	111				H
Pyrene	2,080	44.6	2,232	25.74	92.0	41.8	109				H

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2108342-003AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69843**
Client ID: **CHRL-A9-B3-1.5** Batch ID: **33646** Analysis Date: **9/10/2021** SeqNo: **1416124**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	2,210	22.3	2,232	0	99.0	45	110				H
Chrysene	2,070	44.6	2,232	0	92.6	42.4	106				H
Benzo(b)fluoranthene	2,430	22.3	2,232	0	109	43.7	108				SH
Benzo(k)fluoranthene	2,090	22.3	2,232	0	93.7	39.5	113				H
Benzo(a)pyrene	2,490	22.3	2,232	0	112	44.1	122				H
Indeno(1,2,3-cd)pyrene	2,000	44.6	2,232	0	89.5	40.2	109				H
Dibenz(a,h)anthracene	2,090	44.6	2,232	0	93.5	31.4	126				H
Benzo(g,h,i)perylene	2,080	22.3	2,232	23.28	92.1	28.8	108				H
Surr: 2-Fluorobiphenyl	2,120		2,232		95.1	27.9	129				H
Surr: Terphenyl-d14 (surr)	2,180		2,232		97.5	39.1	145				H

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID: **2108342-003AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69843**
Client ID: **CHRL-A9-B3-1.5** Batch ID: **33646** Analysis Date: **9/10/2021** SeqNo: **1416125**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	2,240	22.7	2,271	0	98.7	35.2	107	2,103	6.39	30	H
2-Methylnaphthalene	2,120	22.7	2,271	0	93.3	43.9	106	2,096	1.10	30	H
1-Methylnaphthalene	2,230	22.7	2,271	0	98.3	46.4	105	2,104	5.91	30	H
Acenaphthylene	2,290	22.7	2,271	0	101	42.7	104	2,098	8.66	30	H
Acenaphthene	2,210	22.7	2,271	0	97.4	43.7	102	2,022	8.92	30	H
Fluorene	2,370	22.7	2,271	23.94	103	46.8	106	2,177	8.61	30	H
Phenanthrene	2,320	45.4	2,271	75.93	99.0	43.8	109	2,125	8.88	30	H
Anthracene	2,280	45.4	2,271	7.373	100	45.2	107	2,065	9.83	30	H
Fluoranthene	2,330	45.4	2,271	15.79	102	44.9	111	2,132	8.69	30	H
Pyrene	2,270	45.4	2,271	25.74	98.7	41.8	109	2,081	8.59	30	H
Benz(a)anthracene	2,390	22.7	2,271	0	105	45	110	2,209	7.86	30	H
Chrysene	2,240	45.4	2,271	0	98.8	42.4	106	2,067	8.21	30	H
Benzo(b)fluoranthene	2,530	22.7	2,271	0	111	43.7	108	2,432	3.78	30	SH
Benzo(k)fluoranthene	2,300	22.7	2,271	0	101	39.5	113	2,093	9.23	30	H

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2108342-003AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69843**
Client ID: **CHRL-A9-B3-1.5** Batch ID: **33646** Analysis Date: **9/10/2021** SeqNo: **1416125**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(a)pyrene	2,610	22.7	2,271	0	115	44.1	122	2,492	4.78	30	H
Indeno(1,2,3-cd)pyrene	2,110	45.4	2,271	0	93.1	40.2	109	1,998	5.70	30	H
Dibenz(a,h)anthracene	2,210	45.4	2,271	0	97.4	31.4	126	2,087	5.81	30	H
Benzo(g,h,i)perylene	2,200	22.7	2,271	23.28	95.8	28.8	108	2,079	5.62	30	H
Surr: 2-Fluorobiphenyl	1,130		1,135		99.9	27.9	129		0		H
Surr: Terphenyl-d14 (surr)	1,170		1,135		103	39.1	145		0		H

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: **MB-33689** SampType: **MBLK** Units: **mg/Kg** Prep Date: **9/14/2021** RunNo: **69900**
Client ID: **MBLKS** Batch ID: **33689** Analysis Date: **9/14/2021** SeqNo: **1417273**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.0167									
Aroclor 1221	ND	0.0167									
Aroclor 1232	ND	0.0167									
Aroclor 1242	ND	0.0167									
Aroclor 1248	ND	0.0167									
Aroclor 1254	ND	0.0167									
Aroclor 1260	ND	0.0167									
Aroclor 1262	ND	0.0167									
Aroclor 1268	ND	0.0167									
Total PCBs	ND	0.0167									
Surr: Decachlorobiphenyl	45.9		66.98		68.6	20.6	142				
Surr: Tetrachloro-m-xylene	49.9		66.98		74.6	22	157				

Sample ID: **LCS1-33689** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/14/2021** RunNo: **69900**
Client ID: **LCSS** Batch ID: **33689** Analysis Date: **9/14/2021** SeqNo: **1417274**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	0.948	0.0500	1.000	0	94.8	48.1	147				
Surr: Decachlorobiphenyl	196		200.0		97.8	20.6	142				
Surr: Tetrachloro-m-xylene	222		200.0		111	22	157				

Sample ID: **LCS2-33689** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/14/2021** RunNo: **69900**
Client ID: **LCSS** Batch ID: **33689** Analysis Date: **9/14/2021** SeqNo: **1417275**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.850	0.0500	1.000	0	85.0	52.2	136				
Aroclor 1260	0.926	0.0500	1.000	0	92.6	50.5	150				
Surr: Decachlorobiphenyl	179		200.0		89.4	20.6	142				
Surr: Tetrachloro-m-xylene	213		200.0		106	22	157				

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: **LCS2-33689**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **9/14/2021**		RunNo: **69900**			
Client ID: **LCSS**	Batch ID: **33689**					Analysis Date: **9/14/2021**		SeqNo: **1417275**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2109045-001AMS**	SampType: **MS**			Units: **mg/Kg-dry**		Prep Date: **9/14/2021**		RunNo: **69900**			
Client ID: **BATCH**	Batch ID: **33689**					Analysis Date: **9/14/2021**		SeqNo: **1417277**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	0.320	0.0170	0.3393	0	94.4	50	150				
Surr: Decachlorobiphenyl	62.8		67.86		92.5	20.6	142				
Surr: Tetrachloro-m-xylene	57.8		67.86		85.2	22	157				

Sample ID: **2109045-001AMSD**	SampType: **MSD**			Units: **mg/Kg-dry**		Prep Date: **9/14/2021**		RunNo: **69900**			
Client ID: **BATCH**	Batch ID: **33689**					Analysis Date: **9/14/2021**		SeqNo: **1417278**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	0.318	0.0170	0.3391	0	93.7	50	150	0.3203	0.841		
Surr: Decachlorobiphenyl	58.7		67.82		86.5	20.6	142		0		
Surr: Tetrachloro-m-xylene	47.8		67.82		70.5	22	157		0		

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **LCS-33496**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **8/26/2021**			RunNo: **69541**		
Client ID: **LCSS**	Batch ID: **33496**					Analysis Date: **8/26/2021**			SeqNo: **1409551**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	25.2	5.00	25.00	0	101	65	135				
Surr: Toluene-d8	1.26		1.250		101	65	135				
Surr: 4-Bromofluorobenzene	1.27		1.250		102	65	135				

Sample ID: **MB-33496**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **8/26/2021**			RunNo: **69541**		
Client ID: **MBLKS**	Batch ID: **33496**					Analysis Date: **8/26/2021**			SeqNo: **1409552**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.00									
Surr: Toluene-d8	1.21		1.250		96.6	65	135				
Surr: 4-Bromofluorobenzene	1.11		1.250		89.0	65	135				

Sample ID: **2108296-001BDUP**	SampType: **DUP**			Units: **mg/Kg-dry**		Prep Date: **8/26/2021**			RunNo: **69541**		
Client ID: **BATCH**	Batch ID: **33496**					Analysis Date: **8/26/2021**			SeqNo: **1409529**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.77						0		30	
Surr: Toluene-d8	1.39		1.442		96.1	65	135		0		
Surr: 4-Bromofluorobenzene	1.26		1.442		87.2	65	135		0		

Sample ID: **2108342-001BMS**	SampType: **MS**			Units: **mg/Kg-dry**		Prep Date: **8/26/2021**			RunNo: **69541**		
Client ID: **CHRL-A9-B1-2**	Batch ID: **33496**					Analysis Date: **8/26/2021**			SeqNo: **1409545**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	20.6	4.92	24.60	1.975	75.6	65	135				
Surr: Toluene-d8	1.22		1.230		99.1	65	135				
Surr: 4-Bromofluorobenzene	1.27		1.230		103	65	135				

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **2108296-020BDUP**	SampType: **DUP**			Units: **mg/Kg-dry**		Prep Date: **8/26/2021**		RunNo: **69541**	
Client ID: **BATCH**	Batch ID: **33496**					Analysis Date: **8/26/2021**		SeqNo: **1409543**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.93						0		30	
Surr: Toluene-d8	1.43		1.482		96.3	65	135		0		
Surr: 4-Bromofluorobenzene	1.29		1.482		87.0	65	135		0		

Sample ID: **LCS-33651**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **9/9/2021**		RunNo: **69824**	
Client ID: **LCSS**	Batch ID: **33651**					Analysis Date: **9/9/2021**		SeqNo: **1415876**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	25.7	5.00	25.00	0	103	65	135				
Surr: Toluene-d8	1.29		1.250		103	65	135				
Surr: 4-Bromofluorobenzene	1.29		1.250		103	65	135				

Sample ID: **MB-33651**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **9/9/2021**		RunNo: **69824**	
Client ID: **MBLKS**	Batch ID: **33651**					Analysis Date: **9/9/2021**		SeqNo: **1415877**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.00									
Surr: Toluene-d8	1.24		1.250		99.0	65	135				
Surr: 4-Bromofluorobenzene	1.12		1.250		89.7	65	135				

Sample ID: **2109107-003BDUP**	SampType: **DUP**			Units: **mg/Kg-dry**		Prep Date: **9/9/2021**		RunNo: **69824**	
Client ID: **BATCH**	Batch ID: **33651**					Analysis Date: **9/10/2021**		SeqNo: **1415863**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	4.54						0		30	
Surr: Toluene-d8	1.11		1.135		98.2	65	135		0		
Surr: 4-Bromofluorobenzene	1.04		1.135		91.9	65	135		0		

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **2109107-004BDUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **9/9/2021**	RunNo: **69824**
Client ID: **BATCH**	Batch ID: **33651**		Analysis Date: **9/10/2021**	SeqNo: **1415865**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	4.67						0		30	
Surr: Toluene-d8	1.14		1.166		97.5	65	135		0		
Surr: 4-Bromofluorobenzene	1.07		1.166		91.7	65	135		0		

Sample ID: **2109107-017BMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **9/9/2021**	RunNo: **69824**
Client ID: **BATCH**	Batch ID: **33651**		Analysis Date: **9/10/2021**	SeqNo: **1415869**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	24.7	5.19	25.97	0	95.1	65	135				
Surr: Toluene-d8	1.32		1.299		102	65	135				
Surr: 4-Bromofluorobenzene	1.33		1.299		103	65	135				

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-33496** SampType: **LCS** Units: **µg/L** Prep Date: **8/26/2021** RunNo: **69538**
Client ID: **LCSS** Batch ID: **33496** Analysis Date: **8/26/2021** SeqNo: **1409518**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.995	0.0200	1.000	0	99.5	80	120				
Toluene	0.989	0.0300	1.000	0	98.9	80	120				
Ethylbenzene	1.03	0.0250	1.000	0	103	80	120				
m,p-Xylene	2.08	0.0500	2.000	0	104	80	120				
o-Xylene	1.04	0.0250	1.000	0	104	80	120				
Surr: Dibromofluoromethane	1.24		1.250		98.9	75.5	120				
Surr: Toluene-d8	1.25		1.250		99.8	80	120				
Surr: 1-Bromo-4-fluorobenzene	1.39		1.250		111	78.5	120				

Sample ID: **MB-33496** SampType: **MBLK** Units: **mg/Kg** Prep Date: **8/26/2021** RunNo: **69538**
Client ID: **MBLKS** Batch ID: **33496** Analysis Date: **8/26/2021** SeqNo: **1409517**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0200									
Toluene	ND	0.0300									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Surr: Dibromofluoromethane	1.24		1.250		98.9	75.5	119				
Surr: Toluene-d8	1.22		1.250		97.5	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	1.16		1.250		92.6	78.5	118				

Sample ID: **2108296-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69538**
Client ID: **BATCH** Batch ID: **33496** Analysis Date: **8/26/2021** SeqNo: **1409487**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0231						0		30	
Toluene	ND	0.0346						0		30	
Ethylbenzene	ND	0.0288						0		30	

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108296-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69538**
Client ID: **BATCH** Batch ID: **33496** Analysis Date: **8/26/2021** SeqNo: **1409487**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	ND	0.0577						0		30	
o-Xylene	ND	0.0288						0		30	
Surr: Dibromofluoromethane	1.42		1.442		98.4	75.5	119		0		
Surr: Toluene-d8	1.40		1.442		97.3	82.4	115		0		
Surr: 1-Bromo-4-fluorobenzene	1.31		1.442		90.7	78.5	118		0		

Sample ID: **2108296-002BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69538**
Client ID: **BATCH** Batch ID: **33496** Analysis Date: **8/26/2021** SeqNo: **1409489**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.901	0.0183	0.9134	0.01629	96.9	75.3	131				
Toluene	0.923	0.0274	0.9134	0.01573	99.3	79.2	130				
Ethylbenzene	0.965	0.0228	0.9134	0.007240	105	79.7	133				
m,p-Xylene	1.93	0.0457	1.827	0.01747	105	81.2	125				
o-Xylene	0.925	0.0228	0.9134	0.01015	100	76.9	130				
Surr: Dibromofluoromethane	1.17		1.142		102	75.5	119				
Surr: Toluene-d8	1.14		1.142		99.8	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	1.23		1.142		108	78.5	118				

Sample ID: **2108296-020BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69538**
Client ID: **BATCH** Batch ID: **33496** Analysis Date: **8/26/2021** SeqNo: **1409510**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0237						0		30	
Toluene	ND	0.0356						0		30	
Ethylbenzene	ND	0.0296						0		30	
m,p-Xylene	ND	0.0593						0		30	
o-Xylene	ND	0.0296						0		30	
Surr: Dibromofluoromethane	1.52		1.482		102	75.5	119		0		

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108296-020BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69538**
Client ID: **BATCH** Batch ID: **33496** Analysis Date: **8/26/2021** SeqNo: **1409510**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Toluene-d8	1.45		1.482		98.2	82.4	115		0		
Surr: 1-Bromo-4-fluorobenzene	1.34		1.482		90.7	78.5	118		0		

Sample ID: **LCS-33651** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **LCSS** Batch ID: **33651** Analysis Date: **9/9/2021** SeqNo: **1415832**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.887	0.0500	1.000	0	88.7	80	120				
Chloromethane	0.863	0.0800	1.000	0	86.3	80	120				
Vinyl chloride	0.964	0.0250	1.000	0	96.4	80	120				
Bromomethane	1.19	0.150	1.000	0	119	80	120				
Trichlorofluoromethane (CFC-11)	0.990	0.0500	1.000	0	99.0	80	120				
Chloroethane	1.01	0.120	1.000	0	101	80	120				
1,1-Dichloroethene	1.01	0.100	1.000	0	101	80	120				
Acetone	2.42	0.500	2.500	0	96.8	80	120				
Methylene chloride	0.981	0.0150	1.000	0	98.1	80	120				
trans-1,2-Dichloroethene	0.979	0.0300	1.000	0	97.9	80	120				
Methyl tert-butyl ether (MTBE)	0.993	0.0300	1.000	0	99.3	80	120				
1,1-Dichloroethane	0.986	0.0250	1.000	0	98.6	80	120				
cis-1,2-Dichloroethene	0.981	0.0250	1.000	0	98.1	80	120				
(MEK) 2-Butanone	2.43	0.450	2.500	0	97.2	80	120				
Chloroform	0.983	0.0250	1.000	0	98.3	80	120				
1,1,1-Trichloroethane (TCA)	1.00	0.0250	1.000	0	100	80	120				
1,1-Dichloropropene	0.990	0.0250	1.000	0	99.0	80	120				
Carbon tetrachloride	0.992	0.0750	1.000	0	99.2	80	120				
1,2-Dichloroethane (EDC)	0.963	0.0230	1.000	0	96.3	80	120				
Benzene	0.988	0.0200	1.000	0	98.8	80	120				
Trichloroethene (TCE)	1.01	0.0200	1.000	0	101	80	120				
1,2-Dichloropropane	0.983	0.0200	1.000	0	98.3	80	120				
Bromodichloromethane	0.963	0.0250	1.000	0	96.3	80	120				

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-33651** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **LCSS** Batch ID: **33651** Analysis Date: **9/9/2021** SeqNo: **1415832**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromomethane	0.976	0.0200	1.000	0	97.6	80	120				
cis-1,3-Dichloropropene	0.949	0.0800	1.000	0	94.9	80	120				
Toluene	0.988	0.0300	1.000	0	98.8	80	120				
Trans-1,3-Dichloropropylene	0.951	0.0500	1.000	0	95.1	80	120				
Methyl Isobutyl Ketone (MIBK)	2.55	0.0750	2.500	0	102	80	120				
1,1,2-Trichloroethane	0.963	0.0170	1.000	0	96.3	80	120				
1,3-Dichloropropane	0.976	0.0200	1.000	0	97.6	80	120				
Tetrachloroethene (PCE)	0.980	0.0400	1.000	0	98.0	80	120				
Dibromochloromethane	0.960	0.0200	1.000	0	96.0	80	120				
1,2-Dibromoethane (EDB)	0.972	0.0100	1.000	0	97.2	80	120				
2-Hexanone (MBK)	2.52	0.0600	2.500	0	101	80	120				
Chlorobenzene	0.978	0.0250	1.000	0	97.8	80	120				
1,1,1,2-Tetrachloroethane	0.973	0.0200	1.000	0	97.3	80	120				
Ethylbenzene	0.977	0.0250	1.000	0	97.7	80	120				
m,p-Xylene	2.00	0.0500	2.000	0	99.8	80	120				
o-Xylene	0.990	0.0250	1.000	0	99.0	80	120				
Styrene	0.984	0.0250	1.000	0	98.4	80	120				
Isopropylbenzene	0.993	0.0300	1.000	0	99.3	80	120				
Bromoform	0.981	0.0250	1.000	0	98.1	80	120				
1,1,2,2-Tetrachloroethane	0.977	0.0150	1.000	0	97.7	80	120				
n-Propylbenzene	0.987	0.0300	1.000	0	98.7	80	120				
Bromobenzene	0.972	0.0300	1.000	0	97.2	80	120				
1,3,5-Trimethylbenzene	1.00	0.0250	1.000	0	100	80	120				
2-Chlorotoluene	0.989	0.0300	1.000	0	98.9	80	120				
4-Chlorotoluene	0.992	0.0300	1.000	0	99.2	80	120				
tert-Butylbenzene	0.984	0.0300	1.000	0	98.4	80	120				
1,2,3-Trichloropropane	0.959	0.0250	1.000	0	95.9	80	120				
1,2,4-Trichlorobenzene	1.02	0.0400	1.000	0	102	80	120				
sec-Butylbenzene	0.995	0.0300	1.000	0	99.5	80	120				
4-Isopropyltoluene	0.987	0.0300	1.000	0	98.7	80	120				

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-33651** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **LCSS** Batch ID: **33651** Analysis Date: **9/9/2021** SeqNo: **1415832**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	1.01	0.0350	1.000	0	101	80	120				
1,4-Dichlorobenzene	1.01	0.0300	1.000	0	101	80	120				
n-Butylbenzene	1.02	0.0400	1.000	0	102	80	120				
1,2-Dichlorobenzene	1.02	0.0300	1.000	0	102	80	120				
1,2-Dibromo-3-chloropropane	1.02	0.0600	1.000	0	102	80	120				
1,2,4-Trimethylbenzene	0.999	0.0250	1.000	0	99.9	80	120				
Hexachloro-1,3-butadiene	1.02	0.0500	1.000	0	102	80	120				
Naphthalene	1.01	0.100	1.000	0	101	80	120				
1,2,3-Trichlorobenzene	1.01	0.0500	1.000	0	101	80	120				
Surr: Dibromofluoromethane	1.17		1.250		93.9	75.5	120				
Surr: Toluene-d8	1.27		1.250		102	80	120				
Surr: 1-Bromo-4-fluorobenzene	1.32		1.250		106	78.5	120				

Sample ID: **MB-33651** SampType: **MBLK** Units: **mg/Kg** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **MBLKS** Batch ID: **33651** Analysis Date: **9/9/2021** SeqNo: **1415831**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0500									
Chloromethane	ND	0.0800									
Vinyl chloride	ND	0.0250									
Bromomethane	ND	0.150									
Trichlorofluoromethane (CFC-11)	ND	0.0500									
Chloroethane	ND	0.120									
1,1-Dichloroethene	ND	0.100									
Acetone	ND	0.500									
Methylene chloride	ND	0.0150									
trans-1,2-Dichloroethene	ND	0.0300									
Methyl tert-butyl ether (MTBE)	ND	0.0300									
1,1-Dichloroethane	ND	0.0250									
cis-1,2-Dichloroethene	ND	0.0250									

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **MB-33651** SampType: **MBLK** Units: **mg/Kg** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **MBLKS** Batch ID: **33651** Analysis Date: **9/9/2021** SeqNo: **1415831**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
(MEK) 2-Butanone	ND	0.450									
Chloroform	ND	0.0250									
1,1,1-Trichloroethane (TCA)	ND	0.0250									
1,1-Dichloropropene	ND	0.0250									
Carbon tetrachloride	ND	0.0750									
1,2-Dichloroethane (EDC)	ND	0.0230									
Benzene	ND	0.0200									
Trichloroethene (TCE)	ND	0.0200									
1,2-Dichloropropane	ND	0.0200									
Bromodichloromethane	ND	0.0250									
Dibromomethane	ND	0.0200									
cis-1,3-Dichloropropene	ND	0.0800									
Toluene	ND	0.0300									
Trans-1,3-Dichloropropylene	ND	0.0500									
Methyl Isobutyl Ketone (MIBK)	ND	0.0750									
1,1,2-Trichloroethane	ND	0.0170									
1,3-Dichloropropane	ND	0.0200									
Tetrachloroethene (PCE)	ND	0.0400									
Dibromochloromethane	ND	0.0200									
1,2-Dibromoethane (EDB)	ND	0.0100									
2-Hexanone (MBK)	ND	0.0600									
Chlorobenzene	ND	0.0250									
1,1,1,2-Tetrachloroethane	ND	0.0200									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Styrene	ND	0.0250									
Isopropylbenzene	ND	0.0300									
Bromoform	ND	0.0250									
1,1,2,2-Tetrachloroethane	ND	0.0150									

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **MB-33651** SampType: **MBLK** Units: **mg/Kg** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **MBLKS** Batch ID: **33651** Analysis Date: **9/9/2021** SeqNo: **1415831**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
n-Propylbenzene	ND	0.0300									
Bromobenzene	ND	0.0300									
1,3,5-Trimethylbenzene	ND	0.0250									
2-Chlorotoluene	ND	0.0300									
4-Chlorotoluene	ND	0.0300									
tert-Butylbenzene	ND	0.0300									
1,2,3-Trichloropropane	ND	0.0250									
1,2,4-Trichlorobenzene	ND	0.0400									
sec-Butylbenzene	ND	0.0300									
4-Isopropyltoluene	ND	0.0300									
1,3-Dichlorobenzene	ND	0.0350									
1,4-Dichlorobenzene	ND	0.0300									
n-Butylbenzene	ND	0.0400									
1,2-Dichlorobenzene	ND	0.0300									
1,2-Dibromo-3-chloropropane	ND	0.0600									
1,2,4-Trimethylbenzene	ND	0.0250									
Hexachloro-1,3-butadiene	ND	0.0500									
Naphthalene	ND	0.100									
1,2,3-Trichlorobenzene	ND	0.0500									
Surr: Dibromofluoromethane	1.23		1.250		98.4	75.5	119				
Surr: Toluene-d8	1.20		1.250		95.8	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	1.16		1.250		93.2	78.5	118				

Sample ID: **2109107-003BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **BATCH** Batch ID: **33651** Analysis Date: **9/10/2021** SeqNo: **1415816**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0454						0		30	
Chloromethane	ND	0.0726						0		30	
Vinyl chloride	ND	0.0227						0		30	

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2109107-003BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **BATCH** Batch ID: **33651** Analysis Date: **9/10/2021** SeqNo: **1415816**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromomethane	ND	0.136						0		30	
Trichlorofluoromethane (CFC-11)	ND	0.0454						0		30	
Chloroethane	ND	0.109						0		30	
1,1-Dichloroethene	ND	0.0908						0		30	
Acetone	ND	0.454						0		30	
Methylene chloride	ND	0.0136						0		30	
trans-1,2-Dichloroethene	ND	0.0272						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0272						0		30	
1,1-Dichloroethane	ND	0.0227						0		30	
cis-1,2-Dichloroethene	ND	0.0227						0		30	
(MEK) 2-Butanone	ND	0.409						0		30	
Chloroform	ND	0.0227						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0227						0		30	
1,1-Dichloropropene	ND	0.0227						0		30	
Carbon tetrachloride	ND	0.0681						0		30	
1,2-Dichloroethane (EDC)	ND	0.0209						0		30	
Benzene	ND	0.0182						0		30	
Trichloroethene (TCE)	ND	0.0182						0		30	
1,2-Dichloropropane	ND	0.0182						0		30	
Bromodichloromethane	ND	0.0227						0		30	
Dibromomethane	ND	0.0182						0		30	
cis-1,3-Dichloropropene	ND	0.0726						0		30	
Toluene	ND	0.0272						0		30	
Trans-1,3-Dichloropropylene	ND	0.0454						0		30	
Methyl Isobutyl Ketone (MIBK)	ND	0.0681						0		30	
1,1,2-Trichloroethane	ND	0.0154						0		30	
1,3-Dichloropropane	ND	0.0182						0		30	
Tetrachloroethene (PCE)	ND	0.0363						0		30	
Dibromochloromethane	ND	0.0182						0		30	
1,2-Dibromoethane (EDB)	ND	0.00908						0		30	

