AP - 111

SWMU-13
DRAINAGE DITCH
(2)

2019

INVESTIGATION REPORT
SWMU 13 – Drainage Ditch between API Evaporation Ponds and Neutralization Tank Evaporation Ponds

Marathon Petroleum Company LP

Gallup Refinery
Marathon Petroleum Company
Gallup, New Mexico

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List of Acronyms

API	American Petroleum Institute
AOCs	areas of concern
BTEX	benzene, toluene, ethylbenzene, and xylene
bgl	below ground level (bgl)
btoc	below top of casing
CFR	Code of Federal Regulations
DRO	diesel range organics
DAF	dilution/attenuation factor
EPA	Environmental Protection Agency
gpm	gallons per minute
HI	hazard index
HSA	hollow-stem auger
IDW	investigation derived waste
LPG	liquefied petroleum gas
LTU	Land Treatment Unit
MADEP	Massachusetts Department of Environmental Protection
MCL	maximum contaminant level
msl	mean sea level
MW	monitoring well
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
PID	photoionization detector
PVC	polyvinyl chloride
SPH	separate phase hydrocarbon
SVOC	semi-volatile organic compound
SWMUs	Solid Waste Management Units
TPH	total petroleum hydrocarbon
TVOC	total volatile organic content
TCLP	toxicity characteristic leaching procedure
USCS	unified soil classification system
VOC	volatile organic compound
WQCC	Water Quality Control Commission

Executive Summary

The Gallup Refinery, which is located 17 miles east of Gallup, New Mexico, has been in operation since the 1950s. Past inspections by State [New Mexico Environment Department (NMED)] and federal environmental inspectors have identified locations where releases to the environment may have occurred. These locations are generally referred to as Solid Waste Management Units (SWMUs) or Areas of Concern (AOCs). Pursuant to the terms and conditions of the facility's Resource Conservation and Recovery Act (RCRA) Post-Closure Care Permit and 20.4.1.500 New Mexico Administrative Code (NMAC), this environmental site investigation was completed for the area identified as SWMU No. 13 - Drainage Ditch between API Evaporation Ponds and Neutralization Tank Evaporation Ponds, which is just north of Evaporation Pond (EP) -2.

The activities completed include sampling and analysis of soils and groundwater along the length of the drainage ditch. Seven deep soil borings were completed immediately adjacent to the drainage ditch and associated pond area using hollow stem augers and all were completed as temporary monitoring wells. Seven shallow soil borings were completed within the drainage ditch and associated pond area using a hand auger. Fifty-eight soil samples (excluding additional quality assurance samples) were collected for analysis of potential site-related constituents (e.g., volatile and semi-volatile organics, total petroleum hydrocarbons (TPH), and metals). Six groundwater samples (excluding additional quality assurance samples) were collected for analysis of potential site-related constituents (e.g., volatile and semi-volatile organics, TPH, metals, and inorganic/general water quality parameters). One of the temporary well completions did not yield groundwater.

Chromium (total) was detected at a concentration above the residential soil screening level in one soil sample [SWMU 13-4 (0-0.5')] and above the non-residential screening level in two soil samples [SWMU 13-9 (0-0.5') and SWMU 13-10 (0-0.5')]. Five soil samples [SWMU 13-1 (1.5-2'), SWMU 13-2 (1.5-2'), SWMU 13-5 (1.5-2'), SWMU 13-7 (17.5-18'), and SWMU 13-12 (0-0.5')] have manganese concentrations that exceed the non-residential screening level. Both Diesel Range Organics and Motor Oil Range Organics were detected at concentrations above the residential soil screening level in three soil samples [SWMU 13-4 (0-0.5'), SWMU 13-9 (0-0.5'), and SWMU 13-10 (0-0.5') and concentrations exceed the non-residential screening level two samples [SWMU 13-11 (0-0.5') and SWMU 13-13 (0-0.5')].

The groundwater analyses indicate total and dissolved arsenic was detected above the screening level in one sample collected at SWMU 13-7. Beryllium (total analyses only) was detected above the screening level in one groundwater sample collected at SWMU 13-2. Iron was detected above the screening level in samples analyzed for total (four exceedances at SWMU 13-2, SWMU 13-4, SWMU 13-6, and SWMU13-7) and dissolved analyses (one exceedance at SWMU 13-7). Lead (total analyses) was detected at a concentration above the screening level in one of the groundwater samples collected which was collected at SWMU 13-2. Manganese was detected above the screening level in both total and dissolved analyses collected at all six locations (SWMU 13-2, SWMU 13-3, SWMU 13-4, SWMU 13-5, SWMU 13-6, and SWMU13-7). Chloride was detected above the screening level in five of the groundwater samples (SWMU 13-3, SWMU 13-4, SWMU 13-5, SWMU 13-6, and SWMU13-7). Sulfate was detected above the screening level in four of the groundwater samples (SWMU 13-2, SWMU 13-3, SWMU 13-4, and SWMU 13-6). Fluoride was detected in one groundwater sample (SWMU 13-7) above the screening level. Gasoline Range Organics were detected above the screening level in five groundwater samples (SWMU 13-2, SWMU 13-3, SWMU 13-4, SWMU 13-5, and SWMU13-7). Diesel Range Organics were detected above the screening level in four groundwater samples (SWMU 13-2, SWMU 13-3, SWMU 13-5, and SWMU13-7).

Section 1
Introduction

The Gallup Refinery is located approximately 17 miles east of Gallup, New Mexico along the north side of Interstate Highway I-40 in McKinley County. The physical address is I-40, Exit #39 Jamestown, New Mexico 87347. The Gallup Refinery property covers approximately 810 acres. Figure 1 presents the refinery location and the regional vicinity, which is characterized as high desert plain comprised primarily of public lands used for grazing by cattle and sheep.

The Gallup Refinery generally processes crude oil from the Four Corners area transported to the facility by pipeline or tanker truck. Various process units are operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, alkylation, isomerization, sulfur recovery, merox treater, and hydrotreating. Current and past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

The area of investigation that is the subject of this report is shown on Figure 2. The purpose of the site investigation is to determine and evaluate the presence, nature, and extent of releases of contaminants in accordance with 20.4.1.500 New Mexico Administrative Code (NMAC) incorporating 40 Code of Federal Regulations (CFR) Section 264.101. The investigation activities were conducted in accordance with 20.4.1.500 NMAC incorporating 40 CFR Section 264.101, Section IV.H.5 of the Post-Closure Care Permit and the *Investigation Work Plan SWMU No. 13 - Drainage Ditch between API Evaporation Ponds and Neutralization Tank Evaporation Ponds* dated May 2016 (approved with modifications July 11, 2019).

Section 2 presents background information for SWMU No. 13, including a review of historical waste management activities to help identity the types of waste handled, sources of releases, and previously known impacts to the environment. Section 3 describes the scope of work completed during the site investigation, including completion of soil borings, installation of temporary monitoring wells, and sample collection. Section 4 of the report explains the results of the field investigation, including the general surface and subsurface conditions and detailed site-specific information acquired during subsurface investigations. Section 5 explains the regulatory standards that are used for comparison to the analytical results and Section 6 presents the analytical results of soil and groundwater samples analyzed for volatile and semi-volatile organic compounds, Total

Petroleum Hydrocarbons (TPH), metals, and inorganic/general chemistry constituents. The results of these analyses are compared to applicable state or federal screening levels. Section 7 summarizes the results, provides an evaluation of the potential impacts and provides recommendations for any future actions.

Section 2
Background

This section presents background information for the area near SWMU No. 13, including a review of historical waste management activities to identity the following:

- Type and characteristics of waste and contaminants handled in the SWMU;
- Known and possible sources of impacts;
- History of releases; and
- Known extent of impacts prior to the current investigation.