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2109107-003BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **BATCH** Batch ID: **33651** Analysis Date: **9/10/2021** SeqNo: **1415816**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Hexanone (MBK)	ND	0.0545						0		30	
Chlorobenzene	ND	0.0227						0		30	
1,1,1,2-Tetrachloroethane	ND	0.0182						0		30	
Ethylbenzene	ND	0.0227						0		30	
m,p-Xylene	ND	0.0454						0		30	
o-Xylene	ND	0.0227						0		30	
Styrene	ND	0.0227						0		30	
Isopropylbenzene	ND	0.0272						0		30	
Bromoform	ND	0.0227						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0136						0		30	
n-Propylbenzene	ND	0.0272						0		30	
Bromobenzene	ND	0.0272						0		30	
1,3,5-Trimethylbenzene	ND	0.0227						0		30	
2-Chlorotoluene	ND	0.0272						0		30	
4-Chlorotoluene	ND	0.0272						0		30	
tert-Butylbenzene	ND	0.0272						0		30	
1,2,3-Trichloropropane	ND	0.0227						0		30	
1,2,4-Trichlorobenzene	ND	0.0363						0		30	
sec-Butylbenzene	ND	0.0272						0		30	
4-Isopropyltoluene	ND	0.0272						0		30	
1,3-Dichlorobenzene	ND	0.0318						0		30	
1,4-Dichlorobenzene	ND	0.0272						0		30	
n-Butylbenzene	ND	0.0363						0		30	
1,2-Dichlorobenzene	ND	0.0272						0		30	
1,2-Dibromo-3-chloropropane	ND	0.0545						0		30	
1,2,4-Trimethylbenzene	ND	0.0227						0		30	
Hexachloro-1,3-butadiene	ND	0.0454						0		30	
Naphthalene	ND	0.0908						0		30	
1,2,3-Trichlorobenzene	ND	0.0454						0		30	
Surr: Dibromofluoromethane	1.16		1.135		102	75.5	119		0		

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2109107-003BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **BATCH** Batch ID: **33651** Analysis Date: **9/10/2021** SeqNo: **1415816**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Toluene-d8	1.09		1.135		95.7	82.4	115		0		
Surr: 1-Bromo-4-fluorobenzene	1.07		1.135		94.1	78.5	118		0		

Sample ID: **2109107-004BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **BATCH** Batch ID: **33651** Analysis Date: **9/10/2021** SeqNo: **1415818**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0467						0		30	
Chloromethane	ND	0.0747						0		30	
Vinyl chloride	ND	0.0233						0		30	
Bromomethane	ND	0.140						0		30	
Trichlorofluoromethane (CFC-11)	ND	0.0467						0		30	
Chloroethane	ND	0.112						0		30	
1,1-Dichloroethene	ND	0.0933						0		30	
Acetone	ND	0.467						0		30	
Methylene chloride	ND	0.0140						0		30	
trans-1,2-Dichloroethene	ND	0.0280						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0280						0		30	
1,1-Dichloroethane	ND	0.0233						0		30	
cis-1,2-Dichloroethene	ND	0.0233						0		30	
(MEK) 2-Butanone	ND	0.420						0		30	
Chloroform	ND	0.0233						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0233						0		30	
1,1-Dichloropropene	ND	0.0233						0		30	
Carbon tetrachloride	ND	0.0700						0		30	
1,2-Dichloroethane (EDC)	ND	0.0215						0		30	
Benzene	ND	0.0187						0		30	
Trichloroethene (TCE)	ND	0.0187						0		30	
1,2-Dichloropropane	ND	0.0187						0		30	
Bromodichloromethane	ND	0.0233						0		30	

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2109107-004BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **BATCH** Batch ID: **33651** Analysis Date: **9/10/2021** SeqNo: **1415818**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromomethane	ND	0.0187						0		30	
cis-1,3-Dichloropropene	ND	0.0747						0		30	
Toluene	ND	0.0280						0		30	
Trans-1,3-Dichloropropylene	ND	0.0467						0		30	
Methyl Isobutyl Ketone (MIBK)	ND	0.0700						0		30	
1,1,2-Trichloroethane	ND	0.0159						0		30	
1,3-Dichloropropane	ND	0.0187						0		30	
Tetrachloroethene (PCE)	ND	0.0373						0		30	
Dibromochloromethane	ND	0.0187						0		30	
1,2-Dibromoethane (EDB)	ND	0.00933						0		30	
2-Hexanone (MBK)	ND	0.0560						0		30	
Chlorobenzene	ND	0.0233						0		30	
1,1,1,2-Tetrachloroethane	ND	0.0187						0		30	
Ethylbenzene	ND	0.0233						0		30	
m,p-Xylene	ND	0.0467						0		30	
o-Xylene	ND	0.0233						0		30	
Styrene	ND	0.0233						0		30	
Isopropylbenzene	ND	0.0280						0		30	
Bromoform	ND	0.0233						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0140						0		30	
n-Propylbenzene	ND	0.0280						0		30	
Bromobenzene	ND	0.0280						0		30	
1,3,5-Trimethylbenzene	ND	0.0233						0		30	
2-Chlorotoluene	ND	0.0280						0		30	
4-Chlorotoluene	ND	0.0280						0		30	
tert-Butylbenzene	ND	0.0280						0		30	
1,2,3-Trichloropropane	ND	0.0233						0		30	
1,2,4-Trichlorobenzene	ND	0.0373						0		30	
sec-Butylbenzene	ND	0.0280						0		30	
4-Isopropyltoluene	ND	0.0280						0		30	

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2109107-004BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **BATCH** Batch ID: **33651** Analysis Date: **9/10/2021** SeqNo: **1415818**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	ND	0.0327						0		30	
1,4-Dichlorobenzene	ND	0.0280						0		30	
n-Butylbenzene	ND	0.0373						0		30	
1,2-Dichlorobenzene	ND	0.0280						0		30	
1,2-Dibromo-3-chloropropane	ND	0.0560						0		30	
1,2,4-Trimethylbenzene	ND	0.0233						0		30	
Hexachloro-1,3-butadiene	ND	0.0467						0		30	
Naphthalene	ND	0.0933						0		30	
1,2,3-Trichlorobenzene	ND	0.0467						0		30	
Surr: Dibromofluoromethane	1.20		1.166		103	75.5	119		0		
Surr: Toluene-d8	1.12		1.166		95.8	82.4	115		0		
Surr: 1-Bromo-4-fluorobenzene	1.10		1.166		94.6	78.5	118		0		

Sample ID: **2109115-001BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **BATCH** Batch ID: **33651** Analysis Date: **9/10/2021** SeqNo: **1415827**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.876	0.0589	1.177	0	74.4	5.35	148				
Chloromethane	0.933	0.0942	1.177	0	79.3	34.4	134				
Vinyl chloride	1.10	0.0294	1.177	0	93.8	50.3	134				
Bromomethane	1.39	0.177	1.177	0	118	40.2	164				
Trichlorofluoromethane (CFC-11)	1.16	0.0589	1.177	0	98.9	54.1	142				
Chloroethane	1.27	0.141	1.177	0	108	42.4	148				
1,1-Dichloroethene	1.17	0.118	1.177	0	99.2	62.2	138				
Acetone	2.98	0.589	2.944	0	101	56.3	172				
Methylene chloride	1.20	0.0177	1.177	0	102	66.3	131				
trans-1,2-Dichloroethene	1.19	0.0353	1.177	0	101	70.2	132				
Methyl tert-butyl ether (MTBE)	1.15	0.0353	1.177	0	97.3	64.8	140				
1,1-Dichloroethane	1.18	0.0294	1.177	0	100	72	130				
cis-1,2-Dichloroethene	1.17	0.0294	1.177	0	99.8	79.6	125				

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2109115-001BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **BATCH** Batch ID: **33651** Analysis Date: **9/10/2021** SeqNo: **1415827**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
(MEK) 2-Butanone	3.17	0.530	2.944	0	108	73.1	138				
Chloroform	1.18	0.0294	1.177	0	99.8	77.3	128				
1,1,1-Trichloroethane (TCA)	1.20	0.0294	1.177	0	102	81.2	124				
1,1-Dichloropropene	1.18	0.0294	1.177	0	100	77.9	127				
Carbon tetrachloride	1.20	0.0883	1.177	0	102	76.9	126				
1,2-Dichloroethane (EDC)	1.18	0.0271	1.177	0	101	74.1	130				
Benzene	1.19	0.0235	1.177	0	101	75.3	131				
Trichloroethene (TCE)	1.22	0.0235	1.177	0	103	78.9	132				
1,2-Dichloropropane	1.17	0.0235	1.177	0	99.4	77	126				
Bromodichloromethane	1.17	0.0294	1.177	0	99.6	75.1	127				
Dibromomethane	1.19	0.0235	1.177	0	101	77.6	126				
cis-1,3-Dichloropropene	1.09	0.0942	1.177	0	92.7	74.5	123				
Toluene	1.19	0.0353	1.177	0	101	79.2	130				
Trans-1,3-Dichloropropylene	1.10	0.0589	1.177	0	93.3	74.3	124				
Methyl Isobutyl Ketone (MIBK)	3.06	0.0883	2.944	0	104	71.8	141				
1,1,2-Trichloroethane	1.19	0.0200	1.177	0	101	77.2	127				
1,3-Dichloropropane	1.19	0.0235	1.177	0	101	74.1	129				
Tetrachloroethene (PCE)	1.20	0.0471	1.177	0	102	77.7	131				
Dibromochloromethane	1.19	0.0235	1.177	0	101	69.7	131				
1,2-Dibromoethane (EDB)	1.19	0.0118	1.177	0	101	78.1	126				
2-Hexanone (MBK)	3.06	0.0706	2.944	0	104	59.3	153				
Chlorobenzene	1.20	0.0294	1.177	0	102	84.7	121				
1,1,1,2-Tetrachloroethane	1.19	0.0235	1.177	0	101	81.8	123				
Ethylbenzene	1.19	0.0294	1.177	0	101	79.7	133				
m,p-Xylene	2.43	0.0589	2.355	0	103	81.2	125				
o-Xylene	1.20	0.0294	1.177	0	102	76.9	130				
Styrene	1.24	0.0294	1.177	0	105	86.2	119				
Isopropylbenzene	1.20	0.0353	1.177	0	102	79.4	132				
Bromoform	1.19	0.0294	1.177	0	101	69.3	136				
1,1,2,2-Tetrachloroethane	1.16	0.0177	1.177	0	98.3	49.1	149				

Work Order: 2108342
CLIENT: O'Neill Service Group
Project: Cedar Hills Reg Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2109115-001BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **9/9/2021** RunNo: **69823**
Client ID: **BATCH** Batch ID: **33651** Analysis Date: **9/10/2021** SeqNo: **1415827**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
n-Propylbenzene	1.20	0.0353	1.177	0	102	77	139				
Bromobenzene	1.20	0.0353	1.177	0	102	77.2	129				
1,3,5-Trimethylbenzene	1.20	0.0294	1.177	0	102	76.7	135				
2-Chlorotoluene	1.21	0.0353	1.177	0	103	76.8	135				
4-Chlorotoluene	1.20	0.0353	1.177	0	102	77.4	131				
tert-Butylbenzene	1.19	0.0353	1.177	0	101	76.5	135				
1,2,3-Trichloropropane	1.14	0.0294	1.177	0	96.9	70.2	132				
1,2,4-Trichlorobenzene	1.16	0.0471	1.177	0	98.9	78.8	129				
sec-Butylbenzene	1.19	0.0353	1.177	0	101	75.7	141				
4-Isopropyltoluene	1.18	0.0353	1.177	0	100	75.2	140				
1,3-Dichlorobenzene	1.19	0.0412	1.177	0	101	86.3	123				
1,4-Dichlorobenzene	1.20	0.0353	1.177	0	102	86.1	123				
n-Butylbenzene	1.14	0.0471	1.177	0	96.9	79.4	130				
1,2-Dichlorobenzene	1.22	0.0353	1.177	0	104	87.8	120				
1,2-Dibromo-3-chloropropane	1.21	0.0706	1.177	0	103	69.5	135				
1,2,4-Trimethylbenzene	1.20	0.0294	1.177	0	102	76	137				
Hexachloro-1,3-butadiene	1.10	0.0589	1.177	0	93.2	70.9	137				
Naphthalene	1.20	0.118	1.177	0	102	72.3	141				
1,2,3-Trichlorobenzene	1.19	0.0589	1.177	0	101	75.1	133				
Surr: Dibromofluoromethane	1.38		1.472		93.8	75.5	119				
Surr: Toluene-d8	1.50		1.472		102	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	1.55		1.472		105	78.5	118				

Sample Log-In Check List

Client Name:	**ONEILL**	Work Order Number:	**2108342**
Logged by:	**Clare Griggs**	Date Received:	**8/24/2021 5:12:00 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No ☐	Not Present	☐
2.	How was the sample delivered?	Client				

Log In

3.	Coolers are present?	Yes	☑	No ☐	NA	☐
4.	Shipping container/cooler in good condition?	Yes	☑	No ☐		
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No ☐	Not Present	☑
6.	Was an attempt made to cool the samples?	Yes	☑	No ☐	NA	☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes	☑	No ☐	NA	☐
8.	Sample(s) in proper container(s)?	Yes	☑	No ☐		
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No ☐		
10.	Are samples properly preserved?	Yes	☑	No ☐		
11.	Was preservative added to bottles?	Yes	☐	No ☑	NA	☐
12.	Is there headspace in the VOA vials?	Yes	☐	No ☐	NA	☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No ☐		
14.	Does paperwork match bottle labels?	Yes	☑	No ☐		
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No ☐		
16.	Is it clear what analyses were requested?	Yes	☑	No ☐		
17.	Were all holding times able to be met?	Yes	☐	No ☑		

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☑	No ☐	NA	☐

Person Notified:	Vance Attkins	Date:	9/9/2021
By Whom:	Gabrielle Coeuille	Via:	☑ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:	Ok to proceed out of hold for add ons?		
Client Instructions:	Proceed.		

19. Additional remarks:

Item Information

Item #	Temp °C
Sample	2.9

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 8/24/21 Page: 1 of: 1

Laboratory Project No (internal): 210342

Project Name: CEDAR HILLS REG. LANDFILL

Special Remarks:

Client: OSG

Project No: 3023

Address:

Collected by: ATKINS

City, State, Zip:

Location: MAINT FACILITY

Telephone:

Report To (PM): ATKINS

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Fax:

PM Email:

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	# of Cont.	VOCs (EPA 8260 / 624)	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1	GHRL-A9-B1-2	8/24/21	830	S	3		X	X		X								
2	B2-2		950					↓		X								
3	B3-1.5		1000				~~X~~	~~X~~		X								
4	B4-2		1020															HOLD
5	B5-2	↓	1040	↓	↓													HOLD
6																		
7																		
8																		
9																		
10																		

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Turn-around Time:
☒ Standard ☐ Next Day
☐ 3 Day ☐ Same Day
☐ 2 Day (specify)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x	VANCE ATKINS	8/24/21 1700	x	Oliver Kroll	8/24/21 1712
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 8/24/21 Page: 1 of: 1

Laboratory Project No (internal): 210342

Project Name: CEDAR HILLS REG. LANDFILL

Special Remarks: Add analysis per VA 9/8/21- gac

Client: OSG

Project No: 3023

Address:

Collected by: ATKINS

City, State, Zip:

Location: MAINT FACILITY

Telephone:

Report To (PM): ATKINS

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Fax:

PM Email:

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	# of Cont.	VOCs (EPA 8260 / 624)	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8) Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1	CHRL-A9-B1-2	8/24/21	830	S	3		X	X		X							
2	B2-2		850					↓	X								
3	B3-1.5		1000			X	~~X~~	X	X		X	X	X				
4	B4-2		1020														HOLD
5	B5-2	↓	1040	↓	↓												HOLD
6																	
7																	
8																	
9																	
10																	

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Turn-around Time:
☒ Standard ☐ Next Day
☐ 3 Day ☐ Same Day
☐ 2 Day (specify)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x	VANCE ATKINS	8/24/21 1712	x	Oliver Kroll	8/24/21 1712
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

O'Neill Service Group
Vance Atkins
17619 NE 67th Court, Suite 100
Redmond, WA 98052

RE: CHRL- AREA 9
Work Order Number: 2108362

September 01, 2021

Attention Vance Atkins:

Fremont Analytical, Inc. received 25 sample(s) on 8/25/2021 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Dissolved Mercury by EPA Method 245.1
Dissolved Metals by EPA Method 200.8
Gasoline by NWTPH-Gx
Mercury by EPA Method 7471B
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020B
Volatile Organic Compounds by EPA Method 8260D

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.3 for Environmental Testing
ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing
Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910

Brianna Barnes
Project Manager

Fremont Analytical

Date: *09/01/2021*

CLIENT: O'Neill Service Group
Project: CHRL- AREA 9
Work Order: 2108362

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2108362-001	CHRL-A9-B1-10	08/25/2021 9:00 AM	08/25/2021 5:18 PM
2108362-002	CHRL-A9-B2-8	08/25/2021 9:40 AM	08/25/2021 5:18 PM
2108362-003	CHRL-A9-B6-4	08/25/2021 10:05 AM	08/25/2021 5:18 PM
2108362-004	CHRL-A9-B6-10	08/25/2021 10:10 AM	08/25/2021 5:18 PM
2108362-005	CHRL-A9-B7-4	08/25/2021 10:30 AM	08/25/2021 5:18 PM
2108362-006	CHRL-A9-B7-9	08/25/2021 10:35 AM	08/25/2021 5:18 PM
2108362-007	CHRL-A9-B8-5	08/25/2021 11:05 AM	08/25/2021 5:18 PM
2108362-008	CHRL-A9-B8-10	08/25/2021 11:10 AM	08/25/2021 5:18 PM
2108362-009	CHRL-A9-B8-W	08/25/2021 11:45 AM	08/25/2021 5:18 PM
2108362-010	CHRL-A9-B9-4	08/25/2021 12:20 PM	08/25/2021 5:18 PM
2108362-011	CHRL-A9-B9-8	08/25/2021 12:25 PM	08/25/2021 5:18 PM
2108362-012	CHRL-A9-B9-12	08/25/2021 12:30 PM	08/25/2021 5:18 PM
2108362-013	CHRL-A9-B10-5	08/25/2021 12:45 PM	08/25/2021 5:18 PM
2108362-014	CHRL-A9-B10-10	08/25/2021 12:50 PM	08/25/2021 5:18 PM
2108362-015	CHRL-A9-B11-5	08/25/2021 1:15 PM	08/25/2021 5:18 PM
2108362-016	CHRL-A9-B11-10	08/25/2021 1:20 PM	08/25/2021 5:18 PM
2108362-017	CHRL-A9-B11-15	08/25/2021 1:25 PM	08/25/2021 5:18 PM
2108362-018	CHRL-A9-B12-4	08/25/2021 1:35 PM	08/25/2021 5:18 PM
2108362-019	CHRL-A9-B12-8	08/25/2021 1:40 PM	08/25/2021 5:18 PM
2108362-020	CHRL-A9-B12-11	08/25/2021 1:45 PM	08/25/2021 5:18 PM
2108362-021	CHRL-A9-B12-12	08/25/2021 1:50 PM	08/25/2021 5:18 PM
2108362-022	CHRL-A9-B13-7	08/25/2021 2:15 PM	08/25/2021 5:18 PM
2108362-023	CHRL-A9-B13-9	08/25/2021 2:20 PM	08/25/2021 5:18 PM
2108362-024	CHRL-A9-Dup	08/25/2021 8:00 AM	08/25/2021 5:18 PM
2108362-025	Trip Blank		08/25/2021 5:18 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2108362**
Date: **9/1/2021**

CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-001
Client Sample ID: **CHRL-A9-B1-10**

Collection Date: 8/25/2021 9:00:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33522		Analyst: MM
Diesel (Fuel Oil)	ND	58.9		mg/Kg-dry	1	8/27/2021 3:53:55 PM
Heavy Oil	ND	118		mg/Kg-dry	1	8/27/2021 3:53:55 PM
Total Petroleum Hydrocarbons	ND	177		mg/Kg-dry	1	8/27/2021 3:53:55 PM
Surr: 2-Fluorobiphenyl	71.0	50 - 150		%Rec	1	8/27/2021 3:53:55 PM
Surr: o-Terphenyl	86.7	50 - 150		%Rec	1	8/27/2021 3:53:55 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	7.07		mg/Kg-dry	1	8/31/2021 9:23:05 PM
Surr: Toluene-d8	96.3	65 - 135		%Rec	1	8/31/2021 9:23:05 PM
Surr: 4-Bromofluorobenzene	89.4	65 - 135		%Rec	1	8/31/2021 9:23:05 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Benzene	ND	0.0283		mg/Kg-dry	1	8/31/2021 9:23:05 PM
Toluene	ND	0.0424		mg/Kg-dry	1	8/31/2021 9:23:05 PM
Ethylbenzene	ND	0.0353		mg/Kg-dry	1	8/31/2021 9:23:05 PM
m,p-Xylene	ND	0.0707		mg/Kg-dry	1	8/31/2021 9:23:05 PM
o-Xylene	ND	0.0353		mg/Kg-dry	1	8/31/2021 9:23:05 PM
Surr: Dibromofluoromethane	97.8	75.5 - 119		%Rec	1	8/31/2021 9:23:05 PM
Surr: Toluene-d8	97.1	82.4 - 115		%Rec	1	8/31/2021 9:23:05 PM
Surr: 1-Bromo-4-fluorobenzene	90.1	78.5 - 118		%Rec	1	8/31/2021 9:23:05 PM
Sample Moisture (Percent Moisture)				Batch ID: R69522		Analyst: MCH
Percent Moisture	24.0	0.500		wt%	1	8/27/2021 9:10:05 AM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-002
Client Sample ID: **CHRL-A9-B2-8**

Collection Date: 8/25/2021 9:40:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33522		Analyst: MM
Diesel (Fuel Oil)	ND	53.7		mg/Kg-dry	1	8/27/2021 4:06:42 PM
Heavy Oil	ND	107		mg/Kg-dry	1	8/27/2021 4:06:42 PM
Total Petroleum Hydrocarbons	ND	161		mg/Kg-dry	1	8/27/2021 4:06:42 PM
Surr: 2-Fluorobiphenyl	66.2	50 - 150		%Rec	1	8/27/2021 4:06:42 PM
Surr: o-Terphenyl	80.4	50 - 150		%Rec	1	8/27/2021 4:06:42 PM
Sample Moisture (Percent Moisture)				Batch ID: R69522		Analyst: MCH
Percent Moisture	8.82	0.500		wt%	1	8/27/2021 9:10:05 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 10:05:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-003
Matrix: Soil
Client Sample ID: **CHRL-A9-B6-4**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33522		Analyst: MM
Diesel (Fuel Oil)	ND	48.3		mg/Kg-dry	1	8/27/2021 4:23:26 PM
Heavy Oil	129	96.6		mg/Kg-dry	1	8/27/2021 4:23:26 PM
Total Petroleum Hydrocarbons	ND	145		mg/Kg-dry	1	8/27/2021 4:23:26 PM
Surr: 2-Fluorobiphenyl	77.6	50 - 150		%Rec	1	8/27/2021 4:23:26 PM
Surr: o-Terphenyl	89.7	50 - 150		%Rec	1	8/27/2021 4:23:26 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	5.80		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Surr: Toluene-d8	95.4	65 - 135		%Rec	1	8/31/2021 9:53:15 PM
Surr: 4-Bromofluorobenzene	90.0	65 - 135		%Rec	1	8/31/2021 9:53:15 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Dichlorodifluoromethane (CFC-12)	ND	0.0580		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Chloromethane	ND	0.0928		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Vinyl chloride	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Bromomethane	ND	0.174		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Trichlorofluoromethane (CFC-11)	ND	0.0580		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Chloroethane	ND	0.139		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,1-Dichloroethene	ND	0.116		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Acetone	ND	0.580		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Methylene chloride	ND	0.0174		mg/Kg-dry	1	8/31/2021 9:53:15 PM
trans-1,2-Dichloroethene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Methyl tert-butyl ether (MTBE)	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,1-Dichloroethane	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
cis-1,2-Dichloroethene	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
(MEK) 2-Butanone	ND	0.522		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Chloroform	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,1,1-Trichloroethane (TCA)	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,1-Dichloropropene	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Carbon tetrachloride	ND	0.0870		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,2-Dichloroethane (EDC)	ND	0.0267		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Benzene	ND	0.0232		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Trichloroethene (TCE)	ND	0.0232		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,2-Dichloropropane	ND	0.0232		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Bromodichloromethane	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Dibromomethane	ND	0.0232		mg/Kg-dry	1	8/31/2021 9:53:15 PM
cis-1,3-Dichloropropene	ND	0.0928		mg/Kg-dry	1	8/31/2021 9:53:15 PM

Client: O'Neill Service Group
Collection Date: 8/25/2021 10:05:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-003
Matrix: Soil
Client Sample ID: **CHRL-A9-B6-4**