SWMU No. 13 is located between Evaporation Ponds No. 2 and No. 12 (Figure 2). In the *Inventory of Solid Waste Management Units* prepared in June 1985, SWMU No. 13 is not specifically described, but the series of related evaporation ponds and their respective uses are described (Geoscience Consultants, Ltd, 1985). An unlined conveyance ditch associated with water softener regeneration wastewater is identified by Unit Number 24 in Table 4-1 in the 1987 RCRA Facility Assessment (RFA) Report (Black and Veatch, 1987). However, as shown on Figure 4-1 in the RFA, this ditch is shown to be located immediately adjacent to the former neutralization tank and is not the same ditch that is later identified as SWMU No. 13. The area currently identified as SWMU No. 13 is discussed in Section 5.4 of the 1987 RFA Report and is noted as being observed during the Visual Site Inspection, but the information related to the contents of the ditch was insufficient to evaluate releases to all media.

In 1990, the "Drainage Ditch between APIS Evaporation Ponds and Neutralization Tank Evaporation Ponds" was identified as a SWMU targeted for investigation in the *SWMU Site-Specific Facility Investigation Workplan* (Applied Earth Sciences, Inc., 1990). Three soil borings (collected at the water's edge – ditch maximum width of 12 feet, 18 inches deep with no dikes) to a depth of five feet with samples collected at 2 - 2.5' and 3.5 – 4.0' were proposed in the Investigation Workplan, which was subsequently modified to four borings to address comments received from EPA on May 30, 1990. The exact boring locations were to be based on field observations with criteria such as stained soil, stressed vegetation, and significant discharge patterns. The general location was depicted as area #24 on Figure 1 – Site Map, which is included in Appendix A. The proposed analyses included the Skinner List constituents.

During the Phase II RCRA Facility Investigation (RFI) conducted in 1991, four soil borings (RFI 1301 through RFI 1304) were completed with two soil samples collected from each boring as proposed in the Investigation Workplan. The location of the borings is shown on the map from the 1991 Phase II RFI Report, which is included in Appendix A (Giant, 1991). The area of investigation was described as "the small overflow lagoon from Evaporation Pond #2 and the associated drainage ditch." The samples were analyzed for Skinner List volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals. None of the organic constituents were detected in the eight samples and all metals results were reported to be below background limits. A copy of the original data summary table from the 1991 RFI Report is included in Appendix A.

Giant requested a No Further Action designation from EPA and based on the sampling results no further investigation of the area was required, but rather in 1995 EPA required that the area be resampled every five years going forward as Giant planned to continue use of the ditch. The first sampling event was conducted in October 1996. Three angle borings were completed beneath the ditch with samples collected from the 6.0' - 6.5' interval, as measured along the length of the borings, and analyzed for VOCs, SVOCs, and metals. All of the VOC and SVOCs results were reported as non-detect and the metals concentrations were described as being comparable to (or lower) than those found in the original RFI sampling. A map showing the boring locations and the analytical report are provided in Appendix B. The location of the SWMU was surveyed at EPA direction and a copy is provided in Appendix B.

Practical Environmental Services, Inc. (PES) was hired in 1998 by Giant Industries to perform a visual inspection, data evaluation, and status assessment of SMWU 13. No additional sampling was conducted as the area was recently sampled in 1996. Their findings are summarized below:

- The drainage ditch was observed in active service conveying wastewater to north area evaporation ponds;
- The ditch sidewalls were visually inspected and found to be intact and stable. No erosion, damage, or sign of containment failure was observed;
- Native shrubs and grasses were observed growing around the perimeter of the ditch. No signs of distress were evident; and
- Local soil in the vicinity of the drainage ditch is bentonitic clays and silts. Similar soil strata from neighboring SWMU exhibited a hydraulic conductivity of less than 10^{-7} cm/sec.

They (PES) determined that the No Further Action proposal previously recommended by Giant and approved by EPA (with requirement for continued sampling) was appropriate for the site.

In August 2001, Giant Industries prepared a *No Further Action Report* to summarize previous activities at SWMU No. 13. Based on the earlier sampling conducted in the Phase II RFI and more recently in 1996, Giant proposed no further action for SWMU No. 13 (Giant, 2001). NMED responded to Giant's request for no further action via letter dated November 2, 2001 and a response letter prepared by PES was submitted October 2, 2002. Items specific to SWMU No. 13 are discussed below.

NMED requested an updated site plan.

- It was noted by PES that the requested site plan was provided.

NMED requested background and current information on the influent and effluent to the SWMU.

- The requested information was provided in the October 2, 2002 response letter. Essentially, the ditch has been and continues to be used to transfer refinery wastewater between evaporation ponds.

NMED requested analyses of water samples from the ditch and bottom sludge or sediment samples, if available.

- PES noted neither water sample or bottom sludge/sediment samples had been collected from the ditch.

NMED requested boring logs from the 1991 and 1996 sampling efforts.

- The requested boring logs were provided.

NMED asked what depths the soil samples were collected from in the 1996 borings.

- PES clarified the samples were collected from 6 feet as measured along the length of the angled borings.

After submission of the requested information to NMED on October 2, 2002, the next correspondence on SMWU No. 13 that is found in the available records is a letter from Western Refining Southwest, Inc. (dated June 24, 2013) requesting that NMED proceed with review of information previously submitted in the 2001 Petition for No Further Action and the Supplementary Information submitted on October 2, 2002. NMED replied to the request on November 18, 2014 stating they would proceed with the requested review and on April 13, 2015 a request for additional information was issued. Comments 23 through 25 were specific to SWMU 13. Western provided a response on June 15, 2015. Copies of NMED's letter and Western's response, including relevant

enclosures are included in Appendix C of the *Investigation Work Plan SWMU No. 13 – Drainage Ditch between API Evaporation Ponds and Neutralization Tank Evaporation Ponds* (DiSorbo, 2019a).

The responses in 2015 noted the drainage ditch was being used to convey non-contact storm water and that the ditch did not receive flows from the evaporation ponds. The area has since been regraded such that stormwater is no longer conveyed through either the ditch or the small "pond" area to the south. The only water entering these areas now is rainfall and there is no active use of these features. The regrading did not affect the drainage itself and surface soils within the ditch were not affected.

Section 3
Scope of Activities

3.1 Soil Boring, Temporary Monitoring Well Installation and Sample Collection

Pursuant to the approved Investigation Work Plan, an investigation of soils and groundwater was conducted to determine and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, soil borings and temporary monitoring wells were installed (Figure 3).

3.1.1 Site Investigation

The scope of work focused an investigation of soils along and beneath the drainage ditch and associated pond area and was conducted to characterize current concentrations of constituents associated with historical refinery operations and define the extent of any such impacts. Five shallow soil borings (SWMU 13-8 through SWMU 13-12) were located along the center line of the drainage ditch and two within the pond area (SWMU 13-13 and SWMU 13-14). These borings were completed using a hand auger to a completion depth of 3 feet. Due to physical limitations accessing locations within the ditch and pond areas, deeper borings were completed using the hollow stem auger method outside, but immediately adjacent to the ditch and pond areas. There are five deep soil borings located adjacent to the ditch (SWMU 13-1 through SWMU 13-5) and two deep soil borings adjacent to the pond area (SWMU 13-6 and SWMU 13-7) (Figure 3).

The seven deep borings were completed using hollow stem augers to depths ranging from 16 feet below ground level (bgl) to 18 feet bgl. Temporary wells were installed in the seven deeper borings. Groundwater samples were collected from six of the seven temporary wells. One temporary well (SWMU 13-1) was dry. The groundwater samples were analyzed for VOCs, SVOCs, TPH, Skinner List metals, cyanide, iron, manganese, chloride, fluoride, nitrate, nitrite, and sulfate.

Discrete soil samples were proposed in the work plan to be retained for laboratory analysis from within the following intervals at each of the soil borings:

- From the upper 0.5 foot interval of the ground surface;

- From the 1.5 to 2.0 foot interval;
- From the upper 0.5 foot interval of native soils (i.e., below any fill material);
- From the interval in each soil boring with the greatest apparent degree of contamination in the vadose zone, based on field observations and field screening;
- From the bottom of each borehole;
- From the 0.5 foot interval at the top of saturation, if encountered; and
- Any additional intervals as determined based on field screening results.