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 33556 Analyst: KT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Toluene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Trans-1,3-Dichloropropylene	ND	0.0580		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Methyl Isobutyl Ketone (MIBK)	ND	0.0870		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,1,2-Trichloroethane	ND	0.0197		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,3-Dichloropropane	ND	0.0232		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Tetrachloroethene (PCE)	ND	0.0464		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Dibromochloromethane	ND	0.0232		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,2-Dibromoethane (EDB)	ND	0.0116		mg/Kg-dry	1	8/31/2021 9:53:15 PM
2-Hexanone (MBK)	ND	0.0696		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Chlorobenzene	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,1,1,2-Tetrachloroethane	ND	0.0232		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Ethylbenzene	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
m,p-Xylene	ND	0.0580		mg/Kg-dry	1	8/31/2021 9:53:15 PM
o-Xylene	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Styrene	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Isopropylbenzene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Bromoform	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,1,2,2-Tetrachloroethane	ND	0.0174		mg/Kg-dry	1	8/31/2021 9:53:15 PM
n-Propylbenzene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Bromobenzene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,3,5-Trimethylbenzene	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
2-Chlorotoluene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
4-Chlorotoluene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
tert-Butylbenzene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,2,3-Trichloropropane	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,2,4-Trichlorobenzene	ND	0.0464		mg/Kg-dry	1	8/31/2021 9:53:15 PM
sec-Butylbenzene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
4-Isopropyltoluene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,3-Dichlorobenzene	ND	0.0406		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,4-Dichlorobenzene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
n-Butylbenzene	ND	0.0464		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,2-Dichlorobenzene	ND	0.0348		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,2-Dibromo-3-chloropropane	ND	0.0696		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,2,4-Trimethylbenzene	ND	0.0290		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Hexachloro-1,3-butadiene	ND	0.0580		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Naphthalene	ND	0.116		mg/Kg-dry	1	8/31/2021 9:53:15 PM
1,2,3-Trichlorobenzene	ND	0.0580		mg/Kg-dry	1	8/31/2021 9:53:15 PM
Surr: Dibromofluoromethane	99.3	75.5 - 119		%Rec	1	8/31/2021 9:53:15 PM
Surr: Toluene-d8	96.9	82.4 - 115		%Rec	1	8/31/2021 9:53:15 PM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-003
Client Sample ID: **CHRL-A9-B6-4**

Collection Date: 8/25/2021 10:05:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Surr: 1-Bromo-4-fluorobenzene	90.0	78.5 - 118		%Rec	1	8/31/2021 9:53:15 PM
Mercury by EPA Method 7471B				Batch ID: 33504		Analyst: CH
Mercury	ND	0.250		mg/Kg-dry	1	8/26/2021 5:16:25 PM
Total Metals by EPA Method 6020B				Batch ID: 33517		Analyst: EH
Arsenic	2.84	0.0951		mg/Kg-dry	1	8/27/2021 4:37:47 PM
Barium	30.8	0.476		mg/Kg-dry	1	8/27/2021 4:37:47 PM
Cadmium	ND	0.159		mg/Kg-dry	1	8/27/2021 4:37:47 PM
Chromium	23.4	0.317		mg/Kg-dry	1	8/27/2021 4:37:47 PM
Lead	2.62	0.159		mg/Kg-dry	1	8/27/2021 4:37:47 PM
Selenium	0.522	0.159		mg/Kg-dry	1	8/27/2021 4:37:47 PM
Silver	ND	0.119		mg/Kg-dry	1	8/27/2021 4:37:47 PM
Sample Moisture (Percent Moisture)				Batch ID: R69522		Analyst: MCH
Percent Moisture	5.84	0.500		wt%	1	8/27/2021 9:10:05 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 10:10:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-004
Matrix: Soil
Client Sample ID: **CHRL-A9-B6-10**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33522		Analyst: MM
Diesel (Fuel Oil)	ND	53.5		mg/Kg-dry	1	8/27/2021 5:01:29 PM
Heavy Oil	ND	107		mg/Kg-dry	1	8/27/2021 5:01:29 PM
Total Petroleum Hydrocarbons	ND	161		mg/Kg-dry	1	8/27/2021 5:01:29 PM
Surr: 2-Fluorobiphenyl	56.2	50 - 150		%Rec	1	8/27/2021 5:01:29 PM
Surr: o-Terphenyl	65.9	50 - 150		%Rec	1	8/27/2021 5:01:29 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	5.33		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Surr: Toluene-d8	95.5	65 - 135		%Rec	1	8/31/2021 10:23:22 PM
Surr: 4-Bromofluorobenzene	89.7	65 - 135		%Rec	1	8/31/2021 10:23:22 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Dichlorodifluoromethane (CFC-12)	ND	0.0533		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Chloromethane	ND	0.0853		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Vinyl chloride	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Bromomethane	ND	0.160		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Trichlorofluoromethane (CFC-11)	ND	0.0533		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Chloroethane	ND	0.128		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,1-Dichloroethene	ND	0.107		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Acetone	ND	0.533		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Methylene chloride	ND	0.0160		mg/Kg-dry	1	8/31/2021 10:23:22 PM
trans-1,2-Dichloroethene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Methyl tert-butyl ether (MTBE)	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,1-Dichloroethane	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
cis-1,2-Dichloroethene	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
(MEK) 2-Butanone	ND	0.480		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Chloroform	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,1,1-Trichloroethane (TCA)	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,1-Dichloropropene	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Carbon tetrachloride	ND	0.0799		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,2-Dichloroethane (EDC)	ND	0.0245		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Benzene	ND	0.0213		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Trichloroethene (TCE)	ND	0.0213		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,2-Dichloropropane	ND	0.0213		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Bromodichloromethane	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Dibromomethane	ND	0.0213		mg/Kg-dry	1	8/31/2021 10:23:22 PM
cis-1,3-Dichloropropene	ND	0.0853		mg/Kg-dry	1	8/31/2021 10:23:22 PM

Client: O'Neill Service Group
Collection Date: 8/25/2021 10:10:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-004
Matrix: Soil
Client Sample ID: **CHRL-A9-B6-10**

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 33556 Analyst: KT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Toluene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Trans-1,3-Dichloropropylene	ND	0.0533		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Methyl Isobutyl Ketone (MIBK)	ND	0.0799		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,1,2-Trichloroethane	ND	0.0181		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,3-Dichloropropane	ND	0.0213		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Tetrachloroethene (PCE)	ND	0.0426		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Dibromochloromethane	ND	0.0213		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,2-Dibromoethane (EDB)	ND	0.0107		mg/Kg-dry	1	8/31/2021 10:23:22 PM
2-Hexanone (MBK)	ND	0.0640		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Chlorobenzene	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,1,1,2-Tetrachloroethane	ND	0.0213		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Ethylbenzene	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
m,p-Xylene	ND	0.0533		mg/Kg-dry	1	8/31/2021 10:23:22 PM
o-Xylene	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Styrene	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Isopropylbenzene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Bromoform	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,1,2,2-Tetrachloroethane	ND	0.0160		mg/Kg-dry	1	8/31/2021 10:23:22 PM
n-Propylbenzene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Bromobenzene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,3,5-Trimethylbenzene	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
2-Chlorotoluene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
4-Chlorotoluene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
tert-Butylbenzene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,2,3-Trichloropropane	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,2,4-Trichlorobenzene	ND	0.0426		mg/Kg-dry	1	8/31/2021 10:23:22 PM
sec-Butylbenzene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
4-Isopropyltoluene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,3-Dichlorobenzene	ND	0.0373		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,4-Dichlorobenzene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
n-Butylbenzene	ND	0.0426		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,2-Dichlorobenzene	ND	0.0320		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,2-Dibromo-3-chloropropane	ND	0.0640		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,2,4-Trimethylbenzene	ND	0.0266		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Hexachloro-1,3-butadiene	ND	0.0533		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Naphthalene	ND	0.107		mg/Kg-dry	1	8/31/2021 10:23:22 PM
1,2,3-Trichlorobenzene	ND	0.0533		mg/Kg-dry	1	8/31/2021 10:23:22 PM
Surr: Dibromofluoromethane	99.5	75.5 - 119		%Rec	1	8/31/2021 10:23:22 PM
Surr: Toluene-d8	97.5	82.4 - 115		%Rec	1	8/31/2021 10:23:22 PM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-004
Client Sample ID: **CHRL-A9-B6-10**

Collection Date: 8/25/2021 10:10:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Surr: 1-Bromo-4-fluorobenzene	90.2	78.5 - 118		%Rec	1	8/31/2021 10:23:22 PM
Mercury by EPA Method 7471B				Batch ID: 33504		Analyst: CH
Mercury	ND	0.260		mg/Kg-dry	1	8/26/2021 5:18:01 PM
Total Metals by EPA Method 6020B				Batch ID: 33517		Analyst: EH
Arsenic	3.70	0.107		mg/Kg-dry	1	8/27/2021 4:43:21 PM
Barium	88.7	0.535		mg/Kg-dry	1	8/27/2021 4:43:21 PM
Cadmium	ND	0.178		mg/Kg-dry	1	8/27/2021 4:43:21 PM
Chromium	30.0	0.357		mg/Kg-dry	1	8/27/2021 4:43:21 PM
Lead	3.13	0.178		mg/Kg-dry	1	8/27/2021 4:43:21 PM
Selenium	1.05	0.178		mg/Kg-dry	1	8/27/2021 4:43:21 PM
Silver	ND	0.134		mg/Kg-dry	1	8/27/2021 4:43:21 PM
Sample Moisture (Percent Moisture)				Batch ID: R69522		Analyst: MCH
Percent Moisture	15.7	0.500		wt%	1	8/27/2021 9:10:05 AM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-005
Client Sample ID: **CHRL-A9-B7-4**

Collection Date: 8/25/2021 10:30:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33522		Analyst: MM
Diesel (Fuel Oil)	ND	53.0		mg/Kg-dry	1	8/27/2021 5:14:14 PM
Heavy Oil	311	106		mg/Kg-dry	1	8/27/2021 5:14:14 PM
Total Petroleum Hydrocarbons	311	159		mg/Kg-dry	1	8/27/2021 5:14:14 PM
Surr: 2-Fluorobiphenyl	86.2	50 - 150		%Rec	1	8/27/2021 5:14:14 PM
Surr: o-Terphenyl	99.7	50 - 150		%Rec	1	8/27/2021 5:14:14 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	7.97		mg/Kg-dry	1	8/31/2021 11:23:39 PM
Surr: Toluene-d8	96.1	65 - 135		%Rec	1	8/31/2021 11:23:39 PM
Surr: 4-Bromofluorobenzene	89.7	65 - 135		%Rec	1	8/31/2021 11:23:39 PM
Sample Moisture (Percent Moisture)				Batch ID: R69522		Analyst: MCH
Percent Moisture	6.90	0.500		wt%	1	8/27/2021 9:10:05 AM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-006
Client Sample ID: **CHRL-A9-B7-9**

Collection Date: 8/25/2021 10:35:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33522		Analyst: MM
Diesel (Fuel Oil)	ND	52.0		mg/Kg-dry	1	8/27/2021 5:39:54 PM
Heavy Oil	ND	104		mg/Kg-dry	1	8/27/2021 5:39:54 PM
Total Petroleum Hydrocarbons	ND	156		mg/Kg-dry	1	8/27/2021 5:39:54 PM
Surr: 2-Fluorobiphenyl	65.5	50 - 150		%Rec	1	8/27/2021 5:39:54 PM
Surr: o-Terphenyl	74.3	50 - 150		%Rec	1	8/27/2021 5:39:54 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	5.34		mg/Kg-dry	1	8/31/2021 11:53:45 PM
Surr: Toluene-d8	95.4	65 - 135		%Rec	1	8/31/2021 11:53:45 PM
Surr: 4-Bromofluorobenzene	89.1	65 - 135		%Rec	1	8/31/2021 11:53:45 PM
Sample Moisture (Percent Moisture)				Batch ID: R69522		Analyst: MCH
Percent Moisture	14.2	0.500		wt%	1	8/27/2021 9:10:05 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 11:05:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-007
Matrix: Soil
Client Sample ID: **CHRL-A9-B8-5**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33522		Analyst: MM
Diesel (Fuel Oil)	ND	47.6		mg/Kg-dry	1	8/27/2021 5:52:48 PM
Heavy Oil	ND	95.1		mg/Kg-dry	1	8/27/2021 5:52:48 PM
Total Petroleum Hydrocarbons	ND	143		mg/Kg-dry	1	8/27/2021 5:52:48 PM
Surr: 2-Fluorobiphenyl	84.7	50 - 150		%Rec	1	8/27/2021 5:52:48 PM
Surr: o-Terphenyl	100	50 - 150		%Rec	1	8/27/2021 5:52:48 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	7.14		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Surr: Toluene-d8	95.2	65 - 135		%Rec	1	9/1/2021 12:23:56 AM
Surr: 4-Bromofluorobenzene	87.1	65 - 135		%Rec	1	9/1/2021 12:23:56 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Dichlorodifluoromethane (CFC-12)	ND	0.0714		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Chloromethane	ND	0.114		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Vinyl chloride	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Bromomethane	ND	0.214		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Trichlorofluoromethane (CFC-11)	ND	0.0714		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Chloroethane	ND	0.171		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,1-Dichloroethene	ND	0.143		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Acetone	ND	0.714		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Methylene chloride	ND	0.0214		mg/Kg-dry	1	9/1/2021 12:23:56 AM
trans-1,2-Dichloroethene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Methyl tert-butyl ether (MTBE)	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,1-Dichloroethane	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
cis-1,2-Dichloroethene	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
(MEK) 2-Butanone	ND	0.643		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Chloroform	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,1,1-Trichloroethane (TCA)	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,1-Dichloropropene	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Carbon tetrachloride	ND	0.107		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,2-Dichloroethane (EDC)	ND	0.0328		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Benzene	ND	0.0286		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Trichloroethene (TCE)	ND	0.0286		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,2-Dichloropropane	ND	0.0286		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Bromodichloromethane	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Dibromomethane	ND	0.0286		mg/Kg-dry	1	9/1/2021 12:23:56 AM
cis-1,3-Dichloropropene	ND	0.114		mg/Kg-dry	1	9/1/2021 12:23:56 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 11:05:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-007
Matrix: Soil
Client Sample ID: **CHRL-A9-B8-5**

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 33556 Analyst: KT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Toluene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Trans-1,3-Dichloropropylene	ND	0.0714		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Methyl Isobutyl Ketone (MIBK)	ND	0.107		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,1,2-Trichloroethane	ND	0.0243		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,3-Dichloropropane	ND	0.0286		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Tetrachloroethene (PCE)	ND	0.0571		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Dibromochloromethane	ND	0.0286		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,2-Dibromoethane (EDB)	ND	0.0143		mg/Kg-dry	1	9/1/2021 12:23:56 AM
2-Hexanone (MBK)	ND	0.0857		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Chlorobenzene	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,1,1,2-Tetrachloroethane	ND	0.0286		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Ethylbenzene	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
m,p-Xylene	ND	0.0714		mg/Kg-dry	1	9/1/2021 12:23:56 AM
o-Xylene	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Styrene	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Isopropylbenzene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Bromoform	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,1,2,2-Tetrachloroethane	ND	0.0214		mg/Kg-dry	1	9/1/2021 12:23:56 AM
n-Propylbenzene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Bromobenzene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,3,5-Trimethylbenzene	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
2-Chlorotoluene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
4-Chlorotoluene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
tert-Butylbenzene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,2,3-Trichloropropane	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,2,4-Trichlorobenzene	ND	0.0571		mg/Kg-dry	1	9/1/2021 12:23:56 AM
sec-Butylbenzene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
4-Isopropyltoluene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,3-Dichlorobenzene	ND	0.0500		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,4-Dichlorobenzene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
n-Butylbenzene	ND	0.0571		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,2-Dichlorobenzene	ND	0.0428		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,2-Dibromo-3-chloropropane	ND	0.0857		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,2,4-Trimethylbenzene	ND	0.0357		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Hexachloro-1,3-butadiene	ND	0.0714		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Naphthalene	ND	0.143		mg/Kg-dry	1	9/1/2021 12:23:56 AM
1,2,3-Trichlorobenzene	ND	0.0714		mg/Kg-dry	1	9/1/2021 12:23:56 AM
Surr: Dibromofluoromethane	99.0	75.5 - 119		%Rec	1	9/1/2021 12:23:56 AM
Surr: Toluene-d8	98.1	82.4 - 115		%Rec	1	9/1/2021 12:23:56 AM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-007
Client Sample ID: **CHRL-A9-B8-5**

Collection Date: 8/25/2021 11:05:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Surr: 1-Bromo-4-fluorobenzene	87.7	78.5 - 118		%Rec	1	9/1/2021 12:23:56 AM
Mercury by EPA Method 7471B				Batch ID: 33504		Analyst: CH
Mercury	ND	0.263		mg/Kg-dry	1	8/26/2021 5:19:38 PM
Total Metals by EPA Method 6020B				Batch ID: 33517		Analyst: EH
Arsenic	5.92	0.103		mg/Kg-dry	1	8/27/2021 4:48:55 PM
Barium	58.0	0.517		mg/Kg-dry	1	8/27/2021 4:48:55 PM
Cadmium	ND	0.172		mg/Kg-dry	1	8/27/2021 4:48:55 PM
Chromium	18.6	0.344		mg/Kg-dry	1	8/27/2021 4:48:55 PM
Lead	2.58	0.172		mg/Kg-dry	1	8/27/2021 4:48:55 PM
Selenium	1.17	0.172		mg/Kg-dry	1	8/27/2021 4:48:55 PM
Silver	ND	0.129		mg/Kg-dry	1	8/27/2021 4:48:55 PM
Sample Moisture (Percent Moisture)				Batch ID: R69522		Analyst: MCH
Percent Moisture	8.56	0.500		wt%	1	8/27/2021 9:10:05 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 11:10:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-008
Matrix: Soil
Client Sample ID: **CHRL-A9-B8-10**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33522		Analyst: MM
Diesel (Fuel Oil)	ND	55.4		mg/Kg-dry	1	8/27/2021 6:05:37 PM
Heavy Oil	ND	111		mg/Kg-dry	1	8/27/2021 6:05:37 PM
Total Petroleum Hydrocarbons	ND	166		mg/Kg-dry	1	8/27/2021 6:05:37 PM
Surr: 2-Fluorobiphenyl	62.3	50 - 150		%Rec	1	8/27/2021 6:05:37 PM
Surr: o-Terphenyl	72.3	50 - 150		%Rec	1	8/27/2021 6:05:37 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	5.90		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Surr: Toluene-d8	97.3	65 - 135		%Rec	1	9/1/2021 12:54:05 AM
Surr: 4-Bromofluorobenzene	83.9	65 - 135		%Rec	1	9/1/2021 12:54:05 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Dichlorodifluoromethane (CFC-12)	ND	0.0590		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Chloromethane	ND	0.0944		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Vinyl chloride	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Bromomethane	ND	0.177		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Trichlorofluoromethane (CFC-11)	ND	0.0590		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Chloroethane	ND	0.142		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,1-Dichloroethene	ND	0.118		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Acetone	ND	0.590		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Methylene chloride	ND	0.0177		mg/Kg-dry	1	9/1/2021 12:54:05 AM
trans-1,2-Dichloroethene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Methyl tert-butyl ether (MTBE)	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,1-Dichloroethane	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
cis-1,2-Dichloroethene	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
(MEK) 2-Butanone	ND	0.531		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Chloroform	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,1,1-Trichloroethane (TCA)	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,1-Dichloropropene	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Carbon tetrachloride	ND	0.0885		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,2-Dichloroethane (EDC)	ND	0.0271		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Benzene	ND	0.0236		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Trichloroethene (TCE)	ND	0.0236		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,2-Dichloropropane	ND	0.0236		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Bromodichloromethane	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Dibromomethane	ND	0.0236		mg/Kg-dry	1	9/1/2021 12:54:05 AM
cis-1,3-Dichloropropene	ND	0.0944		mg/Kg-dry	1	9/1/2021 12:54:05 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 11:10:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-008
Matrix: Soil
Client Sample ID: **CHRL-A9-B8-10**

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 33556 Analyst: KT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Toluene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Trans-1,3-Dichloropropylene	ND	0.0590		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Methyl Isobutyl Ketone (MIBK)	ND	0.0885		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,1,2-Trichloroethane	ND	0.0201		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,3-Dichloropropane	ND	0.0236		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Tetrachloroethene (PCE)	ND	0.0472		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Dibromochloromethane	ND	0.0236		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,2-Dibromoethane (EDB)	ND	0.0118		mg/Kg-dry	1	9/1/2021 12:54:05 AM
2-Hexanone (MBK)	ND	0.0708		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Chlorobenzene	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,1,1,2-Tetrachloroethane	ND	0.0236		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Ethylbenzene	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
m,p-Xylene	ND	0.0590		mg/Kg-dry	1	9/1/2021 12:54:05 AM
o-Xylene	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Styrene	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Isopropylbenzene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Bromoform	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,1,2,2-Tetrachloroethane	ND	0.0177		mg/Kg-dry	1	9/1/2021 12:54:05 AM
n-Propylbenzene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Bromobenzene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,3,5-Trimethylbenzene	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
2-Chlorotoluene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
4-Chlorotoluene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
tert-Butylbenzene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,2,3-Trichloropropane	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,2,4-Trichlorobenzene	ND	0.0472		mg/Kg-dry	1	9/1/2021 12:54:05 AM
sec-Butylbenzene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
4-Isopropyltoluene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,3-Dichlorobenzene	ND	0.0413		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,4-Dichlorobenzene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
n-Butylbenzene	ND	0.0472		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,2-Dichlorobenzene	ND	0.0354		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,2-Dibromo-3-chloropropane	ND	0.0708		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,2,4-Trimethylbenzene	ND	0.0295		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Hexachloro-1,3-butadiene	ND	0.0590		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Naphthalene	ND	0.118		mg/Kg-dry	1	9/1/2021 12:54:05 AM
1,2,3-Trichlorobenzene	ND	0.0590		mg/Kg-dry	1	9/1/2021 12:54:05 AM
Surr: Dibromofluoromethane	101	75.5 - 119		%Rec	1	9/1/2021 12:54:05 AM
Surr: Toluene-d8	99.0	82.4 - 115		%Rec	1	9/1/2021 12:54:05 AM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-008
Client Sample ID: **CHRL-A9-B8-10**

Collection Date: 8/25/2021 11:10:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Surr: 1-Bromo-4-fluorobenzene	84.4	78.5 - 118		%Rec	1	9/1/2021 12:54:05 AM
Mercury by EPA Method 7471B				Batch ID: 33504		Analyst: CH
Mercury	ND	0.254		mg/Kg-dry	1	8/26/2021 5:21:15 PM
Total Metals by EPA Method 6020B				Batch ID: 33517		Analyst: EH
Arsenic	3.12	0.106		mg/Kg-dry	1	8/27/2021 4:54:29 PM
Barium	65.9	0.531		mg/Kg-dry	1	8/27/2021 4:54:29 PM
Cadmium	ND	0.177		mg/Kg-dry	1	8/27/2021 4:54:29 PM
Chromium	33.0	0.354		mg/Kg-dry	1	8/27/2021 4:54:29 PM
Lead	8.19	0.177		mg/Kg-dry	1	8/27/2021 4:54:29 PM
Selenium	0.814	0.177		mg/Kg-dry	1	8/27/2021 4:54:29 PM
Silver	ND	0.133		mg/Kg-dry	1	8/27/2021 4:54:29 PM
Sample Moisture (Percent Moisture)				Batch ID: R69522		Analyst: MCH
Percent Moisture	13.7	0.500		wt%	1	8/27/2021 9:10:05 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 11:45:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-009
Matrix: Groundwater
Client Sample ID: **CHRL-A9-B8-W**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33523		Analyst: MM
Diesel (Fuel Oil)	ND	99.6		µg/L	1	8/30/2021 1:46:02 PM
Heavy Oil	ND	99.6		µg/L	1	8/30/2021 1:46:02 PM
Heavy Fuel Oil	4,210	99.6		µg/L	1	8/30/2021 1:46:02 PM
Total Petroleum Hydrocarbons	4,210	199		µg/L	1	8/30/2021 1:46:02 PM
Surr: 2-Fluorobiphenyl	92.7	50 - 150		%Rec	1	8/30/2021 1:46:02 PM
Surr: o-Terphenyl	100	50 - 150		%Rec	1	8/30/2021 1:46:02 PM
NOTES: Heavy Fuel Oil - Indicates the presence of unresolved compounds in both the Diesel and Lube+ Oil ranges.						
Gasoline by NWTPH-Gx				Batch ID: 33527		Analyst: KT
Gasoline	ND	50.0		µg/L	1	8/27/2021 7:49:54 PM
Surr: Toluene-d8	101	65 - 135		%Rec	1	8/27/2021 7:49:54 PM
Surr: 4-Bromofluorobenzene	96.4	65 - 135		%Rec	1	8/27/2021 7:49:54 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33527		Analyst: KT
Dichlorodifluoromethane (CFC-12)	ND	1.25		µg/L	1	8/27/2021 7:49:54 PM
Chloromethane	ND	0.750	Q	µg/L	1	8/27/2021 7:49:54 PM
Vinyl chloride	ND	0.200		µg/L	1	8/27/2021 7:49:54 PM
Bromomethane	1.83	1.20		µg/L	1	8/27/2021 7:49:54 PM
Trichlorofluoromethane (CFC-11)	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Chloroethane	ND	1.00		µg/L	1	8/27/2021 7:49:54 PM
1,1-Dichloroethene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Acetone	10.6	6.00		µg/L	1	8/27/2021 7:49:54 PM
Methylene chloride	ND	0.750		µg/L	1	8/27/2021 7:49:54 PM
trans-1,2-Dichloroethene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Methyl tert-butyl ether (MTBE)	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
1,1-Dichloroethane	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
cis-1,2-Dichloroethene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
2-Butanone (MEK)	1.59	1.50		µg/L	1	8/27/2021 7:49:54 PM
Chloroform	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
1,1,1-Trichloroethane (TCA)	ND	0.400		µg/L	1	8/27/2021 7:49:54 PM
1,1-Dichloropropene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Carbon tetrachloride	ND	0.750		µg/L	1	8/27/2021 7:49:54 PM
1,2-Dichloroethane (EDC)	ND	0.400		µg/L	1	8/27/2021 7:49:54 PM
Benzene	ND	0.440		µg/L	1	8/27/2021 7:49:54 PM
Trichloroethene (TCE)	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
1,2-Dichloropropane	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM

Client: O'Neill Service Group
Collection Date: 8/25/2021 11:45:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-009
Matrix: Groundwater
Client Sample ID: **CHRL-A9-B8-W**

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 33527 Analyst: KT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Bromodichloromethane	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Dibromomethane	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
cis-1,3-Dichloropropene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Toluene	0.850	0.750		µg/L	1	8/27/2021 7:49:54 PM
trans-1,3-Dichloropropylene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Methyl Isobutyl Ketone (MIBK)	10.0	1.25		µg/L	1	8/27/2021 7:49:54 PM
1,1,2-Trichloroethane	ND	0.350		µg/L	1	8/27/2021 7:49:54 PM
1,3-Dichloropropane	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Tetrachloroethene (PCE)	ND	0.400		µg/L	1	8/27/2021 7:49:54 PM
Dibromochloromethane	ND	1.00		µg/L	1	8/27/2021 7:49:54 PM
1,2-Dibromoethane (EDB)	ND	0.300		µg/L	1	8/27/2021 7:49:54 PM
2-Hexanone (MBK)	ND	1.00		µg/L	1	8/27/2021 7:49:54 PM
Chlorobenzene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
1,1,1,2-Tetrachloroethane	ND	0.300		µg/L	1	8/27/2021 7:49:54 PM
Ethylbenzene	ND	0.400		µg/L	1	8/27/2021 7:49:54 PM
m,p-Xylene	ND	1.00		µg/L	1	8/27/2021 7:49:54 PM
o-Xylene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Styrene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Isopropylbenzene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Bromoform	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
1,1,2,2-Tetrachloroethane	ND	0.400		µg/L	1	8/27/2021 7:49:54 PM
n-Propylbenzene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Bromobenzene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
1,3,5-Trimethylbenzene	ND	0.250		µg/L	1	8/27/2021 7:49:54 PM
2-Chlorotoluene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
4-Chlorotoluene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
tert-Butylbenzene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
1,2,3-Trichloropropane	ND	0.400		µg/L	1	8/27/2021 7:49:54 PM
1,2,4-Trichlorobenzene	ND	0.750		µg/L	1	8/27/2021 7:49:54 PM
sec-Butylbenzene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
4-Isopropyltoluene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
1,3-Dichlorobenzene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
1,4-Dichlorobenzene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
n-Butylbenzene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
1,2-Dichlorobenzene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
1,2-Dibromo-3-chloropropane	ND	1.00		µg/L	1	8/27/2021 7:49:54 PM
1,2,4-Trimethylbenzene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Hexachloro-1,3-butadiene	ND	0.500		µg/L	1	8/27/2021 7:49:54 PM
Naphthalene	ND	1.25		µg/L	1	8/27/2021 7:49:54 PM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-009
Client Sample ID: **CHRL-A9-B8-W**

Collection Date: 8/25/2021 11:45:00 AM
Matrix: Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33527		Analyst: KT
1,2,3-Trichlorobenzene	ND	0.700		µg/L	1	8/27/2021 7:49:54 PM
Surr: Dibromofluoromethane	104	80 - 120		%Rec	1	8/27/2021 7:49:54 PM
Surr: Toluene-d8	101	80 - 120		%Rec	1	8/27/2021 7:49:54 PM
Surr: 1-Bromo-4-fluorobenzene	97.1	80 - 120		%Rec	1	8/27/2021 7:49:54 PM
NOTES:						
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.						
Dissolved Mercury by EPA Method 245.1				Batch ID: 33551		Analyst: CH
Mercury	ND	0.100		µg/L	1	9/1/2021 4:10:21 PM
Dissolved Metals by EPA Method 200.8				Batch ID: 33531		Analyst: EH
Arsenic	4.60	1.00		µg/L	1	8/30/2021 6:06:51 PM
Barium	9.40	1.50		µg/L	1	9/1/2021 12:37:41 PM
Cadmium	0.698	0.125		µg/L	1	8/31/2021 6:02:45 PM
Chromium	0.942	0.750		µg/L	1	8/30/2021 6:06:51 PM
Lead	1.68	0.500		µg/L	1	8/30/2021 6:06:51 PM
Selenium	ND	1.90		µg/L	1	8/30/2021 6:06:51 PM
Silver	ND	0.350		µg/L	1	8/30/2021 6:06:51 PM

Client: O'Neill Service Group
Collection Date: 8/25/2021 12:20:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-010
Matrix: Soil
Client Sample ID: **CHRL-A9-B9-4**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33522		Analyst: MM
Diesel (Fuel Oil)	1,020	49.5		mg/Kg-dry	1	8/27/2021 6:18:26 PM
Heavy Oil	ND	98.9		mg/Kg-dry	1	8/27/2021 6:18:26 PM
Total Petroleum Hydrocarbons	1,020	148		mg/Kg-dry	1	8/27/2021 6:18:26 PM
Surr: 2-Fluorobiphenyl	119	50 - 150		%Rec	1	8/27/2021 6:18:26 PM
Surr: o-Terphenyl	89.2	50 - 150		%Rec	1	8/27/2021 6:18:26 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	5.44		mg/Kg-dry	1	9/1/2021 9:26:32 AM
Surr: Toluene-d8	91.7	65 - 135		%Rec	1	9/1/2021 9:26:32 AM
Surr: 4-Bromofluorobenzene	104	65 - 135		%Rec	1	9/1/2021 9:26:32 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Benzene	ND	0.0218		mg/Kg-dry	1	9/1/2021 9:26:32 AM
Toluene	ND	0.0327		mg/Kg-dry	1	9/1/2021 9:26:32 AM
Ethylbenzene	ND	0.0272		mg/Kg-dry	1	9/1/2021 9:26:32 AM
m,p-Xylene	ND	0.0544		mg/Kg-dry	1	9/1/2021 9:26:32 AM
o-Xylene	ND	0.0272		mg/Kg-dry	1	9/1/2021 9:26:32 AM
Surr: Dibromofluoromethane	99.3	75.5 - 119		%Rec	1	9/1/2021 9:26:32 AM
Surr: Toluene-d8	94.6	82.4 - 115		%Rec	1	9/1/2021 9:26:32 AM
Surr: 1-Bromo-4-fluorobenzene	109	78.5 - 118		%Rec	1	9/1/2021 9:26:32 AM
Mercury by EPA Method 7471B				Batch ID: 33505		Analyst: CH
Mercury	ND	0.250		mg/Kg-dry	1	8/27/2021 12:16:59 PM
Total Metals by EPA Method 6020B				Batch ID: 33517		Analyst: EH
Arsenic	3.94	0.0990		mg/Kg-dry	1	8/27/2021 5:00:03 PM
Barium	85.3	0.495		mg/Kg-dry	1	8/27/2021 5:00:03 PM
Cadmium	ND	0.165		mg/Kg-dry	1	8/27/2021 5:00:03 PM
Chromium	32.4	0.330		mg/Kg-dry	1	8/27/2021 5:00:03 PM
Lead	4.64	0.165		mg/Kg-dry	1	8/27/2021 5:00:03 PM
Selenium	1.08	0.165		mg/Kg-dry	1	8/27/2021 5:00:03 PM
Silver	ND	0.124		mg/Kg-dry	1	8/27/2021 5:00:03 PM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-010
Client Sample ID: **CHRL-A9-B9-4**

Collection Date: 8/25/2021 12:20:00 PM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R69522		Analyst: MCH
Percent Moisture	7.51	0.500		wt%	1	8/27/2021 9:10:05 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 12:25:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-011
Matrix: Soil
Client Sample ID: **CHRL-A9-B9-8**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33522		Analyst: MM
Diesel (Fuel Oil)	ND	64.2		mg/Kg-dry	1	8/30/2021 9:16:24 AM
Heavy Oil	ND	128		mg/Kg-dry	1	8/30/2021 9:16:24 AM
Total Petroleum Hydrocarbons	ND	192		mg/Kg-dry	1	8/30/2021 9:16:24 AM
Surr: 2-Fluorobiphenyl	50.3	50 - 150		%Rec	1	8/30/2021 9:16:24 AM
Surr: o-Terphenyl	63.7	50 - 150		%Rec	1	8/30/2021 9:16:24 AM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	7.67		mg/Kg-dry	1	9/1/2021 1:24:13 AM
Surr: Toluene-d8	96.6	65 - 135		%Rec	1	9/1/2021 1:24:13 AM
Surr: 4-Bromofluorobenzene	87.9	65 - 135		%Rec	1	9/1/2021 1:24:13 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Benzene	ND	0.0307		mg/Kg-dry	1	9/1/2021 1:24:13 AM
Toluene	ND	0.0460		mg/Kg-dry	1	9/1/2021 1:24:13 AM
Ethylbenzene	ND	0.0384		mg/Kg-dry	1	9/1/2021 1:24:13 AM
m,p-Xylene	ND	0.0767		mg/Kg-dry	1	9/1/2021 1:24:13 AM
o-Xylene	ND	0.0384		mg/Kg-dry	1	9/1/2021 1:24:13 AM
Surr: Dibromofluoromethane	101	75.5 - 119		%Rec	1	9/1/2021 1:24:13 AM
Surr: Toluene-d8	98.8	82.4 - 115		%Rec	1	9/1/2021 1:24:13 AM
Surr: 1-Bromo-4-fluorobenzene	83.8	78.5 - 118		%Rec	1	9/1/2021 1:24:13 AM
Mercury by EPA Method 7471B				Batch ID: 33505		Analyst: CH
Mercury	ND	0.317		mg/Kg-dry	1	8/27/2021 12:23:28 PM
Total Metals by EPA Method 6020B				Batch ID: 33517		Analyst: EH
Arsenic	5.16	0.135		mg/Kg-dry	1	8/27/2021 5:05:37 PM
Barium	140	0.676		mg/Kg-dry	1	8/27/2021 5:05:37 PM
Cadmium	ND	0.225		mg/Kg-dry	1	8/27/2021 5:05:37 PM
Chromium	35.6	0.451		mg/Kg-dry	1	8/27/2021 5:05:37 PM
Lead	4.87	0.225		mg/Kg-dry	1	8/27/2021 5:05:37 PM
Selenium	3.30	0.225		mg/Kg-dry	1	8/27/2021 5:05:37 PM
Silver	ND	0.169		mg/Kg-dry	1	8/27/2021 5:05:37 PM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-011
Client Sample ID: **CHRL-A9-B9-8**

Collection Date: 8/25/2021 12:25:00 PM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R69611		Analyst: OK
Percent Moisture	29.6	0.500		wt%	1	8/31/2021 2:49:05 PM

Client: O'Neill Service Group
Collection Date: 8/25/2021 12:45:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-013
Matrix: Soil
Client Sample ID: **CHRL-A9-B10-5**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33528		Analyst: MM
Diesel (Fuel Oil)	ND	56.1		mg/Kg-dry	1	8/27/2021 7:22:22 PM
Heavy Oil	ND	112		mg/Kg-dry	1	8/27/2021 7:22:22 PM
Total Petroleum Hydrocarbons	ND	168		mg/Kg-dry	1	8/27/2021 7:22:22 PM
Surr: 2-Fluorobiphenyl	74.5	50 - 150		%Rec	1	8/27/2021 7:22:22 PM
Surr: o-Terphenyl	85.2	50 - 150		%Rec	1	8/27/2021 7:22:22 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	5.97		mg/Kg-dry	1	9/1/2021 1:54:22 AM
Surr: Toluene-d8	96.1	65 - 135		%Rec	1	9/1/2021 1:54:22 AM
Surr: 4-Bromofluorobenzene	89.4	65 - 135		%Rec	1	9/1/2021 1:54:22 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Benzene	ND	0.0239		mg/Kg-dry	1	9/1/2021 1:54:22 AM
Toluene	ND	0.0358		mg/Kg-dry	1	9/1/2021 1:54:22 AM
Ethylbenzene	ND	0.0299		mg/Kg-dry	1	9/1/2021 1:54:22 AM
m,p-Xylene	ND	0.0597		mg/Kg-dry	1	9/1/2021 1:54:22 AM
o-Xylene	ND	0.0299		mg/Kg-dry	1	9/1/2021 1:54:22 AM
Surr: Dibromofluoromethane	102	75.5 - 119		%Rec	1	9/1/2021 1:54:22 AM
Surr: Toluene-d8	98.1	82.4 - 115		%Rec	1	9/1/2021 1:54:22 AM
Surr: 1-Bromo-4-fluorobenzene	89.9	78.5 - 118		%Rec	1	9/1/2021 1:54:22 AM
Mercury by EPA Method 7471B				Batch ID: 33505		Analyst: CH
Mercury	ND	0.266		mg/Kg-dry	1	8/27/2021 12:25:04 PM
Total Metals by EPA Method 6020B				Batch ID: 33517		Analyst: EH
Arsenic	5.36	0.105		mg/Kg-dry	1	8/27/2021 5:11:11 PM
Barium	93.6	0.525		mg/Kg-dry	1	8/27/2021 5:11:11 PM
Cadmium	ND	0.175		mg/Kg-dry	1	8/27/2021 5:11:11 PM
Chromium	31.3	0.350		mg/Kg-dry	1	8/27/2021 5:11:11 PM
Lead	3.43	0.175		mg/Kg-dry	1	8/27/2021 5:11:11 PM
Selenium	0.882	0.175		mg/Kg-dry	1	8/27/2021 5:11:11 PM
Silver	ND	0.131		mg/Kg-dry	1	8/27/2021 5:11:11 PM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-013
Client Sample ID: **CHRL-A9-B10-5**

Collection Date: 8/25/2021 12:45:00 PM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R69544		Analyst: MCH
Percent Moisture	11.4	0.500		wt%	1	8/27/2021 2:10:02 PM

Client: O'Neill Service Group
Collection Date: 8/25/2021 12:50:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-014
Matrix: Soil
Client Sample ID: **CHRL-A9-B10-10**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33528		Analyst: MM
Diesel (Fuel Oil)	ND	51.0		mg/Kg-dry	1	8/27/2021 7:48:02 PM
Heavy Oil	ND	102		mg/Kg-dry	1	8/27/2021 7:48:02 PM
Total Petroleum Hydrocarbons	ND	153		mg/Kg-dry	1	8/27/2021 7:48:02 PM
Surr: 2-Fluorobiphenyl	76.5	50 - 150		%Rec	1	8/27/2021 7:48:02 PM
Surr: o-Terphenyl	81.6	50 - 150		%Rec	1	8/27/2021 7:48:02 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	5.52		mg/Kg-dry	1	9/1/2021 2:24:30 AM
Surr: Toluene-d8	95.3	65 - 135		%Rec	1	9/1/2021 2:24:30 AM
Surr: 4-Bromofluorobenzene	88.5	65 - 135		%Rec	1	9/1/2021 2:24:30 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Benzene	ND	0.0221		mg/Kg-dry	1	9/1/2021 2:24:30 AM
Toluene	ND	0.0331		mg/Kg-dry	1	9/1/2021 2:24:30 AM
Ethylbenzene	ND	0.0276		mg/Kg-dry	1	9/1/2021 2:24:30 AM
m,p-Xylene	ND	0.0552		mg/Kg-dry	1	9/1/2021 2:24:30 AM
o-Xylene	ND	0.0276		mg/Kg-dry	1	9/1/2021 2:24:30 AM
Surr: Dibromofluoromethane	100	75.5 - 119		%Rec	1	9/1/2021 2:24:30 AM
Surr: Toluene-d8	97.6	82.4 - 115		%Rec	1	9/1/2021 2:24:30 AM
Surr: 1-Bromo-4-fluorobenzene	89.3	78.5 - 118		%Rec	1	9/1/2021 2:24:30 AM
Mercury by EPA Method 7471B				Batch ID: 33505		Analyst: CH
Mercury	ND	0.270		mg/Kg-dry	1	8/27/2021 12:26:40 PM
Total Metals by EPA Method 6020B				Batch ID: 33517		Analyst: EH
Arsenic	4.38	0.100		mg/Kg-dry	1	8/27/2021 5:27:54 PM
Barium	67.6	0.501		mg/Kg-dry	1	8/27/2021 5:27:54 PM
Cadmium	ND	0.167		mg/Kg-dry	1	8/27/2021 5:27:54 PM
Chromium	26.9	0.334		mg/Kg-dry	1	8/27/2021 5:27:54 PM
Lead	2.59	0.167		mg/Kg-dry	1	8/27/2021 5:27:54 PM
Selenium	0.762	0.167		mg/Kg-dry	1	8/27/2021 5:27:54 PM
Silver	ND	0.125		mg/Kg-dry	1	8/27/2021 5:27:54 PM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-014
Client Sample ID: **CHRL-A9-B10-10**

Collection Date: 8/25/2021 12:50:00 PM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R69544		Analyst: MCH
Percent Moisture	9.21	0.500		wt%	1	8/27/2021 2:10:02 PM

Client: O'Neill Service Group
Collection Date: 8/25/2021 1:20:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-016
Matrix: Soil
Client Sample ID: **CHRL-A9-B11-10**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33528		Analyst: MM
Diesel (Fuel Oil)	ND	52.1		mg/Kg-dry	1	8/27/2021 8:13:44 PM
Heavy Oil	ND	104		mg/Kg-dry	1	8/27/2021 8:13:44 PM
Total Petroleum Hydrocarbons	ND	156		mg/Kg-dry	1	8/27/2021 8:13:44 PM
Surr: 2-Fluorobiphenyl	51.0	50 - 150		%Rec	1	8/27/2021 8:13:44 PM
Surr: o-Terphenyl	59.9	50 - 150		%Rec	1	8/27/2021 8:13:44 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	5.53		mg/Kg-dry	1	9/1/2021 2:54:39 AM
Gasoline Range Organics (C6-C12)	6.31	5.53		mg/Kg-dry	1	9/1/2021 2:54:39 AM
Surr: Toluene-d8	96.0	65 - 135		%Rec	1	9/1/2021 2:54:39 AM
Surr: 4-Bromofluorobenzene	88.7	65 - 135		%Rec	1	9/1/2021 2:54:39 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Benzene	ND	0.0221		mg/Kg-dry	1	9/1/2021 2:54:39 AM
Toluene	ND	0.0332		mg/Kg-dry	1	9/1/2021 2:54:39 AM
Ethylbenzene	ND	0.0276		mg/Kg-dry	1	9/1/2021 2:54:39 AM
m,p-Xylene	ND	0.0553		mg/Kg-dry	1	9/1/2021 2:54:39 AM
o-Xylene	ND	0.0276		mg/Kg-dry	1	9/1/2021 2:54:39 AM
Surr: Dibromofluoromethane	105	75.5 - 119		%Rec	1	9/1/2021 2:54:39 AM
Surr: Toluene-d8	97.0	82.4 - 115		%Rec	1	9/1/2021 2:54:39 AM
Surr: 1-Bromo-4-fluorobenzene	85.6	78.5 - 118		%Rec	1	9/1/2021 2:54:39 AM
Sample Moisture (Percent Moisture)				Batch ID: R69544		Analyst: MCH
Percent Moisture	11.8	0.500		wt%	1	8/27/2021 2:10:02 PM

NOTES:
GRO - Indicates the presence of unresolved compounds in the gasoline range.

Client: O'Neill Service Group
Collection Date: 8/25/2021 1:25:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-017
Matrix: Soil
Client Sample ID: **CHRL-A9-B11-15**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33528		Analyst: MM
Diesel (Fuel Oil)	99.2	55.2		mg/Kg-dry	1	8/27/2021 8:39:18 PM
Heavy Oil	144	110		mg/Kg-dry	1	8/27/2021 8:39:18 PM
Total Petroleum Hydrocarbons	244	166		mg/Kg-dry	1	8/27/2021 8:39:18 PM
Surr: 2-Fluorobiphenyl	61.4	50 - 150		%Rec	1	8/27/2021 8:39:18 PM
Surr: o-Terphenyl	77.6	50 - 150		%Rec	1	8/27/2021 8:39:18 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	5.11		mg/Kg-dry	1	9/1/2021 3:24:46 AM
Gasoline Range Organics (C6-C12)	5.84	5.11		mg/Kg-dry	1	9/1/2021 3:24:46 AM
Surr: Toluene-d8	95.6	65 - 135		%Rec	1	9/1/2021 3:24:46 AM
Surr: 4-Bromofluorobenzene	91.8	65 - 135		%Rec	1	9/1/2021 3:24:46 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Benzene	ND	0.0204		mg/Kg-dry	1	9/1/2021 3:24:46 AM
Toluene	ND	0.0307		mg/Kg-dry	1	9/1/2021 3:24:46 AM
Ethylbenzene	ND	0.0256		mg/Kg-dry	1	9/1/2021 3:24:46 AM
m,p-Xylene	ND	0.0511		mg/Kg-dry	1	9/1/2021 3:24:46 AM
o-Xylene	ND	0.0256		mg/Kg-dry	1	9/1/2021 3:24:46 AM
Surr: Dibromofluoromethane	103	75.5 - 119		%Rec	1	9/1/2021 3:24:46 AM
Surr: Toluene-d8	96.9	82.4 - 115		%Rec	1	9/1/2021 3:24:46 AM
Surr: 1-Bromo-4-fluorobenzene	88.7	78.5 - 118		%Rec	1	9/1/2021 3:24:46 AM
Sample Moisture (Percent Moisture)				Batch ID: R69544		Analyst: MCH
Percent Moisture	10.4	0.500		wt%	1	8/27/2021 2:10:02 PM

NOTES:
GRO - Indicates the presence of unresolved compounds in the gasoline range.

Client: O'Neill Service Group
Collection Date: 8/25/2021 1:45:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-020
Matrix: Soil
Client Sample ID: **CHRL-A9-B12-11**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33528		Analyst: MM
Diesel (Fuel Oil)	1,050	47.9		mg/Kg-dry	1	8/27/2021 9:05:00 PM
Heavy Oil	137	95.9		mg/Kg-dry	1	8/27/2021 9:05:00 PM
Total Petroleum Hydrocarbons	1,180	144		mg/Kg-dry	1	8/27/2021 9:05:00 PM
Surr: 2-Fluorobiphenyl	89.3	50 - 150		%Rec	1	8/27/2021 9:05:00 PM
Surr: o-Terphenyl	108	50 - 150		%Rec	1	8/27/2021 9:05:00 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	5.16		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Surr: Toluene-d8	92.6	65 - 135		%Rec	1	9/1/2021 3:54:53 AM
Surr: 4-Bromofluorobenzene	106	65 - 135		%Rec	1	9/1/2021 3:54:53 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Dichlorodifluoromethane (CFC-12)	ND	0.0516		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Chloromethane	ND	0.0826		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Vinyl chloride	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Bromomethane	ND	0.155		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Trichlorofluoromethane (CFC-11)	ND	0.0516		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Chloroethane	ND	0.124		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,1-Dichloroethene	ND	0.103		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Acetone	ND	0.516		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Methylene chloride	ND	0.0155		mg/Kg-dry	1	9/1/2021 3:54:53 AM
trans-1,2-Dichloroethene	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Methyl tert-butyl ether (MTBE)	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,1-Dichloroethane	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
cis-1,2-Dichloroethene	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
(MEK) 2-Butanone	ND	0.465		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Chloroform	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,1,1-Trichloroethane (TCA)	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,1-Dichloropropene	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Carbon tetrachloride	ND	0.0775		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,2-Dichloroethane (EDC)	ND	0.0238		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Benzene	ND	0.0207		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Trichloroethene (TCE)	ND	0.0207		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,2-Dichloropropane	ND	0.0207		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Bromodichloromethane	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Dibromomethane	ND	0.0207		mg/Kg-dry	1	9/1/2021 3:54:53 AM
cis-1,3-Dichloropropene	ND	0.0826		mg/Kg-dry	1	9/1/2021 3:54:53 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 1:45:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-020
Matrix: Soil
Client Sample ID: **CHRL-A9-B12-11**

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 33556 Analyst: KT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Toluene	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Trans-1,3-Dichloropropylene	ND	0.0516		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Methyl Isobutyl Ketone (MIBK)	ND	0.0775		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,1,2-Trichloroethane	ND	0.0176		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,3-Dichloropropane	ND	0.0207		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Tetrachloroethene (PCE)	ND	0.0413		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Dibromochloromethane	ND	0.0207		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,2-Dibromoethane (EDB)	ND	0.0103		mg/Kg-dry	1	9/1/2021 3:54:53 AM
2-Hexanone (MBK)	ND	0.0620		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Chlorobenzene	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,1,1,2-Tetrachloroethane	ND	0.0207		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Ethylbenzene	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
m,p-Xylene	ND	0.0516		mg/Kg-dry	1	9/1/2021 3:54:53 AM
o-Xylene	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Styrene	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Isopropylbenzene	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Bromoform	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,1,2,2-Tetrachloroethane	ND	0.0155		mg/Kg-dry	1	9/1/2021 3:54:53 AM
n-Propylbenzene	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Bromobenzene	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,3,5-Trimethylbenzene	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
2-Chlorotoluene	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
4-Chlorotoluene	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
tert-Butylbenzene	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,2,3-Trichloropropane	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,2,4-Trichlorobenzene	ND	0.0413		mg/Kg-dry	1	9/1/2021 3:54:53 AM
sec-Butylbenzene	0.0478	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
4-Isopropyltoluene	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,3-Dichlorobenzene	ND	0.0362		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,4-Dichlorobenzene	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
n-Butylbenzene	ND	0.0413		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,2-Dichlorobenzene	ND	0.0310		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,2-Dibromo-3-chloropropane	ND	0.0620		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,2,4-Trimethylbenzene	ND	0.0258		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Hexachloro-1,3-butadiene	ND	0.0516		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Naphthalene	ND	0.103		mg/Kg-dry	1	9/1/2021 3:54:53 AM
1,2,3-Trichlorobenzene	ND	0.0516		mg/Kg-dry	1	9/1/2021 3:54:53 AM
Surr: Dibromofluoromethane	108	75.5 - 119		%Rec	1	9/1/2021 3:54:53 AM
Surr: Toluene-d8	95.9	82.4 - 115		%Rec	1	9/1/2021 3:54:53 AM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Collection Date: 8/25/2021 1:45:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-020
Matrix: Soil
Client Sample ID: **CHRL-A9-B12-11**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Surr: 1-Bromo-4-fluorobenzene	107	78.5 - 118		%Rec	1	9/1/2021 3:54:53 AM
Mercury by EPA Method 7471B				Batch ID: 33505		Analyst: CH
Mercury	ND	0.261		mg/Kg-dry	1	8/27/2021 12:28:16 PM
Total Metals by EPA Method 6020B				Batch ID: 33517		Analyst: EH
Arsenic	3.12	0.105		mg/Kg-dry	1	8/27/2021 5:33:28 PM
Barium	62.3	0.523		mg/Kg-dry	1	8/27/2021 5:33:28 PM
Cadmium	ND	0.174		mg/Kg-dry	1	8/27/2021 5:33:28 PM
Chromium	26.6	0.349		mg/Kg-dry	1	8/27/2021 5:33:28 PM
Lead	2.13	0.174		mg/Kg-dry	1	8/27/2021 5:33:28 PM
Selenium	0.972	0.174		mg/Kg-dry	1	8/27/2021 5:33:28 PM
Silver	ND	0.131		mg/Kg-dry	1	8/27/2021 5:33:28 PM
Sample Moisture (Percent Moisture)				Batch ID: R69544		Analyst: MCH
Percent Moisture	9.68	0.500		wt%	1	8/27/2021 2:10:02 PM