Discrete soil samples were collected for laboratory analysis from within the following intervals at each of the seven hand auger borings:

- From the upper 0.5 foot interval of the ground surface;
- From the 1.5 to 2.0 foot interval; and
- From the bottom of each borehole (2 to 3 foot interval).

The objectives were met at each deep soil boring with discussions below detailing the exact sample collection intervals at each soil boring. The soil samples were analyzed for VOCs, SVOCs, TPH, Skinner List metals, iron, and manganese.

The following list provides a summary of the soil borings advanced using hollow stem augers:

- SWMU 13-1; advanced to 16 feet bgl; temporary well installed;
- SWMU 13-2; advanced to 16 feet bgl; temporary well installed;
- SWMU 13-3; advanced to 16 feet bgl; temporary well installed;
- SWMU 13-4; advanced to 16 feet bgl; temporary well installed;
- SWMU 13-5; advanced to 16 feet bgl; temporary well installed;
- SWMU 13-6; advanced to 18 feet bgl; temporary well installed; and
- SWMU 13-7; advanced to 18 feet bgl; temporary well installed.

3.2 Collection and Management of Investigation Derived Waste

Drill cuttings, excess sample material and other investigation derived waste (IDW) associated with soil borings were placed in containers. All drill cuttings generated during the investigation were collected and put into 55-gallon drums. The drums are currently on-site pending finalization of waste characterization before being sent off-site for disposal. All purge water and decontamination water were disposed in the refinery wastewater system upstream of the API Separator.

3.3 Surveys

A global positioning system receiver was used to record the coordinates of each soil boring. These coordinates were recorded on the field boring logs. Surveys of each location and the land surface were completed by a registered land surveyor. The survey is included in Appendix C (page 3 of 9).

Section 4
Field Investigation Results

This section provides a summary of the surface and subsurface conditions at the refinery, including the area near SWMU No. 13. A discussion is included on the installation of soil borings, field screening of soils, and collection of soil samples for analysis. This is followed by a description of the installation of temporary well completions and the collection of groundwater samples.

4.1 Surface Conditions

A topographic map of the area near SWMU No. 13 is included as Figure 4. Site topographic features include high ground in the southeast gradually decreasing to a lowland fluvial plain to the northwest. Elevations on the refinery property range from 6,860 feet to 7,040 feet. The area of the site near SWMU No. 13 at an approximate elevation of 6,886 feet above mean sea level (msl).

The soils in the vicinity of SWMU No. 13 are identified as the Rehobeth silty clay loam. Rehobeth soil properties include a pH ranging from 8 to 9 standard units and salinity measuring up to approximately 8 mmhos/cm (slightly saline). It is classified as well drained. The parent material is described as stream alluvium derived from gypsiferous shale (USDA, 2005).

Regional surface water features include the refinery evaporation ponds and a number of small ponds (one cattle water pond and two small unnamed spring fed ponds). The site is located in the Puerco River Valley, north of the Zuni Uplift with overland flows directed northward to the tributaries of the Puerco River. The Puerco River continues to the west to the confluence with the Little Colorado River. The South Fork of the Puerco River is intermittent and retains flow only during and immediately following precipitation events.

4.2 Subsurface Conditions

An underground pipeline was detected during clearance of utilities in the area of the borings at SWMU No. 13. The location of the pipeline is shown on Figure 3. The pipeline is 4-inch PVC and was exposed at the land surface in some areas and increased with depth near the north end of SWMU No. 13.

4.2.1 Geology

The shallow subsurface soils consist of fluvial and alluvial deposits comprised of clay and silt with minor inter-bedded sand layers. The diverse properties and complex, irregular stratigraphy of the surface soils across the site cause a wide range of hydraulic conductivity ranging from less than 10^{-2} cm/sec for gravely sands immediately overlying the Petrified Forest Formation to 10^{-8} cm/sec in the clay soils located near the surface (Western Refining, 2009). Generally, shallow groundwater at the refinery follows the upper contact of the Chinle Group with prevailing flow from the southeast to the northwest, with some flow potentially to the northeast on the northeastern portion of the refinery property.