Client: O'Neill Service Group
Collection Date: 8/25/2021 1:50:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-021
Matrix: Soil
Client Sample ID: **CHRL-A9-B12-12**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33528		Analyst: MM
Diesel (Fuel Oil)	77.7	50.9		mg/Kg-dry	1	8/27/2021 9:43:12 PM
Heavy Oil	ND	102		mg/Kg-dry	1	8/27/2021 9:43:12 PM
Total Petroleum Hydrocarbons	ND	153		mg/Kg-dry	1	8/27/2021 9:43:12 PM
Surr: 2-Fluorobiphenyl	87.3	50 - 150		%Rec	1	8/27/2021 9:43:12 PM
Surr: o-Terphenyl	97.5	50 - 150		%Rec	1	8/27/2021 9:43:12 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	4.88		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Surr: Toluene-d8	94.2	65 - 135		%Rec	1	9/1/2021 4:25:01 AM
Surr: 4-Bromofluorobenzene	98.1	65 - 135		%Rec	1	9/1/2021 4:25:01 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Dichlorodifluoromethane (CFC-12)	ND	0.0488		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Chloromethane	ND	0.0781		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Vinyl chloride	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Bromomethane	ND	0.146		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Trichlorofluoromethane (CFC-11)	ND	0.0488		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Chloroethane	ND	0.117		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,1-Dichloroethene	ND	0.0976		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Acetone	ND	0.488		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Methylene chloride	ND	0.0146		mg/Kg-dry	1	9/1/2021 4:25:01 AM
trans-1,2-Dichloroethene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Methyl tert-butyl ether (MTBE)	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,1-Dichloroethane	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
cis-1,2-Dichloroethene	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
(MEK) 2-Butanone	ND	0.439		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Chloroform	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,1,1-Trichloroethane (TCA)	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,1-Dichloropropene	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Carbon tetrachloride	ND	0.0732		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,2-Dichloroethane (EDC)	ND	0.0224		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Benzene	ND	0.0195		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Trichloroethene (TCE)	ND	0.0195		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,2-Dichloropropane	ND	0.0195		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Bromodichloromethane	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Dibromomethane	ND	0.0195		mg/Kg-dry	1	9/1/2021 4:25:01 AM
cis-1,3-Dichloropropene	ND	0.0781		mg/Kg-dry	1	9/1/2021 4:25:01 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 1:50:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-021
Matrix: Soil
Client Sample ID: **CHRL-A9-B12-12**

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 33556 Analyst: KT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Toluene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Trans-1,3-Dichloropropylene	ND	0.0488		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Methyl Isobutyl Ketone (MIBK)	ND	0.0732		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,1,2-Trichloroethane	ND	0.0166		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,3-Dichloropropane	ND	0.0195		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Tetrachloroethene (PCE)	ND	0.0390		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Dibromochloromethane	ND	0.0195		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,2-Dibromoethane (EDB)	ND	0.00976		mg/Kg-dry	1	9/1/2021 4:25:01 AM
2-Hexanone (MBK)	ND	0.0586		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Chlorobenzene	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,1,1,2-Tetrachloroethane	ND	0.0195		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Ethylbenzene	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
m,p-Xylene	ND	0.0488		mg/Kg-dry	1	9/1/2021 4:25:01 AM
o-Xylene	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Styrene	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Isopropylbenzene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Bromoform	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,1,2,2-Tetrachloroethane	ND	0.0146		mg/Kg-dry	1	9/1/2021 4:25:01 AM
n-Propylbenzene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Bromobenzene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,3,5-Trimethylbenzene	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
2-Chlorotoluene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
4-Chlorotoluene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
tert-Butylbenzene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,2,3-Trichloropropane	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,2,4-Trichlorobenzene	ND	0.0390		mg/Kg-dry	1	9/1/2021 4:25:01 AM
sec-Butylbenzene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
4-Isopropyltoluene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,3-Dichlorobenzene	ND	0.0342		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,4-Dichlorobenzene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
n-Butylbenzene	ND	0.0390		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,2-Dichlorobenzene	ND	0.0293		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,2-Dibromo-3-chloropropane	ND	0.0586		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,2,4-Trimethylbenzene	ND	0.0244		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Hexachloro-1,3-butadiene	ND	0.0488		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Naphthalene	ND	0.0976		mg/Kg-dry	1	9/1/2021 4:25:01 AM
1,2,3-Trichlorobenzene	ND	0.0488		mg/Kg-dry	1	9/1/2021 4:25:01 AM
Surr: Dibromofluoromethane	98.0	75.5 - 119		%Rec	1	9/1/2021 4:25:01 AM
Surr: Toluene-d8	96.7	82.4 - 115		%Rec	1	9/1/2021 4:25:01 AM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-021
Client Sample ID: **CHRL-A9-B12-12**

Collection Date: 8/25/2021 1:50:00 PM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Surr: 1-Bromo-4-fluorobenzene	97.3	78.5 - 118		%Rec	1	9/1/2021 4:25:01 AM
Mercury by EPA Method 7471B				Batch ID: 33505		Analyst: CH
Mercury	ND	0.251		mg/Kg-dry	1	8/27/2021 12:33:12 PM
Total Metals by EPA Method 6020B				Batch ID: 33532		Analyst: EH
Arsenic	4.20	0.0995		mg/Kg-dry	1	8/30/2021 3:14:54 PM
Barium	61.3	0.498		mg/Kg-dry	1	8/30/2021 3:14:54 PM
Cadmium	ND	0.166		mg/Kg-dry	1	8/30/2021 3:14:54 PM
Chromium	25.5	0.332		mg/Kg-dry	1	8/30/2021 3:14:54 PM
Lead	2.26	0.166		mg/Kg-dry	1	8/30/2021 3:14:54 PM
Selenium	1.04	0.166		mg/Kg-dry	1	8/30/2021 3:14:54 PM
Silver	ND	0.124		mg/Kg-dry	1	8/30/2021 3:14:54 PM
Sample Moisture (Percent Moisture)				Batch ID: R69544		Analyst: MCH
Percent Moisture	7.94	0.500		wt%	1	8/27/2021 2:10:02 PM

Client: O'Neill Service Group
Collection Date: 8/25/2021 2:15:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-022
Matrix: Soil
Client Sample ID: **CHRL-A9-B13-7**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33528		Analyst: MM
Diesel (Fuel Oil)	ND	49.8		mg/Kg-dry	1	8/27/2021 10:08:50 PM
Heavy Oil	ND	99.6		mg/Kg-dry	1	8/27/2021 10:08:50 PM
Total Petroleum Hydrocarbons	ND	149		mg/Kg-dry	1	8/27/2021 10:08:50 PM
Surr: 2-Fluorobiphenyl	72.8	50 - 150		%Rec	1	8/27/2021 10:08:50 PM
Surr: o-Terphenyl	81.4	50 - 150		%Rec	1	8/27/2021 10:08:50 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	4.73		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Surr: Toluene-d8	96.6	65 - 135		%Rec	1	9/1/2021 7:56:04 AM
Surr: 4-Bromofluorobenzene	91.0	65 - 135		%Rec	1	9/1/2021 7:56:04 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Dichlorodifluoromethane (CFC-12)	ND	0.0473		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Chloromethane	ND	0.0757		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Vinyl chloride	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Bromomethane	ND	0.142		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Trichlorofluoromethane (CFC-11)	ND	0.0473		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Chloroethane	ND	0.114		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,1-Dichloroethene	ND	0.0947		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Acetone	ND	0.473		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Methylene chloride	ND	0.0142		mg/Kg-dry	1	9/1/2021 7:56:04 AM
trans-1,2-Dichloroethene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Methyl tert-butyl ether (MTBE)	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,1-Dichloroethane	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
cis-1,2-Dichloroethene	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
(MEK) 2-Butanone	ND	0.426		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Chloroform	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,1,1-Trichloroethane (TCA)	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,1-Dichloropropene	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Carbon tetrachloride	ND	0.0710		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,2-Dichloroethane (EDC)	ND	0.0218		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Benzene	ND	0.0189		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Trichloroethene (TCE)	ND	0.0189		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,2-Dichloropropane	ND	0.0189		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Bromodichloromethane	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Dibromomethane	ND	0.0189		mg/Kg-dry	1	9/1/2021 7:56:04 AM
cis-1,3-Dichloropropene	ND	0.0757		mg/Kg-dry	1	9/1/2021 7:56:04 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 2:15:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-022
Matrix: Soil
Client Sample ID: **CHRL-A9-B13-7**

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 33556 Analyst: KT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Toluene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Trans-1,3-Dichloropropylene	ND	0.0473		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Methyl Isobutyl Ketone (MIBK)	ND	0.0710		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,1,2-Trichloroethane	ND	0.0161		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,3-Dichloropropane	ND	0.0189		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Tetrachloroethene (PCE)	ND	0.0379		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Dibromochloromethane	ND	0.0189		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,2-Dibromoethane (EDB)	ND	0.00947		mg/Kg-dry	1	9/1/2021 7:56:04 AM
2-Hexanone (MBK)	ND	0.0568		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Chlorobenzene	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,1,1,2-Tetrachloroethane	ND	0.0189		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Ethylbenzene	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
m,p-Xylene	ND	0.0473		mg/Kg-dry	1	9/1/2021 7:56:04 AM
o-Xylene	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Styrene	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Isopropylbenzene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Bromoform	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,1,2,2-Tetrachloroethane	ND	0.0142		mg/Kg-dry	1	9/1/2021 7:56:04 AM
n-Propylbenzene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Bromobenzene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,3,5-Trimethylbenzene	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
2-Chlorotoluene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
4-Chlorotoluene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
tert-Butylbenzene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,2,3-Trichloropropane	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,2,4-Trichlorobenzene	ND	0.0379		mg/Kg-dry	1	9/1/2021 7:56:04 AM
sec-Butylbenzene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
4-Isopropyltoluene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,3-Dichlorobenzene	ND	0.0331		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,4-Dichlorobenzene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
n-Butylbenzene	ND	0.0379		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,2-Dichlorobenzene	ND	0.0284		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,2-Dibromo-3-chloropropane	ND	0.0568		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,2,4-Trimethylbenzene	ND	0.0237		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Hexachloro-1,3-butadiene	ND	0.0473		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Naphthalene	ND	0.0947		mg/Kg-dry	1	9/1/2021 7:56:04 AM
1,2,3-Trichlorobenzene	ND	0.0473		mg/Kg-dry	1	9/1/2021 7:56:04 AM
Surr: Dibromofluoromethane	95.7	75.5 - 119		%Rec	1	9/1/2021 7:56:04 AM
Surr: Toluene-d8	96.5	82.4 - 115		%Rec	1	9/1/2021 7:56:04 AM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Collection Date: 8/25/2021 2:15:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-022
Matrix: Soil
Client Sample ID: **CHRL-A9-B13-7**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Surr: 1-Bromo-4-fluorobenzene	91.3	78.5 - 118		%Rec	1	9/1/2021 7:56:04 AM
Mercury by EPA Method 7471B				Batch ID: 33505		Analyst: CH
Mercury	ND	0.257		mg/Kg-dry	1	8/27/2021 12:34:49 PM
Total Metals by EPA Method 6020B				Batch ID: 33532		Analyst: EH
Arsenic	2.98	0.108		mg/Kg-dry	1	8/30/2021 3:20:28 PM
Barium	91.1	0.541		mg/Kg-dry	1	8/30/2021 3:20:28 PM
Cadmium	ND	0.180		mg/Kg-dry	1	8/30/2021 3:20:28 PM
Chromium	27.7	0.360		mg/Kg-dry	1	8/30/2021 3:20:28 PM
Lead	2.45	0.180		mg/Kg-dry	1	8/30/2021 3:20:28 PM
Selenium	1.46	0.180		mg/Kg-dry	1	8/30/2021 3:20:28 PM
Silver	ND	0.135		mg/Kg-dry	1	8/30/2021 3:20:28 PM
Sample Moisture (Percent Moisture)				Batch ID: R69544		Analyst: MCH
Percent Moisture	13.3	0.500		wt%	1	8/27/2021 2:10:02 PM

Client: O'Neill Service Group
Collection Date: 8/25/2021 2:20:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-023
Matrix: Soil
Client Sample ID: **CHRL-A9-B13-9**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33528		Analyst: MM
Diesel (Fuel Oil)	ND	46.8		mg/Kg-dry	1	8/27/2021 10:34:20 PM
Heavy Oil	ND	93.5		mg/Kg-dry	1	8/27/2021 10:34:20 PM
Total Petroleum Hydrocarbons	ND	140		mg/Kg-dry	1	8/27/2021 10:34:20 PM
Surr: 2-Fluorobiphenyl	80.6	50 - 150		%Rec	1	8/27/2021 10:34:20 PM
Surr: o-Terphenyl	85.3	50 - 150		%Rec	1	8/27/2021 10:34:20 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	42.8	5.81		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Surr: Toluene-d8	99.7	65 - 135		%Rec	1	9/1/2021 8:26:13 AM
Surr: 4-Bromofluorobenzene	120	65 - 135		%Rec	1	9/1/2021 8:26:13 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Dichlorodifluoromethane (CFC-12)	ND	0.0581		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Chloromethane	ND	0.0929		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Vinyl chloride	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Bromomethane	ND	0.174		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Trichlorofluoromethane (CFC-11)	ND	0.0581		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Chloroethane	ND	0.139		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,1-Dichloroethene	ND	0.116		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Acetone	ND	0.581		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Methylene chloride	ND	0.0174		mg/Kg-dry	1	9/1/2021 8:26:13 AM
trans-1,2-Dichloroethene	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Methyl tert-butyl ether (MTBE)	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,1-Dichloroethane	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
cis-1,2-Dichloroethene	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
(MEK) 2-Butanone	ND	0.523		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Chloroform	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,1,1-Trichloroethane (TCA)	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,1-Dichloropropene	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Carbon tetrachloride	ND	0.0871		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,2-Dichloroethane (EDC)	ND	0.0267		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Benzene	ND	0.0232		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Trichloroethene (TCE)	ND	0.0232		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,2-Dichloropropane	ND	0.0232		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Bromodichloromethane	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Dibromomethane	ND	0.0232		mg/Kg-dry	1	9/1/2021 8:26:13 AM
cis-1,3-Dichloropropene	ND	0.0929		mg/Kg-dry	1	9/1/2021 8:26:13 AM

Client: O'Neill Service Group
Collection Date: 8/25/2021 2:20:00 PM
Project: CHRL- AREA 9
Lab ID: 2108362-023
Matrix: Soil
Client Sample ID: **CHRL-A9-B13-9**

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 33556 Analyst: KT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Toluene	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Trans-1,3-Dichloropropylene	ND	0.0581		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Methyl Isobutyl Ketone (MIBK)	ND	0.0871		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,1,2-Trichloroethane	ND	0.0197		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,3-Dichloropropane	ND	0.0232		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Tetrachloroethene (PCE)	ND	0.0465		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Dibromochloromethane	ND	0.0232		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,2-Dibromoethane (EDB)	ND	0.0116		mg/Kg-dry	1	9/1/2021 8:26:13 AM
2-Hexanone (MBK)	ND	0.0697		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Chlorobenzene	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,1,1,2-Tetrachloroethane	ND	0.0232		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Ethylbenzene	0.0304	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
m,p-Xylene	ND	0.0581		mg/Kg-dry	1	9/1/2021 8:26:13 AM
o-Xylene	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Styrene	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Isopropylbenzene	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Bromoform	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,1,2,2-Tetrachloroethane	ND	0.0174		mg/Kg-dry	1	9/1/2021 8:26:13 AM
n-Propylbenzene	0.117	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Bromobenzene	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,3,5-Trimethylbenzene	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
2-Chlorotoluene	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
4-Chlorotoluene	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
tert-Butylbenzene	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,2,3-Trichloropropane	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,2,4-Trichlorobenzene	ND	0.0465		mg/Kg-dry	1	9/1/2021 8:26:13 AM
sec-Butylbenzene	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
4-Isopropyltoluene	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,3-Dichlorobenzene	ND	0.0407		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,4-Dichlorobenzene	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
n-Butylbenzene	0.269	0.0465		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,2-Dichlorobenzene	ND	0.0348		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,2-Dibromo-3-chloropropane	ND	0.0697		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,2,4-Trimethylbenzene	ND	0.0290		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Hexachloro-1,3-butadiene	ND	0.0581		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Naphthalene	ND	0.116		mg/Kg-dry	1	9/1/2021 8:26:13 AM
1,2,3-Trichlorobenzene	ND	0.0581		mg/Kg-dry	1	9/1/2021 8:26:13 AM
Surr: Dibromofluoromethane	92.7	75.5 - 119		%Rec	1	9/1/2021 8:26:13 AM
Surr: Toluene-d8	98.0	82.4 - 115		%Rec	1	9/1/2021 8:26:13 AM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-023
Client Sample ID: **CHRL-A9-B13-9**

Collection Date: 8/25/2021 2:20:00 PM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Surr: 1-Bromo-4-fluorobenzene	101	78.5 - 118		%Rec	1	9/1/2021 8:26:13 AM
Mercury by EPA Method 7471B				Batch ID: 33505		Analyst: CH
Mercury	ND	0.263		mg/Kg-dry	1	8/27/2021 12:36:27 PM
Total Metals by EPA Method 6020B				Batch ID: 33532		Analyst: EH
Arsenic	5.41	0.103		mg/Kg-dry	1	8/30/2021 3:26:02 PM
Barium	84.2	0.514		mg/Kg-dry	1	8/30/2021 3:26:02 PM
Cadmium	ND	0.171		mg/Kg-dry	1	8/30/2021 3:26:02 PM
Chromium	29.0	0.343		mg/Kg-dry	1	8/30/2021 3:26:02 PM
Lead	2.53	0.171		mg/Kg-dry	1	8/30/2021 3:26:02 PM
Selenium	1.31	0.171		mg/Kg-dry	1	8/30/2021 3:26:02 PM
Silver	ND	0.129		mg/Kg-dry	1	8/30/2021 3:26:02 PM
Sample Moisture (Percent Moisture)				Batch ID: R69544		Analyst: MCH
Percent Moisture	10.2	0.500		wt%	1	8/27/2021 2:10:02 PM

Client: O'Neill Service Group
Collection Date: 8/25/2021 8:00:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-024
Matrix: Soil
Client Sample ID: **CHRL-A9-Dup**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 33528		Analyst: MM
Diesel (Fuel Oil)	2,680	52.4		mg/Kg-dry	1	8/27/2021 10:59:50 PM
Heavy Oil	433	105		mg/Kg-dry	1	8/27/2021 10:59:50 PM
Total Petroleum Hydrocarbons	3,110	157		mg/Kg-dry	1	8/27/2021 10:59:50 PM
Surr: 2-Fluorobiphenyl	78.6	50 - 150		%Rec	1	8/27/2021 10:59:50 PM
Surr: o-Terphenyl	111	50 - 150		%Rec	1	8/27/2021 10:59:50 PM
Gasoline by NWTPH-Gx				Batch ID: 33556		Analyst: KT
Gasoline	ND	53.7	D	mg/Kg-dry	10	9/1/2021 10:26:50 AM
Surr: Toluene-d8	93.9	65 - 135	D	%Rec	10	9/1/2021 10:26:50 AM
Surr: 4-Bromofluorobenzene	106	65 - 135	D	%Rec	10	9/1/2021 10:26:50 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Dichlorodifluoromethane (CFC-12)	ND	0.0537		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Chloromethane	ND	0.0860		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Vinyl chloride	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Bromomethane	ND	0.161		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Trichlorofluoromethane (CFC-11)	ND	0.0537		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Chloroethane	ND	0.129		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,1-Dichloroethene	ND	0.107		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Acetone	ND	0.537		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Methylene chloride	ND	0.0161		mg/Kg-dry	1	9/1/2021 8:56:24 AM
trans-1,2-Dichloroethene	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Methyl tert-butyl ether (MTBE)	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,1-Dichloroethane	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
cis-1,2-Dichloroethene	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
(MEK) 2-Butanone	ND	0.484		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Chloroform	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,1,1-Trichloroethane (TCA)	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,1-Dichloropropene	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Carbon tetrachloride	ND	0.0806		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,2-Dichloroethane (EDC)	ND	0.0247		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Benzene	ND	0.0215		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Trichloroethene (TCE)	ND	0.0215		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,2-Dichloropropane	ND	0.0215		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Bromodichloromethane	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM

NOTES:
Diluted due to high levels of non-target analytes.

Client: O'Neill Service Group
Collection Date: 8/25/2021 8:00:00 AM
Project: CHRL- AREA 9
Lab ID: 2108362-024
Matrix: Soil
Client Sample ID: **CHRL-A9-Dup**

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 33556 Analyst: KT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dibromomethane	ND	0.0215		mg/Kg-dry	1	9/1/2021 8:56:24 AM
cis-1,3-Dichloropropene	ND	0.0860		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Toluene	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Trans-1,3-Dichloropropylene	ND	0.0537		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Methyl Isobutyl Ketone (MIBK)	ND	0.0806		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,1,2-Trichloroethane	ND	0.0183		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,3-Dichloropropane	ND	0.0215		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Tetrachloroethene (PCE)	ND	0.0430		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Dibromochloromethane	ND	0.0215		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,2-Dibromoethane (EDB)	ND	0.0107		mg/Kg-dry	1	9/1/2021 8:56:24 AM
2-Hexanone (MBK)	ND	0.0645		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Chlorobenzene	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,1,1,2-Tetrachloroethane	ND	0.0215		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Ethylbenzene	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
m,p-Xylene	ND	0.0537		mg/Kg-dry	1	9/1/2021 8:56:24 AM
o-Xylene	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Styrene	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Isopropylbenzene	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Bromoform	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,1,2,2-Tetrachloroethane	ND	0.0161		mg/Kg-dry	1	9/1/2021 8:56:24 AM
n-Propylbenzene	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Bromobenzene	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,3,5-Trimethylbenzene	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
2-Chlorotoluene	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
4-Chlorotoluene	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
tert-Butylbenzene	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,2,3-Trichloropropane	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,2,4-Trichlorobenzene	ND	0.0430		mg/Kg-dry	1	9/1/2021 8:56:24 AM
sec-Butylbenzene	1.21	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
4-Isopropyltoluene	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,3-Dichlorobenzene	ND	0.0376		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,4-Dichlorobenzene	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
n-Butylbenzene	ND	0.0430		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,2-Dichlorobenzene	ND	0.0322		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,2-Dibromo-3-chloropropane	ND	0.0645		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,2,4-Trimethylbenzene	ND	0.0269		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Hexachloro-1,3-butadiene	ND	0.0537		mg/Kg-dry	1	9/1/2021 8:56:24 AM
Naphthalene	ND	0.107		mg/Kg-dry	1	9/1/2021 8:56:24 AM
1,2,3-Trichlorobenzene	ND	0.0537		mg/Kg-dry	1	9/1/2021 8:56:24 AM

Analytical Report

Work Order: **2108362**
Date Reported: **9/1/2021**

Client: O'Neill Service Group
Project: CHRL- AREA 9
Lab ID: 2108362-024
Client Sample ID: **CHRL-A9-Dup**

Collection Date: 8/25/2021 8:00:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 33556		Analyst: KT
Surr: Dibromofluoromethane	102	75.5 - 119		%Rec	1	9/1/2021 8:56:24 AM
Surr: Toluene-d8	111	82.4 - 115		%Rec	1	9/1/2021 8:56:24 AM
Surr: 1-Bromo-4-fluorobenzene	101	78.5 - 118		%Rec	1	9/1/2021 8:56:24 AM
Mercury by EPA Method 7471B				Batch ID: 33505		Analyst: CH
Mercury	ND	0.244		mg/Kg-dry	1	8/27/2021 12:38:04 PM
Total Metals by EPA Method 6020B				Batch ID: 33532		Analyst: EH
Arsenic	3.27	0.103		mg/Kg-dry	1	8/30/2021 2:47:04 PM
Barium	62.5	0.513		mg/Kg-dry	1	8/30/2021 2:47:04 PM
Cadmium	ND	0.171		mg/Kg-dry	1	8/30/2021 2:47:04 PM
Chromium	25.4	0.342		mg/Kg-dry	1	8/30/2021 2:47:04 PM
Lead	2.19	0.171		mg/Kg-dry	1	8/30/2021 2:47:04 PM
Selenium	1.28	0.171		mg/Kg-dry	1	8/30/2021 2:47:04 PM
Silver	ND	0.128		mg/Kg-dry	1	8/30/2021 2:47:04 PM
Sample Moisture (Percent Moisture)				Batch ID: R69544		Analyst: MCH
Percent Moisture	8.66	0.500		wt%	1	8/27/2021 2:10:02 PM

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Dissolved Metals by EPA Method 200.8

Sample ID: **MB-33530FB** SampType: **MBLK** Units: **µg/L** Prep Date: **8/30/2021** RunNo: **69590**
Client ID: **MBLKW** Batch ID: **33531** Analysis Date: **8/30/2021** SeqNo: **1410591**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	1.00									
Barium	ND	1.50									
Cadmium	ND	0.125									
Chromium	ND	0.750									
Lead	ND	0.500									
Selenium	ND	1.90									
Silver	ND	0.350									

Sample ID: **MB-33531** SampType: **MBLK** Units: **µg/L** Prep Date: **8/30/2021** RunNo: **69590**
Client ID: **MBLKW** Batch ID: **33531** Analysis Date: **8/30/2021** SeqNo: **1410592**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	1.00									
Barium	ND	1.50									
Cadmium	ND	0.125									
Chromium	ND	0.750									
Lead	ND	0.500									
Selenium	ND	1.90									
Silver	ND	0.350									

Sample ID: **LCS-33531** SampType: **LCS** Units: **µg/L** Prep Date: **8/30/2021** RunNo: **69590**
Client ID: **LCSW** Batch ID: **33531** Analysis Date: **8/30/2021** SeqNo: **1410593**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	112	1.00	100.0	0	112	85	115				
Chromium	108	0.750	100.0	0	108	85	115				
Lead	56.3	0.500	50.00	0	113	85	115				
Selenium	11.5	1.90	10.00	0	115	85	115				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Dissolved Metals by EPA Method 200.8

Sample ID: **2108362-009CDUP** SampType: **DUP** Units: **µg/L** Prep Date: **8/30/2021** RunNo: **69590**
Client ID: **CHRL-A9-B8-W** Batch ID: **33531** Analysis Date: **8/30/2021** SeqNo: **1410597**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	3.26	1.00						4.604	34.1	30	R
Chromium	ND	0.750						0.9425	24.3	30	
Lead	1.56	0.500						1.678	7.13	30	
Selenium	1.95	1.90						1.177	49.5	30	
Silver	ND	0.350						0		30	

NOTES:
R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Sample ID: **2108362-009CMS** SampType: **MS** Units: **µg/L** Prep Date: **8/30/2021** RunNo: **69590**
Client ID: **CHRL-A9-B8-W** Batch ID: **33531** Analysis Date: **8/30/2021** SeqNo: **1410598**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	545	1.00	500.0	4.604	108	70	130				
Barium	590	1.50	500.0	10.31	116	70	130				
Cadmium	28.4	0.125	25.00	0.7780	110	70	130				
Chromium	481	0.750	500.0	0.9425	96.1	70	130				
Lead	261	0.500	250.0	1.678	104	70	130				
Selenium	55.2	1.90	50.00	1.177	108	70	130				
Silver	27.9	0.350	25.00	0	111	70	130				

Sample ID: **2108362-009CMSD** SampType: **MSD** Units: **µg/L** Prep Date: **8/30/2021** RunNo: **69590**
Client ID: **CHRL-A9-B8-W** Batch ID: **33531** Analysis Date: **8/30/2021** SeqNo: **1410599**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	559	1.00	500.0	4.604	111	70	130	544.6	2.56	30	
Barium	612	1.50	500.0	10.31	120	70	130	589.9	3.66	30	
Cadmium	29.7	0.125	25.00	0.7780	116	70	130	28.40	4.56	30	
Chromium	495	0.750	500.0	0.9425	98.8	70	130	481.2	2.83	30	
Lead	261	0.500	250.0	1.678	104	70	130	260.8	0.0535	30	
Selenium	60.5	1.90	50.00	1.177	119	70	130	55.19	9.23	30	

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Dissolved Metals by EPA Method 200.8

Sample ID: **2108362-009CMSD**	SampType: **MSD**			Units: **µg/L**		Prep Date: **8/30/2021**			RunNo: **69590**		
Client ID: **CHRL-A9-B8-W**	Batch ID: **33531**					Analysis Date: **8/30/2021**			SeqNo: **1410599**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	29.1	0.350	25.00	0	117	70	130	27.86	4.45	30	

Sample ID: **LCS-33531**	SampType: **LCS**			Units: **µg/L**		Prep Date: **8/30/2021**			RunNo: **69590**		
Client ID: **LCSW**	Batch ID: **33531**					Analysis Date: **8/31/2021**			SeqNo: **1411313**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	5.00	0.125	5.000	0	100	85	115				
Silver	5.43	0.350	5.000	0	109	85	115				

Sample ID: **2108362-009CDUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **8/30/2021**			RunNo: **69590**		
Client ID: **CHRL-A9-B8-W**	Batch ID: **33531**					Analysis Date: **8/31/2021**			SeqNo: **1411315**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	0.700	0.125						0.6975	0.286	30	

Sample ID: **LCS-33531**	SampType: **LCS**			Units: **µg/L**		Prep Date: **8/30/2021**			RunNo: **69590**		
Client ID: **LCSW**	Batch ID: **33531**					Analysis Date: **9/1/2021**			SeqNo: **1411713**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	101	1.50	100.0	0	101	85	115				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Dissolved Mercury by EPA Method 245.1

Sample ID: **MB-33551**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **8/31/2021**			RunNo: **69641**		
Client ID: **MBLKW**	Batch ID: **33551**					Analysis Date: **9/1/2021**			SeqNo: **1411969**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.100									

Sample ID: **LCS-33551**	SampType: **LCS**			Units: **µg/L**		Prep Date: **8/31/2021**			RunNo: **69641**		
Client ID: **LCSW**	Batch ID: **33551**					Analysis Date: **9/1/2021**			SeqNo: **1411972**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.30	0.100	2.500	0	92.0	85	115				

Sample ID: **2108362-009CDUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **8/31/2021**			RunNo: **69641**		
Client ID: **CHRL-A9-B8-W**	Batch ID: **33551**					Analysis Date: **9/1/2021**			SeqNo: **1411974**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.100						0		20	

Sample ID: **2108362-009CMS**	SampType: **MS**			Units: **µg/L**		Prep Date: **8/31/2021**			RunNo: **69641**		
Client ID: **CHRL-A9-B8-W**	Batch ID: **33551**					Analysis Date: **9/1/2021**			SeqNo: **1411975**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.27	0.100	2.500	0	90.8	70	130				

Sample ID: **2108362-009CMSD**	SampType: **MSD**			Units: **µg/L**		Prep Date: **8/31/2021**			RunNo: **69641**		
Client ID: **CHRL-A9-B8-W**	Batch ID: **33551**					Analysis Date: **9/1/2021**			SeqNo: **1411976**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.31	0.100	2.500	0	92.4	70	130	2.270	1.75	20	

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Dissolved Mercury by EPA Method 245.1

Sample ID: **MB-33530-FB** SampType: **MBLK** Units: **µg/L** Prep Date: **8/31/2021** RunNo: **69641**
Client ID: **MBLKW** Batch ID: **33551** Analysis Date: **9/1/2021** SeqNo: **1411988**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.100									

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **MB-33517** SampType: **MBLK** Units: **mg/Kg** Prep Date: **8/26/2021** RunNo: **69529**
Client ID: **MBLKS** Batch ID: **33517** Analysis Date: **8/27/2021** SeqNo: **1409914**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0968									
Barium	ND	0.484									
Cadmium	ND	0.161									
Chromium	ND	0.323									
Lead	ND	0.161									
Selenium	ND	0.161									
Silver	ND	0.121									

Sample ID: **LCS-33517** SampType: **LCS** Units: **mg/Kg** Prep Date: **8/26/2021** RunNo: **69529**
Client ID: **LCSS** Batch ID: **33517** Analysis Date: **8/27/2021** SeqNo: **1409915**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	36.4	0.0960	40.00	0	91.1	80	120				
Barium	39.9	0.480	40.00	0	99.8	80	120				
Cadmium	1.93	0.160	2.000	0	96.7	80	120				
Chromium	37.4	0.320	40.00	0	93.5	80	120				
Lead	19.5	0.160	20.00	0	97.5	80	120				
Selenium	3.52	0.160	4.000	0	87.9	80	120				
Silver	1.96	0.120	2.000	0	98.1	80	120				

Sample ID: **2108376-003AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69529**
Client ID: **BATCH** Batch ID: **33517** Analysis Date: **8/27/2021** SeqNo: **1409918**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	48.8	0.107	44.46	4.835	98.8	75	125				
Barium	161	0.533	44.46	107.3	120	75	125				
Cadmium	2.34	0.178	2.223	0.1489	98.7	75	125				
Chromium	71.7	0.356	44.46	25.27	104	75	125				
Lead	29.7	0.178	22.23	7.814	98.4	75	125				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **2108376-003AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69529**
Client ID: **BATCH** Batch ID: **33517** Analysis Date: **8/27/2021** SeqNo: **1409918**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	4.85	0.178	4.446	0.7943	91.3	75	125				
Silver	1.98	0.133	2.223	0.07898	85.5	75	125				

Sample ID: **2108376-003AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69529**
Client ID: **BATCH** Batch ID: **33517** Analysis Date: **8/27/2021** SeqNo: **1409919**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	49.6	0.112	46.54	4.835	96.1	75	125	48.77	1.64	20	
Barium	157	0.559	46.54	107.3	106	75	125	160.6	2.35	20	
Cadmium	2.50	0.186	2.327	0.1489	101	75	125	2.343	6.59	20	
Chromium	71.7	0.372	46.54	25.27	99.7	75	125	71.65	0.0139	20	
Lead	29.7	0.186	23.27	7.814	94.2	75	125	29.68	0.144	20	
Selenium	4.94	0.186	4.654	0.7943	89.1	75	125	4.853	1.82	20	
Silver	2.14	0.140	2.327	0.07898	88.4	75	125	1.979	7.63	20	

Sample ID: **MB-33532** SampType: **MBLK** Units: **mg/Kg** Prep Date: **8/30/2021** RunNo: **69589**
Client ID: **MBLKS** Batch ID: **33532** Analysis Date: **8/30/2021** SeqNo: **1410541**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0968									
Barium	ND	0.484									
Cadmium	ND	0.161									
Chromium	ND	0.323									
Lead	ND	0.161									
Selenium	ND	0.161									
Silver	ND	0.121									

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **LCS-33532** SampType: **LCS** Units: **mg/Kg** Prep Date: **8/30/2021** RunNo: **69589**
Client ID: **LCSS** Batch ID: **33532** Analysis Date: **8/30/2021** SeqNo: **1410542**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	38.7	0.0938	39.06	0	99.0	80	120				
Barium	43.0	0.469	39.06	0	110	80	120				
Chromium	37.9	0.312	39.06	0	97.1	80	120				
Lead	21.2	0.156	19.53	0	108	80	120				
Selenium	4.08	0.156	3.906	0	105	80	120				

Sample ID: **2108362-024AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **8/30/2021** RunNo: **69589**
Client ID: **CHRL-A9-Dup** Batch ID: **33532** Analysis Date: **8/30/2021** SeqNo: **1410545**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.8	0.0995	41.47	3.270	105	75	125				
Barium	112	0.498	41.47	62.46	120	75	125				
Cadmium	2.48	0.166	2.073	0.1125	114	75	125				
Chromium	69.9	0.332	41.47	25.44	107	75	125				
Lead	22.7	0.166	20.73	2.193	98.9	75	125				
Selenium	5.34	0.166	4.147	1.285	97.7	75	125				
Silver	2.08	0.124	2.073	0.04696	97.9	75	125				

Sample ID: **2108362-024AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **8/30/2021** RunNo: **69589**
Client ID: **CHRL-A9-Dup** Batch ID: **33532** Analysis Date: **8/30/2021** SeqNo: **1410546**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	48.1	0.103	43.10	3.270	104	75	125	46.80	2.72	20	
Barium	102	0.517	43.10	62.46	92.0	75	125	112.3	9.49	20	
Cadmium	2.46	0.172	2.155	0.1125	109	75	125	2.480	0.865	20	
Chromium	69.1	0.345	43.10	25.44	101	75	125	69.86	1.04	20	
Lead	23.9	0.172	21.55	2.193	101	75	125	22.70	4.99	20	
Selenium	4.97	0.172	4.310	1.285	85.4	75	125	5.338	7.23	20	
Silver	2.13	0.129	2.155	0.04696	96.6	75	125	2.077	2.43	20	

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **2108362-024AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **8/30/2021**	RunNo: **69589**
Client ID: **CHRL-A9-Dup**	Batch ID: **33532**		Analysis Date: **8/30/2021**	SeqNo: **1410546**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **LCS-33532**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **8/30/2021**	RunNo: **69589**
Client ID: **LCSS**	Batch ID: **33532**		Analysis Date: **8/31/2021**	SeqNo: **1411245**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	1.93	0.156	1.953	0	99.0	80	120				
Silver	2.06	0.117	1.953	0	105	80	120				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Mercury by EPA Method 7471B

Sample ID: **MB-33504** SampType: **MBLK** Units: **mg/Kg** Prep Date: **8/26/2021** RunNo: **69514**
Client ID: **MBLKS** Batch ID: **33504** Analysis Date: **8/26/2021** SeqNo: **1408901**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-33504** SampType: **LCS** Units: **mg/Kg** Prep Date: **8/26/2021** RunNo: **69514**
Client ID: **LCSS** Batch ID: **33504** Analysis Date: **8/26/2021** SeqNo: **1408902**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.509	0.250	0.5000	0	102	80	120				

Sample ID: **2108212-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69514**
Client ID: **BATCH** Batch ID: **33504** Analysis Date: **8/26/2021** SeqNo: **1408904**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.266						0		20	

Sample ID: **2108212-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69514**
Client ID: **BATCH** Batch ID: **33504** Analysis Date: **8/26/2021** SeqNo: **1408905**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.561	0.266	0.5310	0.02189	101	70	130				

Sample ID: **2108212-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69514**
Client ID: **BATCH** Batch ID: **33504** Analysis Date: **8/26/2021** SeqNo: **1408906**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.552	0.271	0.5415	0.02189	98.0	70	130	0.5608	1.53	20	

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Mercury by EPA Method 7471B

Sample ID: **MB-33505** SampType: **MBLK** Units: **mg/Kg** Prep Date: **8/26/2021** RunNo: **69549**
Client ID: **MBLKS** Batch ID: **33505** Analysis Date: **8/27/2021** SeqNo: **1409650**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-33505** SampType: **LCS** Units: **mg/Kg** Prep Date: **8/26/2021** RunNo: **69549**
Client ID: **LCSS** Batch ID: **33505** Analysis Date: **8/27/2021** SeqNo: **1409651**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.494	0.250	0.5000	0	98.8	80	120				

Sample ID: **2108362-010ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69549**
Client ID: **CHRL-A9-B9-4** Batch ID: **33505** Analysis Date: **8/27/2021** SeqNo: **1409653**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.260						0		20	

Sample ID: **2108362-010AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69549**
Client ID: **CHRL-A9-B9-4** Batch ID: **33505** Analysis Date: **8/27/2021** SeqNo: **1409654**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.492	0.237	0.4742	0.03294	96.9	70	130				

Sample ID: **2108362-010AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **8/26/2021** RunNo: **69549**
Client ID: **CHRL-A9-B9-4** Batch ID: **33505** Analysis Date: **8/27/2021** SeqNo: **1409655**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.503	0.246	0.4915	0.03294	95.7	70	130	0.4923	2.21	20	

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **MB-33522** SampType: **MBLK** Units: **mg/Kg** Prep Date: **8/27/2021** RunNo: **69543**
Client ID: **MBLKS** Batch ID: **33522** Analysis Date: **8/27/2021** SeqNo: **1409572**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Total Petroleum Hydrocarbons	ND	150									
Surr: 2-Fluorobiphenyl	8.69		10.00		86.9	50	150				
Surr: o-Terphenyl	10.1		10.00		101	50	150				

Sample ID: **MB-33522** SampType: **MBLK** Units: **mg/Kg** Prep Date: **8/27/2021** RunNo: **69573**
Client ID: **MBLKS** Batch ID: **33522** Analysis Date: **8/27/2021** SeqNo: **1410223**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Total Petroleum Hydrocarbons	ND	150									
Surr: 2-Fluorobiphenyl	8.69		10.00		86.9	50	150				
Surr: o-Terphenyl	10.1		10.00		101	50	150				

Sample ID: **LCS-33522** SampType: **LCS** Units: **mg/Kg** Prep Date: **8/27/2021** RunNo: **69543**
Client ID: **LCSS** Batch ID: **33522** Analysis Date: **8/27/2021** SeqNo: **1409573**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	507	150	500.0	0	101	77.2	122				
Surr: 2-Fluorobiphenyl	9.09		10.00		90.9	50	150				
Surr: o-Terphenyl	12.1		10.00		121	50	150				

Sample ID: **LCS-33522** SampType: **LCS** Units: **mg/Kg** Prep Date: **8/27/2021** RunNo: **69573**
Client ID: **LCSS** Batch ID: **33522** Analysis Date: **8/27/2021** SeqNo: **1410224**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	507	150	500.0	0	101	77.2	122				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **LCS-33522** SampType: **LCS** Units: **mg/Kg** Prep Date: **8/27/2021** RunNo: **69573**
Client ID: **LCSS** Batch ID: **33522** Analysis Date: **8/27/2021** SeqNo: **1410224**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	9.09		10.00		90.9	50	150				
Surr: o-Terphenyl	12.1		10.00		121	50	150				

Sample ID: **2108360-025AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **8/27/2021** RunNo: **69573**
Client ID: **BATCH** Batch ID: **33522** Analysis Date: **8/27/2021** SeqNo: **1410228**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	590	151	503.5	189.1	79.7	68	132				
Surr: 2-Fluorobiphenyl	8.55		10.07		84.9	50	150				
Surr: o-Terphenyl	11.5		10.07		114	50	150				

Sample ID: **2108360-025AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **8/27/2021** RunNo: **69573**
Client ID: **BATCH** Batch ID: **33522** Analysis Date: **8/27/2021** SeqNo: **1410229**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	574	146	487.2	189.1	79.1	68	132	590.2	2.70	30	
Surr: 2-Fluorobiphenyl	8.60		9.745		88.3	50	150		0		
Surr: o-Terphenyl	11.3		9.745		116	50	150		0		

Sample ID: **2108360-027ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/27/2021** RunNo: **69573**
Client ID: **BATCH** Batch ID: **33522** Analysis Date: **8/27/2021** SeqNo: **1410233**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	51.4						0		30	
Heavy Oil	ND	103						0		30	
Total Petroleum Hydrocarbons	ND	154						0		30	
Surr: 2-Fluorobiphenyl	6.21		10.27		60.4	50	150		0		
Surr: o-Terphenyl	7.85		10.27		76.4	50	150		0		

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **MB-33528**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **8/27/2021**		RunNo: **69578**		
Client ID: **MBLKS**	Batch ID: **33528**					Analysis Date: **8/27/2021**		SeqNo: **1410358**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Total Petroleum Hydrocarbons	ND	150									
Surr: 2-Fluorobiphenyl	9.06		10.00		90.6	50	150				
Surr: o-Terphenyl	10.0		10.00		100	50	150				

Sample ID: **LCS-33528**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **8/27/2021**		RunNo: **69578**		
Client ID: **LCSS**	Batch ID: **33528**					Analysis Date: **8/27/2021**		SeqNo: **1410359**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	523	150	500.0	0	105	77.2	122				
Surr: 2-Fluorobiphenyl	9.40		10.00		94.0	50	150				
Surr: o-Terphenyl	11.7		10.00		117	50	150				

Sample ID: **2108362-024AMS**	SampType: **MS**			Units: **mg/Kg-dry**		Prep Date: **8/27/2021**		RunNo: **69578**		
Client ID: **CHRL-A9-Dup**	Batch ID: **33528**					Analysis Date: **8/27/2021**		SeqNo: **1410371**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	3,570	142	473.1	3,113	96.8	68	132				
Surr: 2-Fluorobiphenyl	6.47		9.462		68.4	50	150				
Surr: o-Terphenyl	9.33		9.462		98.6	50	150				

Sample ID: **2108362-024AMSD**	SampType: **MSD**			Units: **mg/Kg-dry**		Prep Date: **8/27/2021**		RunNo: **69578**		
Client ID: **CHRL-A9-Dup**	Batch ID: **33528**					Analysis Date: **8/27/2021**		SeqNo: **1410372**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	3,560	139	463.1	3,113	96.8	68	132	3,571	0.264	30	
Surr: 2-Fluorobiphenyl	6.39		9.262		69.0	50	150		0		
Surr: o-Terphenyl	10.0		9.262		108	50	150		0		

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **2108362-024AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **8/27/2021** RunNo: **69578**
Client ID: **CHRL-A9-Dup** Batch ID: **33528** Analysis Date: **8/27/2021** SeqNo: **1410372**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2108393-012ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/27/2021** RunNo: **69578**
Client ID: **BATCH** Batch ID: **33528** Analysis Date: **8/28/2021** SeqNo: **1410381**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	46.1						0		30	
Heavy Oil	ND	92.1						0		30	
Total Petroleum Hydrocarbons	ND	138						0		30	
Surr: 2-Fluorobiphenyl	7.09		9.213		77.0	50	150		0		
Surr: o-Terphenyl	7.96		9.213		86.4	50	150		0		

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **MB-33523** SampType: **MBLK** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69572**
Client ID: **MBLKW** Batch ID: **33523** Analysis Date: **8/30/2021** SeqNo: **1410389**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	99.2									
Heavy Oil	ND	99.2									
Total Petroleum Hydrocarbons	ND	198									
Surr: 2-Fluorobiphenyl	16.2		19.84		81.5	50	150				
Surr: o-Terphenyl	18.8		19.84		94.6	50	150				

Sample ID: **LCS-33523** SampType: **LCS** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69572**
Client ID: **LCSW** Batch ID: **33523** Analysis Date: **8/30/2021** SeqNo: **1410390**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	932	197	987.1	0	94.4	55	117				
Surr: 2-Fluorobiphenyl	18.9		19.74		95.7	50	150				
Surr: o-Terphenyl	20.4		19.74		103	50	150				

Sample ID: **2108385-001BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69572**
Client ID: **BATCH** Batch ID: **33523** Analysis Date: **8/30/2021** SeqNo: **1410392**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	251	98.9						274.8	8.93	30	
Heavy Oil	ND	98.9						136.7	39.6	30	
Total Petroleum Hydrocarbons	343	198						411.5	18.2	30	
Surr: 2-Fluorobiphenyl	17.2		19.77		86.9	50	150		0		
Surr: o-Terphenyl	19.0		19.77		96.2	50	150		0		

Sample ID: **2108363-001AMS** SampType: **MS** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69572**
Client ID: **BATCH** Batch ID: **33523** Analysis Date: **8/30/2021** SeqNo: **1410396**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	908	199	993.9	0	91.3	37.1	131				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **2108363-001AMS** SampType: **MS** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69572**
Client ID: **BATCH** Batch ID: **33523** Analysis Date: **8/30/2021** SeqNo: **1410396**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	18.1		19.88		90.9	50	150				
Surr: o-Terphenyl	22.6		19.88		114	50	150				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **LCS-33556**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **8/31/2021**	RunNo: **69646**
Client ID: **LCSS**	Batch ID: **33556**		Analysis Date: **8/31/2021**	SeqNo: **1411691**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	24.1	5.00	25.00	0	96.5	65	135				
Surr: Toluene-d8	1.23		1.250		98.1	65	135				
Surr: 4-Bromofluorobenzene	1.34		1.250		107	65	135				

Sample ID: **MB-33556**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **8/31/2021**	RunNo: **69646**
Client ID: **MBLKS**	Batch ID: **33556**		Analysis Date: **8/31/2021**	SeqNo: **1411692**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.00									
Surr: Toluene-d8	1.19		1.250		95.0	65	135				
Surr: 4-Bromofluorobenzene	1.11		1.250		89.1	65	135				

Sample ID: **2108362-004BDUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **8/31/2021**	RunNo: **69646**
Client ID: **CHRL-A9-B6-10**	Batch ID: **33556**		Analysis Date: **8/31/2021**	SeqNo: **1411669**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.33						0		30	
Surr: Toluene-d8	1.27		1.332		95.6	65	135		0		
Surr: 4-Bromofluorobenzene	1.17		1.332		87.7	65	135		0		

Sample ID: **2108362-008BMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **8/31/2021**	RunNo: **69646**
Client ID: **CHRL-A9-B8-10**	Batch ID: **33556**		Analysis Date: **9/1/2021**	SeqNo: **1411674**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	26.3	5.90	29.50	0	89.3	65	135				
Surr: Toluene-d8	1.51		1.475		102	65	135				
Surr: 4-Bromofluorobenzene	1.54		1.475		104	65	135				

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Date: *9/1/2021*

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **2108362-010BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/31/2021** RunNo: **69646**
Client ID: **CHRL-A9-B9-4** Batch ID: **33556** Analysis Date: **9/1/2021** SeqNo: **1411676**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.44						0		30	
Surr: Toluene-d8	1.27		1.361		93.6	65	135		0		
Surr: 4-Bromofluorobenzene	1.42		1.361		104	65	135		0		

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **LCS-33527**	SampType: **LCS**	Units: **µg/L**	Prep Date: **8/27/2021**	RunNo: **69561**
Client ID: **LCSW**	Batch ID: **33527**		Analysis Date: **8/27/2021**	SeqNo: **1410028**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	469	50.0	500.0	0	93.9	65	135				
Surr: Toluene-d8	24.9		25.00		99.6	65	135				
Surr: 4-Bromofluorobenzene	24.9		25.00		99.7	65	135				

Sample ID: **MB-33527**	SampType: **MBLK**	Units: **µg/L**	Prep Date: **8/27/2021**	RunNo: **69561**
Client ID: **MBLKW**	Batch ID: **33527**		Analysis Date: **8/27/2021**	SeqNo: **1410010**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0									
Surr: Toluene-d8	25.4		25.00		102	65	135				
Surr: 4-Bromofluorobenzene	24.7		25.00		98.9	65	135				