The Quaternary alluvium, which occurs at the land surface in the area of the refinery is mapped regionally as a narrow band trending west-northwest and running just north of I-40 (Figure 5). The Quaternary alluvium is thought to be the parent material of the Rehobeth soils discussed above in Section 4.1. A cross section of the shallow subsurface in the immediate vicinity of SWMU No. 13 is included as Figure 6. Figure 3 shows the location of the cross section. As shown on the cross section, the predominant lithology is clay with sandy clay/clayey sand layers.

Subcropping beneath the Quaternary alluvium is the Triassic Chinle Group (Figure 5). The stratigraphy of the Chinle Group was described in detail for the nearby Fort Wingate quadrangle by Lucas *et al.*, 1997. The Painted Desert Member of the Petrified Forest Formation is the uppermost member of the Chinle Group present in the area of the refinery. The Painted Desert Member is described as reddish-brown and grayish red mudstone with minor beds of resistant, laminated or crossbedded, litharenite. This is consistent with the bedrock encountered at the refinery. Beneath the Painted Desert Member is the Sonsela Member, which is described by Lucas *et al.* (1997) as gray to yellowish-brown, fine-grained to conglomeratic, crossbedded sandstone. The base of the Sonsela Member is recognized as a basin wide unconformity, which was termed the Tr-4 unconformity (Heckert and Lucas, 1996). The Blue Mesa Member, which underlies the Sonsela Member, is the lowest member of the Petrified Forest Formation. The Blue Mesa Member is described as mostly purple and greenish-gray mudstone.

4.2.2 Hydrogeology

Figure 6 presents the potentiometric surface measured during field work activities conducted in the month of November 2019. A potentiometric surface map (Figure 7) is included using measurements

collected in August 2018. The groundwater flow direction in the area of SWMU No. 13 is to the northwest.

The diverse properties and complex, irregular stratigraphy of the Quaternary alluvium across the refinery cause a wide range of hydraulic conductivity ranging from less than 10^{-2} cm/sec for gravel like sands immediately overlying the Painted Desert Member to 10^{-8} cm/sec in the clay soils located near the surface (Western Refining, 2009). Permeability tests performed on the Quaternary alluvium beneath the nearby Land Treatment Unit (LTU) indicated an average permeability of 1.9E-05 cm/sec (Appendix D). Permeability tests performed on soils in the area of the firewater pond indicated an average permeability of 1.1E-07 cm/sec (Appendix D).

As described above, the bedrock (i.e., Petrified Forest Formation) is mainly composed of low permeability materials (e.g., mudstone) with the exception of the Sonsela Member and some thinner sandstones within the overlying Painted Desert Member. Yield tests, including slug tests and pumping tests have been performed at the refinery to estimate the hydraulic conductivity of the Painted Desert Member (Appendix D). A slug test performed on July 3, 1984 in well OW-4 indicated a hydraulic conductivity of 4.0E-7 cm/sec. A pump test was performed in well OW-24 on February 20, 1985 and it yielded a hydraulic conductivity of 2.5E-7 cm/sec. The Painted Desert Member appears to be a competent aquitard capable of reducing the potential for downward migration of contaminants from groundwater that may occur within the overlying Quaternary alluvium.

The Sonsela Member is identified as the uppermost aquifer for RCRA monitoring purposes at the LTU because the overlying groundwater bearing units are not capable of supplying sufficient quantities of groundwater to meet the definitions of an aquifer. Wells completed in a thinner permeable sandstone layer within the Painted Desert Member are also monitored near the LTU as a potential early warning network. The Sonsela's highest point occurs southeast of the site and slopes downward to the northwest as it passes under the refinery. The Sonsela Member forms a water-bearing reservoir with artesian conditions throughout the central and western portions of the refinery property (Western, 2009). Aquifer test of the Sonsela Member conducted northeast of Prewitt indicated a transmissivity of greater than 100 ft^2/day (Stone and others, 1983). Yield tests conducted at the site have shown a much lower hydraulic conductivity of 0.34 ft/day (1.2E-04 cm/sec) (Appendix D).