Sample ID: **2108362-009ADUP**	SampType: **DUP**	Units: **µg/L**	Prep Date: **8/27/2021**	RunNo: **69561**
Client ID: **CHRL-A9-B8-W**	Batch ID: **33527**		Analysis Date: **8/27/2021**	SeqNo: **1409999**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0						0		30	
Surr: Toluene-d8	25.2		25.00		101	65	135		0		
Surr: 4-Bromofluorobenzene	24.3		25.00		97.2	65	135		0		

Sample ID: **2108384-001AMS**	SampType: **MS**	Units: **µg/L**	Prep Date: **8/27/2021**	RunNo: **69561**
Client ID: **BATCH**	Batch ID: **33527**		Analysis Date: **8/27/2021**	SeqNo: **1410001**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	467	50.0	500.0	43.54	84.7	65	135				
Surr: Toluene-d8	24.9		25.00		99.6	65	135				
Surr: 4-Bromofluorobenzene	25.0		25.00		99.9	65	135				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-33556** SampType: **LCS** Units: **mg/Kg** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **LCSS** Batch ID: **33556** Analysis Date: **8/31/2021** SeqNo: **1411654**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.948	0.0500	1.000	0	94.8	80	120				
Chloromethane	0.920	0.0800	1.000	0	92.0	80	120				
Vinyl chloride	1.00	0.0250	1.000	0	100	80	120				
Bromomethane	1.09	0.150	1.000	0	109	80	120				
Trichlorofluoromethane (CFC-11)	1.01	0.0500	1.000	0	101	80	120				
Chloroethane	0.979	0.120	1.000	0	97.9	80	120				
1,1-Dichloroethene	1.02	0.100	1.000	0	102	80	120				
Acetone	2.44	0.500	2.500	0	97.5	80	120				
Methylene chloride	1.02	0.0150	1.000	0	102	80	120				
trans-1,2-Dichloroethene	1.00	0.0300	1.000	0	100	80	120				
Methyl tert-butyl ether (MTBE)	0.873	0.0300	1.000	0	87.3	80	120				
1,1-Dichloroethane	1.01	0.0250	1.000	0	101	80	120				
cis-1,2-Dichloroethene	0.993	0.0250	1.000	0	99.3	80	120				
(MEK) 2-Butanone	2.02	0.450	2.500	0	80.9	80	120				
Chloroform	0.988	0.0250	1.000	0	98.8	80	120				
1,1,1-Trichloroethane (TCA)	0.942	0.0250	1.000	0	94.2	80	120				
1,1-Dichloropropene	0.936	0.0250	1.000	0	93.6	80	120				
Carbon tetrachloride	0.918	0.0750	1.000	0	91.8	80	120				
1,2-Dichloroethane (EDC)	0.930	0.0230	1.000	0	93.0	80	120				
Benzene	0.884	0.0200	1.000	0	88.4	80	120				
Trichloroethene (TCE)	0.846	0.0200	1.000	0	84.6	80	120				
1,2-Dichloropropane	0.860	0.0200	1.000	0	86.0	80	120				
Bromodichloromethane	0.891	0.0250	1.000	0	89.1	80	120				
Dibromomethane	0.965	0.0200	1.000	0	96.5	80	120				
cis-1,3-Dichloropropene	0.887	0.0800	1.000	0	88.7	80	120				
Toluene	0.949	0.0300	1.000	0	94.9	80	120				
Trans-1,3-Dichloropropylene	0.852	0.0500	1.000	0	85.2	80	120				
Methyl Isobutyl Ketone (MIBK)	2.10	0.0750	2.500	0	83.9	80	120				
1,1,2-Trichloroethane	0.859	0.0170	1.000	0	85.9	80	120				
1,3-Dichloropropane	0.856	0.0200	1.000	0	85.6	80	120				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-33556** SampType: **LCS** Units: **mg/Kg** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **LCSS** Batch ID: **33556** Analysis Date: **8/31/2021** SeqNo: **1411654**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	0.928	0.0400	1.000	0	92.8	80	120				
Dibromochloromethane	0.857	0.0200	1.000	0	85.7	80	120				
1,2-Dibromoethane (EDB)	0.868	0.0100	1.000	0	86.8	80	120				
2-Hexanone (MBK)	2.22	0.0600	2.500	0	88.7	80	120				
Chlorobenzene	0.951	0.0250	1.000	0	95.1	80	120				
1,1,1,2-Tetrachloroethane	0.862	0.0200	1.000	0	86.2	80	120				
Ethylbenzene	0.962	0.0250	1.000	0	96.2	80	120				
m,p-Xylene	1.97	0.0500	2.000	0	98.5	80	120				
o-Xylene	0.968	0.0250	1.000	0	96.8	80	120				
Styrene	0.982	0.0250	1.000	0	98.2	80	120				
Isopropylbenzene	0.988	0.0300	1.000	0	98.8	80	120				
Bromoform	0.864	0.0250	1.000	0	86.4	80	120				
1,1,2,2-Tetrachloroethane	0.892	0.0150	1.000	0	89.2	80	120				
n-Propylbenzene	0.988	0.0300	1.000	0	98.8	80	120				
Bromobenzene	0.967	0.0300	1.000	0	96.7	80	120				
1,3,5-Trimethylbenzene	0.980	0.0250	1.000	0	98.0	80	120				
2-Chlorotoluene	0.977	0.0300	1.000	0	97.7	80	120				
4-Chlorotoluene	0.981	0.0300	1.000	0	98.1	80	120				
tert-Butylbenzene	0.979	0.0300	1.000	0	97.9	80	120				
1,2,3-Trichloropropane	0.905	0.0250	1.000	0	90.5	80	120				
1,2,4-Trichlorobenzene	0.976	0.0400	1.000	0	97.6	80	120				
sec-Butylbenzene	1.00	0.0300	1.000	0	100	80	120				
4-Isopropyltoluene	0.997	0.0300	1.000	0	99.7	80	120				
1,3-Dichlorobenzene	0.987	0.0350	1.000	0	98.7	80	120				
1,4-Dichlorobenzene	0.990	0.0300	1.000	0	99.0	80	120				
n-Butylbenzene	0.981	0.0400	1.000	0	98.1	80	120				
1,2-Dichlorobenzene	0.982	0.0300	1.000	0	98.2	80	120				
1,2-Dibromo-3-chloropropane	1.01	0.0600	1.000	0	101	80	120				
1,2,4-Trimethylbenzene	0.982	0.0250	1.000	0	98.2	80	120				
Hexachloro-1,3-butadiene	1.02	0.0500	1.000	0	102	80	120				

Work Order: 2108362
CLIENT: O'Neill Service Group
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QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-33556** SampType: **LCS** Units: **mg/Kg** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **LCSS** Batch ID: **33556** Analysis Date: **8/31/2021** SeqNo: **1411654**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	0.959	0.100	1.000	0	95.9	80	120				
1,2,3-Trichlorobenzene	0.974	0.0500	1.000	0	97.4	80	120				
Surr: Dibromofluoromethane	1.27		1.250		102	75.5	120				
Surr: Toluene-d8	1.25		1.250		100	80	120				
Surr: 1-Bromo-4-fluorobenzene	1.39		1.250		111	78.5	120				

Sample ID: **MB-33556** SampType: **MBLK** Units: **mg/Kg** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **MBLKS** Batch ID: **33556** Analysis Date: **8/31/2021** SeqNo: **1411653**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0500									
Chloromethane	ND	0.0800									
Vinyl chloride	ND	0.0250									
Bromomethane	ND	0.150									
Trichlorofluoromethane (CFC-11)	ND	0.0500									
Chloroethane	ND	0.120									
1,1-Dichloroethene	ND	0.100									
Acetone	ND	0.500									
Methylene chloride	ND	0.0150									
trans-1,2-Dichloroethene	ND	0.0300									
Methyl tert-butyl ether (MTBE)	ND	0.0300									
1,1-Dichloroethane	ND	0.0250									
cis-1,2-Dichloroethene	ND	0.0250									
(MEK) 2-Butanone	ND	0.450									
Chloroform	ND	0.0250									
1,1,1-Trichloroethane (TCA)	ND	0.0250									
1,1-Dichloropropene	ND	0.0250									
Carbon tetrachloride	ND	0.0750									
1,2-Dichloroethane (EDC)	ND	0.0230									
Benzene	ND	0.0200									

Work Order: 2108362
CLIENT: O'Neill Service Group
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QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **MB-33556** SampType: **MBLK** Units: **mg/Kg** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **MBLKS** Batch ID: **33556** Analysis Date: **8/31/2021** SeqNo: **1411653**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	ND	0.0200									
1,2-Dichloropropane	ND	0.0200									
Bromodichloromethane	ND	0.0250									
Dibromomethane	ND	0.0200									
cis-1,3-Dichloropropene	ND	0.0800									
Toluene	ND	0.0300									
Trans-1,3-Dichloropropylene	ND	0.0500									
Methyl Isobutyl Ketone (MIBK)	ND	0.0750									
1,1,2-Trichloroethane	ND	0.0170									
1,3-Dichloropropane	ND	0.0200									
Tetrachloroethene (PCE)	ND	0.0400									
Dibromochloromethane	ND	0.0200									
1,2-Dibromoethane (EDB)	ND	0.0100									
2-Hexanone (MBK)	ND	0.0600									
Chlorobenzene	ND	0.0250									
1,1,1,2-Tetrachloroethane	ND	0.0200									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Styrene	ND	0.0250									
Isopropylbenzene	ND	0.0300									
Bromoform	ND	0.0250									
1,1,2,2-Tetrachloroethane	ND	0.0150									
n-Propylbenzene	ND	0.0300									
Bromobenzene	ND	0.0300									
1,3,5-Trimethylbenzene	ND	0.0250									
2-Chlorotoluene	ND	0.0300									
4-Chlorotoluene	ND	0.0300									
tert-Butylbenzene	ND	0.0300									
1,2,3-Trichloropropane	ND	0.0250									

Work Order: 2108362
CLIENT: O'Neill Service Group
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QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **MB-33556** SampType: **MBLK** Units: **mg/Kg** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **MBLKS** Batch ID: **33556** Analysis Date: **8/31/2021** SeqNo: **1411653**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	ND	0.0400									
sec-Butylbenzene	ND	0.0300									
4-Isopropyltoluene	ND	0.0300									
1,3-Dichlorobenzene	ND	0.0350									
1,4-Dichlorobenzene	ND	0.0300									
n-Butylbenzene	ND	0.0400									
1,2-Dichlorobenzene	ND	0.0300									
1,2-Dibromo-3-chloropropane	ND	0.0600									
1,2,4-Trimethylbenzene	ND	0.0250									
Hexachloro-1,3-butadiene	ND	0.0500									
Naphthalene	ND	0.100									
1,2,3-Trichlorobenzene	ND	0.0500									
Surr: Dibromofluoromethane	1.24		1.250		99.4	75.5	119				
Surr: Toluene-d8	1.23		1.250		98.7	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	1.12		1.250		89.9	78.5	118				

Sample ID: **2108362-004BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **CHRL-A9-B6-10** Batch ID: **33556** Analysis Date: **8/31/2021** SeqNo: **1411631**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0533						0		30	
Chloromethane	ND	0.0853						0		30	
Vinyl chloride	ND	0.0266						0		30	
Bromomethane	ND	0.160						0		30	
Trichlorofluoromethane (CFC-11)	ND	0.0533						0		30	
Chloroethane	ND	0.128						0		30	
1,1-Dichloroethene	ND	0.107						0		30	
Acetone	ND	0.533						0		30	
Methylene chloride	ND	0.0160						0		30	
trans-1,2-Dichloroethene	ND	0.0320						0		30	

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108362-004BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **CHRL-A9-B6-10** Batch ID: **33556** Analysis Date: **8/31/2021** SeqNo: **1411631**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.0320						0		30	
1,1-Dichloroethane	ND	0.0266						0		30	
cis-1,2-Dichloroethene	ND	0.0266						0		30	
(MEK) 2-Butanone	ND	0.480						0		30	
Chloroform	ND	0.0266						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0266						0		30	
1,1-Dichloropropene	ND	0.0266						0		30	
Carbon tetrachloride	ND	0.0799						0		30	
1,2-Dichloroethane (EDC)	ND	0.0245						0		30	
Benzene	ND	0.0213						0		30	
Trichloroethene (TCE)	ND	0.0213						0		30	
1,2-Dichloropropane	ND	0.0213						0		30	
Bromodichloromethane	ND	0.0266						0		30	
Dibromomethane	ND	0.0213						0		30	
cis-1,3-Dichloropropene	ND	0.0853						0		30	
Toluene	ND	0.0320						0		30	
Trans-1,3-Dichloropropylene	ND	0.0533						0		30	
Methyl Isobutyl Ketone (MIBK)	ND	0.0799						0		30	
1,1,2-Trichloroethane	ND	0.0181						0		30	
1,3-Dichloropropane	ND	0.0213						0		30	
Tetrachloroethene (PCE)	ND	0.0426						0		30	
Dibromochloromethane	ND	0.0213						0		30	
1,2-Dibromoethane (EDB)	ND	0.0107						0		30	
2-Hexanone (MBK)	ND	0.0640						0		30	
Chlorobenzene	ND	0.0266						0		30	
1,1,1,2-Tetrachloroethane	ND	0.0213						0		30	
Ethylbenzene	ND	0.0266						0		30	
m,p-Xylene	ND	0.0533						0		30	
o-Xylene	ND	0.0266						0		30	
Styrene	ND	0.0266						0		30	

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108362-004BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **CHRL-A9-B6-10** Batch ID: **33556** Analysis Date: **8/31/2021** SeqNo: **1411631**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Isopropylbenzene	ND	0.0320						0		30	
Bromoform	ND	0.0266						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0160						0		30	
n-Propylbenzene	ND	0.0320						0		30	
Bromobenzene	ND	0.0320						0		30	
1,3,5-Trimethylbenzene	ND	0.0266						0		30	
2-Chlorotoluene	ND	0.0320						0		30	
4-Chlorotoluene	ND	0.0320						0		30	
tert-Butylbenzene	ND	0.0320						0		30	
1,2,3-Trichloropropane	ND	0.0266						0		30	
1,2,4-Trichlorobenzene	ND	0.0426						0		30	
sec-Butylbenzene	ND	0.0320						0		30	
4-Isopropyltoluene	ND	0.0320						0		30	
1,3-Dichlorobenzene	ND	0.0373						0		30	
1,4-Dichlorobenzene	ND	0.0320						0		30	
n-Butylbenzene	ND	0.0426						0		30	
1,2-Dichlorobenzene	ND	0.0320						0		30	
1,2-Dibromo-3-chloropropane	ND	0.0640						0		30	
1,2,4-Trimethylbenzene	ND	0.0266						0		30	
Hexachloro-1,3-butadiene	ND	0.0533						0		30	
Naphthalene	ND	0.107						0		30	
1,2,3-Trichlorobenzene	ND	0.0533						0		30	
Surr: Dibromofluoromethane	1.30		1.332		97.9	75.5	119		0		
Surr: Toluene-d8	1.30		1.332		97.2	82.4	115		0		
Surr: 1-Bromo-4-fluorobenzene	1.18		1.332		88.3	78.5	118		0		

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108362-005BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **CHRL-A9-B7-4** Batch ID: **33556** Analysis Date: **9/1/2021** SeqNo: **1411633**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.653	0.0797	1.595	0	40.9	5.35	148				
Chloromethane	0.606	0.128	1.595	0	38.0	34.4	134				
Vinyl chloride	0.894	0.0399	1.595	0	56.1	50.3	134				
Bromomethane	1.12	0.239	1.595	0	70.2	40.2	164				
Trichlorofluoromethane (CFC-11)	1.17	0.0797	1.595	0	73.5	54.1	142				
Chloroethane	0.992	0.191	1.595	0	62.2	42.4	148				
1,1-Dichloroethene	1.34	0.159	1.595	0	84.2	62.2	138				
Acetone	3.62	0.797	3.987	0	90.8	56.3	172				
Methylene chloride	1.28	0.0239	1.595	0	80.3	66.3	131				
trans-1,2-Dichloroethene	1.29	0.0478	1.595	0	81.2	70.2	132				
Methyl tert-butyl ether (MTBE)	1.16	0.0478	1.595	0	72.5	64.8	140				
1,1-Dichloroethane	1.33	0.0399	1.595	0	83.5	72	130				
cis-1,2-Dichloroethene	1.31	0.0399	1.595	0	82.4	79.6	125				
(MEK) 2-Butanone	2.95	0.718	3.987	0	74.0	73.1	138				
Chloroform	1.30	0.0399	1.595	0	81.5	77.3	128				
1,1,1-Trichloroethane (TCA)	1.25	0.0399	1.595	0	78.5	81.2	124				S
1,1-Dichloropropene	1.26	0.0399	1.595	0	79.3	77.9	127				
Carbon tetrachloride	1.21	0.120	1.595	0	76.1	76.9	126				S
1,2-Dichloroethane (EDC)	1.23	0.0367	1.595	0	77.1	74.1	130				
Benzene	1.17	0.0319	1.595	0	73.7	75.3	131				S
Trichloroethene (TCE)	1.14	0.0319	1.595	0	71.6	78.9	132				S
1,2-Dichloropropane	1.15	0.0319	1.595	0	72.3	77	126				S
Bromodichloromethane	1.19	0.0399	1.595	0	74.8	75.1	127				S
Dibromomethane	1.27	0.0319	1.595	0	79.4	77.6	126				
cis-1,3-Dichloropropene	1.19	0.128	1.595	0	74.4	74.5	123				S
Toluene	1.25	0.0478	1.595	0	78.4	79.2	130				S
Trans-1,3-Dichloropropylene	1.05	0.0797	1.595	0	65.9	74.3	124				S
Methyl Isobutyl Ketone (MIBK)	2.86	0.120	3.987	0	71.8	71.8	141				
1,1,2-Trichloroethane	1.09	0.0271	1.595	0	68.3	77.2	127				S
1,3-Dichloropropane	1.13	0.0319	1.595	0	70.7	74.1	129				S

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108362-005BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **CHRL-A9-B7-4** Batch ID: **33556** Analysis Date: **9/1/2021** SeqNo: **1411633**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	1.20	0.0638	1.595	0	75.0	77.7	131				S
Dibromochloromethane	1.13	0.0319	1.595	0	70.7	69.7	131				
1,2-Dibromoethane (EDB)	1.13	0.0159	1.595	0	71.1	78.1	126				S
2-Hexanone (MBK)	3.16	0.0957	3.987	0	79.2	59.3	153				
Chlorobenzene	1.26	0.0399	1.595	0	78.9	84.7	121				S
1,1,1,2-Tetrachloroethane	1.16	0.0319	1.595	0	72.6	81.8	123				S
Ethylbenzene	1.29	0.0399	1.595	0	80.9	79.7	133				
m,p-Xylene	2.60	0.0797	3.190	0	81.7	81.2	125				
o-Xylene	1.27	0.0399	1.595	0	79.8	76.9	130				
Styrene	1.30	0.0399	1.595	0	81.6	86.2	119				S
Isopropylbenzene	1.35	0.0478	1.595	0	84.4	79.4	132				
Bromoform	1.16	0.0399	1.595	0	72.5	69.3	136				
1,1,2,2-Tetrachloroethane	1.13	0.0239	1.595	0	70.6	49.1	149				
n-Propylbenzene	1.32	0.0478	1.595	0	83.0	77	139				
Bromobenzene	1.28	0.0478	1.595	0	80.3	77.2	129				
1,3,5-Trimethylbenzene	1.30	0.0399	1.595	0	81.3	76.7	135				
2-Chlorotoluene	1.30	0.0478	1.595	0	81.7	76.8	135				
4-Chlorotoluene	1.31	0.0478	1.595	0	82.1	77.4	131				
tert-Butylbenzene	1.33	0.0478	1.595	0	83.7	76.5	135				
1,2,3-Trichloropropane	1.22	0.0399	1.595	0	76.8	70.2	132				
1,2,4-Trichlorobenzene	1.42	0.0638	1.595	0	89.1	78.8	129				
sec-Butylbenzene	1.35	0.0478	1.595	0	84.4	75.7	141				
4-Isopropyltoluene	1.34	0.0478	1.595	0	84.2	75.2	140				
1,3-Dichlorobenzene	1.31	0.0558	1.595	0	82.4	86.3	123				S
1,4-Dichlorobenzene	1.30	0.0478	1.595	0	81.6	86.1	123				S
n-Butylbenzene	1.39	0.0638	1.595	0	87.1	79.4	130				
1,2-Dichlorobenzene	1.33	0.0478	1.595	0	83.1	87.8	120				S
1,2-Dibromo-3-chloropropane	1.30	0.0957	1.595	0	81.7	69.5	135				
1,2,4-Trimethylbenzene	1.29	0.0399	1.595	0	81.2	76	137				
Hexachloro-1,3-butadiene	1.44	0.0797	1.595	0	90.5	70.9	137				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108362-005BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **CHRL-A9-B7-4** Batch ID: **33556** Analysis Date: **9/1/2021** SeqNo: **1411633**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1.46	0.159	1.595	0	91.5	72.3	141				
1,2,3-Trichlorobenzene	1.43	0.0797	1.595	0	89.8	75.1	133				
Surr: Dibromofluoromethane	2.02		1.993		101	75.5	119				
Surr: Toluene-d8	1.97		1.993		99.0	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	2.21		1.993		111	78.5	118				

NOTES:
S - Spike recovery indicates a possible matrix effect.

Sample ID: **2108362-010BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **CHRL-A9-B9-4** Batch ID: **33556** Analysis Date: **9/1/2021** SeqNo: **1411638**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0544						0		30	
Chloromethane	ND	0.0871						0		30	
Vinyl chloride	ND	0.0272						0		30	
Bromomethane	ND	0.163						0		30	
Trichlorofluoromethane (CFC-11)	ND	0.0544						0		30	
Chloroethane	ND	0.131						0		30	
1,1-Dichloroethene	ND	0.109						0		30	
Acetone	ND	0.544						0		30	
Methylene chloride	ND	0.0163						0		30	
trans-1,2-Dichloroethene	ND	0.0327						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0327						0		30	
1,1-Dichloroethane	ND	0.0272						0		30	
cis-1,2-Dichloroethene	ND	0.0272						0		30	
(MEK) 2-Butanone	ND	0.490						0		30	
Chloroform	ND	0.0272						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0272						0		30	
1,1-Dichloropropene	ND	0.0272						0		30	
Carbon tetrachloride	ND	0.0817						0		30	
1,2-Dichloroethane (EDC)	ND	0.0250						0		30	

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108362-010BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **CHRL-A9-B9-4** Batch ID: **33556** Analysis Date: **9/1/2021** SeqNo: **1411638**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0218						0		30	
Trichloroethene (TCE)	ND	0.0218						0		30	
1,2-Dichloropropane	ND	0.0218						0		30	
Bromodichloromethane	ND	0.0272						0		30	
Dibromomethane	ND	0.0218						0		30	
cis-1,3-Dichloropropene	ND	0.0871						0		30	
Toluene	ND	0.0327						0		30	
Trans-1,3-Dichloropropylene	ND	0.0544						0		30	
Methyl Isobutyl Ketone (MIBK)	ND	0.0817						0		30	
1,1,2-Trichloroethane	ND	0.0185						0		30	
1,3-Dichloropropane	ND	0.0218						0		30	
Tetrachloroethene (PCE)	ND	0.0436						0		30	
Dibromochloromethane	ND	0.0218						0		30	
1,2-Dibromoethane (EDB)	ND	0.0109						0		30	
2-Hexanone (MBK)	ND	0.0653						0		30	
Chlorobenzene	ND	0.0272						0		30	
1,1,1,2-Tetrachloroethane	ND	0.0218						0		30	
Ethylbenzene	ND	0.0272						0		30	
m,p-Xylene	ND	0.0544						0		30	
o-Xylene	ND	0.0272						0		30	
Styrene	ND	0.0272						0		30	
Isopropylbenzene	ND	0.0327						0		30	
Bromoform	ND	0.0272						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0163						0		30	
n-Propylbenzene	0.0354	0.0327						0.03677	3.90	30	
Bromobenzene	ND	0.0327						0		30	
1,3,5-Trimethylbenzene	ND	0.0272						0		30	
2-Chlorotoluene	ND	0.0327						0		30	
4-Chlorotoluene	ND	0.0327						0		30	
tert-Butylbenzene	ND	0.0327						0		30	

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108362-010BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/31/2021** RunNo: **69645**
Client ID: **CHRL-A9-B9-4** Batch ID: **33556** Analysis Date: **9/1/2021** SeqNo: **1411638**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichloropropane	ND	0.0272						0		30	
1,2,4-Trichlorobenzene	ND	0.0436						0		30	
sec-Butylbenzene	0.0340	0.0327						0.03579	4.99	30	
4-Isopropyltoluene	0.0339	0.0327						0.03486	2.77	30	
1,3-Dichlorobenzene	ND	0.0381						0		30	
1,4-Dichlorobenzene	ND	0.0327						0		30	
n-Butylbenzene	ND	0.0436						0		30	
1,2-Dichlorobenzene	ND	0.0327						0		30	
1,2-Dibromo-3-chloropropane	ND	0.0653						0		30	
1,2,4-Trimethylbenzene	0.0559	0.0272						0.05835	4.28	30	
Hexachloro-1,3-butadiene	ND	0.0544						0		30	
Naphthalene	0.226	0.109						0.2130	6.01	30	
1,2,3-Trichlorobenzene	ND	0.0544						0		30	
Surr: Dibromofluoromethane	1.34		1.361		98.5	75.5	119		0		
Surr: Toluene-d8	1.28		1.361		93.9	82.4	115		0		
Surr: 1-Bromo-4-fluorobenzene	1.45		1.361		106	78.5	118		0		

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-33527** SampType: **LCS** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **LCSW** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409979**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	18.2	1.25	20.00	0	90.9	80	120				
Chloromethane	14.4	0.750	20.00	0	71.8	80	120				S
Vinyl chloride	18.0	0.200	20.00	0	90.1	80	120				
Bromomethane	23.5	1.20	20.00	0	118	80	120				
Trichlorofluoromethane (CFC-11)	20.1	0.500	20.00	0	100	80	120				
Chloroethane	20.5	1.00	20.00	0	103	80	120				
1,1-Dichloroethene	22.1	0.500	20.00	0	110	80	120				
Acetone	59.5	6.00	50.00	0	119	80	120				
Methylene chloride	21.9	0.750	20.00	0	110	80	120				
trans-1,2-Dichloroethene	21.7	0.500	20.00	0	108	80	120				
Methyl tert-butyl ether (MTBE)	23.9	0.500	20.00	0	120	80	120				
1,1-Dichloroethane	21.7	0.500	20.00	0	108	80	120				
cis-1,2-Dichloroethene	21.9	0.500	20.00	0	110	80	120				
2-Butanone (MEK)	56.9	1.50	50.00	0	114	80	120				
Chloroform	21.0	0.500	20.00	0	105	80	120				
1,1,1-Trichloroethane (TCA)	20.6	0.400	20.00	0	103	80	120				
1,1-Dichloropropene	21.9	0.500	20.00	0	109	80	120				
Carbon tetrachloride	20.6	0.750	20.00	0	103	80	120				
1,2-Dichloroethane (EDC)	21.3	0.400	20.00	0	106	80	120				
Benzene	21.7	0.440	20.00	0	109	80	120				
Trichloroethene (TCE)	21.0	0.500	20.00	0	105	80	120				
1,2-Dichloropropane	21.9	0.500	20.00	0	110	80	120				
Bromodichloromethane	20.6	0.500	20.00	0	103	80	120				
Dibromomethane	21.2	0.500	20.00	0	106	80	120				
cis-1,3-Dichloropropene	22.5	0.500	20.00	0	112	80	120				
Toluene	20.9	0.750	20.00	0	104	80	120				
trans-1,3-Dichloropropylene	23.9	0.500	20.00	0	120	80	120				
Methyl Isobutyl Ketone (MIBK)	54.5	1.25	50.00	0	109	80	120				
1,1,2-Trichloroethane	20.7	0.350	20.00	0	104	80	120				
1,3-Dichloropropane	21.5	0.500	20.00	0	107	80	120				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-33527** SampType: **LCS** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **LCSW** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409979**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	19.9	0.400	20.00	0	99.5	80	120				
Dibromochloromethane	19.1	1.00	20.00	0	95.5	80	120				
1,2-Dibromoethane (EDB)	21.0	0.300	20.00	0	105	80	120				
2-Hexanone (MBK)	59.2	1.00	50.00	0	118	80	120				
Chlorobenzene	20.3	0.500	20.00	0	102	80	120				
1,1,1,2-Tetrachloroethane	20.0	0.300	20.00	0	100	80	120				
Ethylbenzene	20.7	0.400	20.00	0	103	80	120				
m,p-Xylene	41.4	1.00	40.00	0	103	80	120				
o-Xylene	20.8	0.500	20.00	0	104	80	120				
Styrene	21.1	0.500	20.00	0	106	80	120				
Isopropylbenzene	20.7	0.500	20.00	0	104	80	120				
Bromoform	19.1	0.500	20.00	0	95.5	80	120				
1,1,2,2-Tetrachloroethane	22.0	0.400	20.00	0	110	80	120				
n-Propylbenzene	20.9	0.500	20.00	0	104	80	120				
Bromobenzene	20.8	0.500	20.00	0	104	80	120				
1,3,5-Trimethylbenzene	20.9	0.250	20.00	0	104	80	120				
2-Chlorotoluene	21.2	0.500	20.00	0	106	80	120				
4-Chlorotoluene	21.2	0.500	20.00	0	106	80	120				
tert-Butylbenzene	20.8	0.500	20.00	0	104	80	120				
1,2,3-Trichloropropane	22.7	0.400	20.00	0	113	80	120				
1,2,4-Trichlorobenzene	20.7	0.750	20.00	0	103	80	120				
sec-Butylbenzene	20.9	0.500	20.00	0	105	80	120				
4-Isopropyltoluene	20.9	0.500	20.00	0	104	80	120				
1,3-Dichlorobenzene	19.7	0.500	20.00	0	98.7	80	120				
1,4-Dichlorobenzene	19.6	0.500	20.00	0	98.0	80	120				
n-Butylbenzene	20.5	0.500	20.00	0	103	80	120				
1,2-Dichlorobenzene	19.8	0.500	20.00	0	99.0	80	120				
1,2-Dibromo-3-chloropropane	20.3	1.00	20.00	0	101	80	120				
1,2,4-Trimethylbenzene	20.9	0.500	20.00	0	105	80	120				
Hexachloro-1,3-butadiene	20.2	0.500	20.00	0	101	80	120				

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-33527** SampType: **LCS** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **LCSW** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409979**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	20.8	1.25	20.00	0	104	80	120				
1,2,3-Trichlorobenzene	20.6	0.700	20.00	0	103	80	120				
Surr: Dibromofluoromethane	25.8		25.00		103	80	120				
Surr: Toluene-d8	25.4		25.00		102	80	120				
Surr: 1-Bromo-4-fluorobenzene	26.8		25.00		107	80	120				

NOTES:
S - Outlying spike recovery observed (low bias). Samples will be qualified with a Q.

Sample ID: **MB-33527** SampType: **MBLK** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **MBLKW** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409978**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	1.25									
Chloromethane	ND	0.750									Q
Vinyl chloride	ND	0.200									
Bromomethane	ND	1.20									
Trichlorofluoromethane (CFC-11)	ND	0.500									
Chloroethane	ND	1.00									
1,1-Dichloroethene	ND	0.500									
Acetone	ND	6.00									
Methylene chloride	ND	0.750									
trans-1,2-Dichloroethene	ND	0.500									
Methyl tert-butyl ether (MTBE)	ND	0.500									
1,1-Dichloroethane	ND	0.500									
cis-1,2-Dichloroethene	ND	0.500									
2-Butanone (MEK)	ND	1.50									
Chloroform	ND	0.500									
1,1,1-Trichloroethane (TCA)	ND	0.400									
1,1-Dichloropropene	ND	0.500									
Carbon tetrachloride	ND	0.750									
1,2-Dichloroethane (EDC)	ND	0.400									

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **MB-33527** SampType: **MBLK** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **MBLKW** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409978**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.440									
Trichloroethene (TCE)	ND	0.500									
1,2-Dichloropropane	ND	0.500									
Bromodichloromethane	ND	0.500									
Dibromomethane	ND	0.500									
cis-1,3-Dichloropropene	ND	0.500									
Toluene	ND	0.750									
trans-1,3-Dichloropropylene	ND	0.500									
Methyl Isobutyl Ketone (MIBK)	ND	1.25									
1,1,2-Trichloroethane	ND	0.350									
1,3-Dichloropropane	ND	0.500									
Tetrachloroethene (PCE)	ND	0.400									
Dibromochloromethane	ND	1.00									
1,2-Dibromoethane (EDB)	ND	0.300									
2-Hexanone (MBK)	ND	1.00									
Chlorobenzene	ND	0.500									
1,1,1,2-Tetrachloroethane	ND	0.300									
Ethylbenzene	ND	0.400									
m,p-Xylene	ND	1.00									
o-Xylene	ND	0.500									
Styrene	ND	0.500									
Isopropylbenzene	ND	0.500									
Bromoform	ND	0.500									
1,1,2,2-Tetrachloroethane	ND	0.400									
n-Propylbenzene	ND	0.500									
Bromobenzene	ND	0.500									
1,3,5-Trimethylbenzene	ND	0.250									
2-Chlorotoluene	ND	0.500									
4-Chlorotoluene	ND	0.500									
tert-Butylbenzene	ND	0.500									

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **MB-33527** SampType: **MBLK** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **MBLKW** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409978**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichloropropane	ND	0.400									
1,2,4-Trichlorobenzene	ND	0.750									
sec-Butylbenzene	ND	0.500									
4-Isopropyltoluene	ND	0.500									
1,3-Dichlorobenzene	ND	0.500									
1,4-Dichlorobenzene	ND	0.500									
n-Butylbenzene	ND	0.500									
1,2-Dichlorobenzene	ND	0.500									
1,2-Dibromo-3-chloropropane	ND	1.00									
1,2,4-Trimethylbenzene	ND	0.500									
Hexachloro-1,3-butadiene	ND	0.500									
Naphthalene	ND	1.25									
1,2,3-Trichlorobenzene	ND	0.700									
Surr: Dibromofluoromethane	25.5		25.00		102	80	120				
Surr: Toluene-d8	24.9		25.00		99.6	80	120				
Surr: 1-Bromo-4-fluorobenzene	24.9		25.00		99.6	80	120				

NOTES:
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Sample ID: **2108362-009ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **CHRL-A9-B8-W** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409970**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	1.25						0		30	
Chloromethane	ND	0.750						0		30	Q
Vinyl chloride	ND	0.200						0		30	
Bromomethane	1.84	1.20						1.833	0.289	30	
Trichlorofluoromethane (CFC-11)	ND	0.500						0		30	
Chloroethane	ND	1.00						0		30	
1,1-Dichloroethene	ND	0.500						0		30	
Acetone	11.1	6.00						10.55	4.71	30	

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108362-009ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **CHRL-A9-B8-W** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409970**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	ND	0.750						0		30	
trans-1,2-Dichloroethene	ND	0.500						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.500						0		30	
1,1-Dichloroethane	ND	0.500						0		30	
cis-1,2-Dichloroethene	ND	0.500						0		30	
2-Butanone (MEK)	ND	1.50						1.589	200	30	R
Chloroform	ND	0.500						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.400						0		30	
1,1-Dichloropropene	ND	0.500						0		30	
Carbon tetrachloride	ND	0.750						0		30	
1,2-Dichloroethane (EDC)	ND	0.400						0		30	
Benzene	ND	0.440						0		30	
Trichloroethene (TCE)	ND	0.500						0		30	
1,2-Dichloropropane	ND	0.500						0		30	
Bromodichloromethane	ND	0.500						0		30	
Dibromomethane	ND	0.500						0		30	
cis-1,3-Dichloropropene	ND	0.500						0		30	
Toluene	0.821	0.750						0.8501	3.42	30	
trans-1,3-Dichloropropylene	ND	0.500						0		30	
Methyl Isobutyl Ketone (MIBK)	11.3	1.25						10.02	11.7	30	
1,1,2-Trichloroethane	ND	0.350						0		30	
1,3-Dichloropropane	ND	0.500						0		30	
Tetrachloroethene (PCE)	ND	0.400						0		30	
Dibromochloromethane	ND	1.00						0		30	
1,2-Dibromoethane (EDB)	ND	0.300						0		30	
2-Hexanone (MBK)	ND	1.00						0		30	
Chlorobenzene	0.533	0.500						0	200	30	
1,1,1,2-Tetrachloroethane	ND	0.300						0		30	
Ethylbenzene	ND	0.400						0		30	
m,p-Xylene	ND	1.00						0		30	

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108362-009ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **CHRL-A9-B8-W** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409970**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	ND	0.500						0		30	
Styrene	ND	0.500						0		30	
Isopropylbenzene	ND	0.500						0		30	
Bromoform	ND	0.500						0		30	
1,1,2,2-Tetrachloroethane	ND	0.400						0		30	
n-Propylbenzene	ND	0.500						0		30	
Bromobenzene	ND	0.500						0		30	
1,3,5-Trimethylbenzene	ND	0.250						0		30	
2-Chlorotoluene	ND	0.500						0		30	
4-Chlorotoluene	ND	0.500						0		30	
tert-Butylbenzene	ND	0.500						0		30	
1,2,3-Trichloropropane	ND	0.400						0		30	
1,2,4-Trichlorobenzene	ND	0.750						0		30	
sec-Butylbenzene	ND	0.500						0		30	
4-Isopropyltoluene	ND	0.500						0		30	
1,3-Dichlorobenzene	ND	0.500						0		30	
1,4-Dichlorobenzene	ND	0.500						0		30	
n-Butylbenzene	ND	0.500						0		30	
1,2-Dichlorobenzene	ND	0.500						0		30	
1,2-Dibromo-3-chloropropane	ND	1.00						0		30	
1,2,4-Trimethylbenzene	ND	0.500						0		30	
Hexachloro-1,3-butadiene	ND	0.500						0		30	
Naphthalene	ND	1.25						0		30	
1,2,3-Trichlorobenzene	ND	0.700						0		30	
Surr: Dibromofluoromethane	25.8		25.00		103	80	120		0		
Surr: Toluene-d8	25.4		25.00		102	80	120		0		
Surr: 1-Bromo-4-fluorobenzene	24.7		25.00		98.7	80	120		0		

NOTES:
R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108385-001AMS** SampType: **MS** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **BATCH** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409975**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	27.3	1.25	20.00	0	136	5	146				
Chloromethane	22.7	0.750	20.00	0	113	24	156				
Vinyl chloride	24.9	0.200	20.00	0	124	44.9	151				
Bromomethane	27.9	1.20	20.00	0	139	30.7	196				
Trichlorofluoromethane (CFC-11)	21.9	0.500	20.00	0	110	70.5	134				
Chloroethane	22.7	1.00	20.00	0	113	63.2	134				
1,1-Dichloroethene	21.8	0.500	20.00	0	109	73.3	134				
Acetone	71.4	6.00	50.00	0	143	61.1	149				
Methylene chloride	21.9	0.750	20.00	0	110	76	130				
trans-1,2-Dichloroethene	21.9	0.500	20.00	0	109	77.2	131				
Methyl tert-butyl ether (MTBE)	23.4	0.500	20.00	0	117	59	139				
1,1-Dichloroethane	21.9	0.500	20.00	0	110	75	138				
cis-1,2-Dichloroethene	21.5	0.500	20.00	0	108	77.6	130				
2-Butanone (MEK)	57.0	1.50	50.00	0	114	60.4	140				
Chloroform	21.4	0.500	20.00	0	107	77.5	133				
1,1,1-Trichloroethane (TCA)	21.0	0.400	20.00	0	105	83.5	128				
1,1-Dichloropropene	22.5	0.500	20.00	0	112	80.2	133				
Carbon tetrachloride	20.9	0.750	20.00	0	105	80.8	131				
1,2-Dichloroethane (EDC)	20.5	0.400	20.00	0	103	74.5	129				
Benzene	21.9	0.440	20.00	0	110	76.9	135				
Trichloroethene (TCE)	21.4	0.500	20.00	0.2247	106	72.5	130				
1,2-Dichloropropane	23.6	0.500	20.00	0	118	74	135				
Bromodichloromethane	20.6	0.500	20.00	0	103	75.6	132				
Dibromomethane	20.5	0.500	20.00	0	103	79.2	125				
cis-1,3-Dichloropropene	20.9	0.500	20.00	0	104	56.6	136				
Toluene	21.1	0.750	20.00	0	105	76.2	131				
trans-1,3-Dichloropropylene	21.4	0.500	20.00	0	107	55.6	135				
Methyl Isobutyl Ketone (MIBK)	55.1	1.25	50.00	0	110	62.2	139				
1,1,2-Trichloroethane	19.7	0.350	20.00	0	98.7	76.4	125				
1,3-Dichloropropane	20.4	0.500	20.00	0	102	75.2	126				

Work Order: 2108362
CLIENT: O'Neill Service Group
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QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108385-001AMS** SampType: **MS** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **BATCH** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409975**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	20.7	0.400	20.00	0	103	77.7	126				
Dibromochloromethane	18.6	1.00	20.00	0	93.0	71.1	128				
1,2-Dibromoethane (EDB)	19.8	0.300	20.00	0	99.1	72.9	126				
2-Hexanone (MBK)	47.8	1.00	50.00	0	95.6	59.9	141				
Chlorobenzene	20.2	0.500	20.00	0	101	87.6	118				
1,1,1,2-Tetrachloroethane	19.2	0.300	20.00	0	96.2	83.5	119				
Ethylbenzene	22.3	0.400	20.00	1.744	103	82.1	129				
m,p-Xylene	50.8	1.00	40.00	10.16	102	84.3	123				
o-Xylene	22.8	0.500	20.00	2.505	101	83.5	122				
Styrene	20.1	0.500	20.00	0	101	69.5	131				
Isopropylbenzene	21.3	0.500	20.00	1.223	101	81.5	129				
Bromoform	17.3	0.500	20.00	0	86.7	74.9	129				
1,1,2,2-Tetrachloroethane	20.4	0.400	20.00	0	102	79.9	142				
n-Propylbenzene	26.7	0.500	20.00	6.738	100	78.7	135				
Bromobenzene	20.2	0.500	20.00	0	101	84.4	116				
1,3,5-Trimethylbenzene	37.6	0.250	20.00	18.74	94.2	80.5	125				
2-Chlorotoluene	26.1	0.500	20.00	6.056	100	82.2	126				
4-Chlorotoluene	21.5	0.500	20.00	1.876	98.0	81.5	125				
tert-Butylbenzene	19.4	0.500	20.00	0	97.0	83.8	125				
1,2,3-Trichloropropane	19.6	0.400	20.00	0	98.0	71.1	127				
1,2,4-Trichlorobenzene	21.1	0.750	20.00	0	106	71.4	125				
sec-Butylbenzene	20.6	0.500	20.00	2.265	91.5	79.7	133				
4-Isopropyltoluene	19.9	0.500	20.00	1.604	91.4	79.1	128				
1,3-Dichlorobenzene	20.3	0.500	20.00	0	102	85.9	121				
1,4-Dichlorobenzene	20.1	0.500	20.00	0	100	86.6	119				
n-Butylbenzene	35.2	0.500	20.00	18.23	84.8	70.7	142				
1,2-Dichlorobenzene	20.8	0.500	20.00	0	104	87.2	119				
1,2-Dibromo-3-chloropropane	22.0	1.00	20.00	0	110	66.1	146				
1,2,4-Trimethylbenzene	63.1	0.500	20.00	44.81	91.6	79.4	126				E
Hexachloro-1,3-butadiene	10.8	0.500	20.00	0	53.9	73.8	130				S

Work Order: 2108362
CLIENT: O'Neill Service Group
Project: CHRL- AREA 9

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2108385-001AMS** SampType: **MS** Units: **µg/L** Prep Date: **8/27/2021** RunNo: **69559**
Client ID: **BATCH** Batch ID: **33527** Analysis Date: **8/27/2021** SeqNo: **1409975**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	24.9	1.25	20.00	1.673	116	60.3	141				
1,2,3-Trichlorobenzene	21.5	0.700	20.00	0	107	73.5	124				
Surr: Dibromofluoromethane	25.1		25.00		100	80	120				
Surr: Toluene-d8	26.2		25.00		105	80	120				
Surr: 1-Bromo-4-fluorobenzene	26.1		25.00		105	80	120				

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Appendix D:
Soil Reuse Guidelines (Ecology, 2016)

Table 12.1 Guidelines for Reuse of Petroleum-Contaminated Soil

Parameter	Analytical Method	Soil Category (8)(9)(10)			
		1 No detectable Petroleum Components (mg/kg)	2 Commercial Fill Above Water Table (mg/kg)	3 Paving Base Material & Road Construction (mg/kg)	4 Landfill Daily Cover or Asphalt Manufacturing (mg/kg)
Total Petroleum Hydrocarbons (1)(2) See Table 7.1 for petroleum products that fall within these categories.					
Gasoline Range Organics	NWTPH-Gx	<5	5 - 30	>30 - 100	>100
Diesel Range Organics	NWTPH-Dx	<25	25 - 200	>200 - 500	>500
Heavy Fuels and Oils*	NWTPH-Dx	<100	100 - 200	>200 – 500	>500
Mineral Oil	NWTPH-Dx	<100	100 - 200	>200 – 500	>500
Volatile Petroleum Components					
Benzene	SW8260B	<0.005	0.005 - 0.03	0.03 or less	See Table 12.2
Ethylbenzene	SW8260B	<0.005	0.005 - 6	6 or less	>6
Toluene	SW8260B	<0.005	0.005 - 7	7 or less	>7
Xylenes (3)	SW8260B	<0.015	0.015 - 9	9 or less	>9
Fuel Additives & Blending Components					
(MTBE) Methyl Tert-Butyl Ether	SW8260B	<0.005	0.005 - 0.1	0.1 or less	>0.1
Lead	SW6010A	<17	17 - 50	>50 - 220	See Table 12.2
Other Petroleum Components					
Polychlorinated (4) Biphenyls (PCBs)	SW8082	<0.04	<0.04	<0.04	See Table 12.2
Naphthalenes (5)	SW8260B	<0.05	0.05 - 5	5 or less	>5
cPAHs (6)	SW8270C	<0.05	0.05 - 0.1	>0.1 - 2	>2
Other Petroleum Characteristics (Applies to soils contaminated with any petroleum product.)					
Odors	Smell	No detectable odor			
Staining	Visual	No unusual color or staining			
Sheen Test	See Footnote # 7	No visible sheen			

IMPORTANT: See Table 12.2 and the footnotes to this Table on the following pages!
Test soil for the parameters specified in Table 7.2.
****Does NOT include waste oil contaminated soils, which should be disposed of in a landfill.***
"<" means less than; ">" means greater than

Table 12.1 Guidelines for reuse of petroleum-contaminated soil.

Table 12.2 Description and Recommended Best Management Practices for Soil Categories in Table 12.1 (continued next page)

Category	Acceptable Uses	Limitations
Category 1 Soils: Soils with no detectable/ quantifiable levels of petroleum hydrocarbons or constituents using the analytical methods listed in Table 7.3 and are not suspected of being contaminated with any other hazardous substances.	• Can be used anywhere the use is allowed under other regulations. • Any use allowed for Category 2, 3 & 4 soils.	• These soils should be odor-free.
Category 2 Soils: Soils with residual levels of petroleum hydrocarbons that could have adverse impacts on the environment in some circumstances.	• Any use allowed for Category 3 & 4 soils. • Backfill at cleanup sites above the water table. • Fill in commercial or industrial areas above the water table. • Road and bridge embankment construction in areas above the water table.	• These soils may have a slight petroleum odor, depending on the sensitivity of the individual. This should be considered when reusing these soils. • Should be placed above the highest anticipated high water table. If seasonal groundwater elevation information is not available, place at least 10 feet above the current water table. • Should not be placed within 100 feet of any private drinking water well or within the 10 year wellhead protection area of a public water supply well. • Should not be placed in or directly adjacent to wetlands or surface water where contact with water is possible. • Should not be placed under a surface water infiltration facility or septic drain field. • Any other limitations in state or local regulations.
Category 3 Soils: Soils with moderate levels of residual petroleum contamination that could have adverse impacts on the environment unless re-used in carefully controlled situations.	• Any use allowed for Category 4 soils. • Use as pavement base material under public and private paved streets and roads. • Use as pavement base material under commercial and industrial parking lots.	• Should be placed above the highest anticipated high water table. If seasonal ground water elevation information is not available, place at least 10 feet above the water table. • Should be a maximum of 2 feet thick to minimize potential for leaching or vapor impacts. • Should not be placed within 100 feet of any private drinking water well or within the 10 year wellhead protection area of a public water supply well. • Should not be placed in or directly adjacent to wetlands or surface water. • Should not be placed under a surface water infiltration facility or septic drain field. • When exposed, runoff from area in use should be contained or treated to prevent entrance to storm drains, surface water or wetlands. • Any other limitations in state or local regulations.

Table 12.2 Description and recommended best management practices for soil categories in Table 12.1 (continued next page).

Table 12.2 (continued) Description and Recommended Best Management Practices for Soil Categories in Table 12.1

Category	Acceptable Uses	Limitations
Category 4 Soils: Soils with high levels of petroleum contamination that should not be re-used except in very limited circumstances.	• Use in the manufacture of asphalt. • Use as daily cover in a lined municipal solid waste or limited purpose landfill provided this is allowed under the landfill operating permit.	**Landfill Limitations:** The soil should be tested for and pass the following tests: ➢ Free liquids test. Soils that contain free liquids cannot be landfilled without treatment. ➢ TCLP for lead and benzene. Unless exempt under WAC 173-303-071(3)(t), soils that fail a TCLP for lead or benzene must be disposed of as hazardous waste. ➢ Flammability test. Soils that fail this test must be disposed of as hazardous waste. ➢ Bioassay test under WAC 173-303-100(5). Soils that fail this test must be disposed of as hazardous waste. ➢ PCBs. Soils with a total PCB content of 2 ppm or more must be disposed of as hazardous waste. Soil used for daily cover should be stockpiled within the landfill lined fill area. Soil containing more than 10,000 mg/kg TPH should be buried immediately with other wastes or daily covered to limit potential worker exposure. Any additional limitations specified in the landfill permit or in other state or local regulations. **Asphalt Manufacturing Limitations:** Soil storage areas should be contained in a bermed area to minimize contact with surface water runoff from adjacent areas. Runoff from storage areas should be considered contaminated until tested to prove otherwise. Soil storage areas should also be lined and covered with a roof or secured tarp to minimize contact with precipitation and potential groundwater contamination. Leachate from storage areas should be considered contaminated until tested to prove otherwise. The soil should be tested for and pass the following tests: ➢ TCLP for lead and benzene. Unless exempt under WAC 173-303-071(3)(t), soils that fail a TCLP for lead or benzene must be disposed of as hazardous waste. ➢ Flammability test. Soils that fail this test must be disposed of as hazardous waste. ➢ Bioassay test under WAC 173-303-100(5). Soils that fail this test must be disposed of as hazardous waste. ➢ No detectable levels of PCBs in soil (<0.04 mg/kg). Precautions should be taken to minimize worker exposure to soil storage piles and any dust or vapors from these piles prior to feeding into the asphalt batch plant.

IMPORTANT: See the following page for additional information!