4.3 Exploratory Drilling Investigations, Soil Sampling and Boring Abandonment

This subsection provides a detailed description of subsurface investigations to delineate impacts to soils and groundwater in the area of SWMU No. 13. This includes soil field screening results, soil sampling intervals and methods for detection of subsurface impacts in soils.

A description of the field screening and soil sampling procedures are presented in Appendix E – Field Methods. Copies of the boring/well logs are provided in Appendix F. In addition to being included on the soil boring logs, the soil vapor (i.e., headspace) screening results are summarized in Table 1. The locations of the soil borings/wells appear on Figure 3.

4.3.1 Soil Investigation

Seven deep soil borings (SWMU 13-1 through SWMU 13-7) were advanced using the hollow-stem auger (HSA) method. A hand auger was used to clear each drilling location to a depth of 5 feet. Soil samples for logging, screening and sample collection were collected from the auger bucket from 0 to 5 feet. After each location was cleared, the CME 55 track drilling rig was set up at the location. Sample collection was then accomplished using the HSA drilling method and split spoon samplers. Temporary groundwater monitoring wells were installed in these seven borings. Seven shallow soil borings (SWMU 13-8 through SWMU 13-14) were advanced using a hand auger. The drilling equipment was decontaminated between each borehole, as described in Appendix E. The soil boring logs describe the subsurface lithology, the presence of saturation, the field screening results, soil sample collection intervals, and any temporary well construction details. Soil samples that were collected with the split spoon sampler were photographed. Electronic copies of these photographs are included in Appendix G. The installation of soil borings and collection of soil samples are discussed below in numerical order.

<u>SWMU 13-1</u>

On October 22, 2019 the CME 55 track drilling rig was set up on location SWMU 13-1. SWMU 13-1 is located north of the drainage ditch at the west end of the ditch. The ground surface at SWMU 13-1 is approximately 2.54 feet above the bottom of the drainage ditch. Sample collection from 0 – 5 feet below ground level (bgl) was accomplished using a decontaminated hand auger. Sample collection from 5 to 16 feet was accomplished using the HSA drilling method and split spoon samplers. The split spoon samplers were decontaminated between each sample. Five soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 1.4 ppm, no odor, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading - 1.2 ppm, no odor, required interval;
- 5 feet bgl to 6 feet bgl: PID reading - 89.7 ppm, no odor, elevated PID reading;
- 8 feet bgl to 10 feet bgl: PID reading - 4.7 ppm, no odor, interval immediately above saturation; and
- 14 feet bgl to 16 feet bgl: PID reading – 2.8 ppm, no odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Silt/Clayey Silt: 0 – 2 feet bgl (very fine grain, low plasticity, soft, damp, brown, no odor);
- Silty Clay: 2 feet bgl – 5 feet bgl (low plasticity, firm, damp, brown, no odor);
- Clay: 5 feet bgl – 8 feet bgl (high plasticity, firm, damp, brown, no odor, becomes sandy at base – clayey sand);
- Clayey Sand/Sand: 8 feet bgl – 10 feet bgl (fine grain, loose, damp, brown, no odor);
- Clayey Sand/Sand: 10 feet bgl – 12 feet bgl (fine grain, loose, very moist to saturated, brown, no odor);
- Clayey Sand/Sand: 12 feet bgl – 14 feet bgl (fine grain, loose, very moist to saturated at base, brown, no odor); and
- Clay: 14 feet bgl – 16 feet bgl (high plasticity, stiff, damp, brown, no odor).

The sampling was terminated at 16 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 6 feet bgl to 16 feet bgl. Groundwater samples were collected as discussed below in Section 4.4.1. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-2

On October 22, 2019 the CME 55 track drilling rig was set up on location SWMU 13-2. SWMU 13-2 is located south of the drainage ditch at the west end of the ditch. The ground surface at SWMU 13-2 is approximately 2.38 feet above the bottom of the drainage ditch. Sample collection from 0 – 5 feet bgl was accomplished using a decontaminated hand auger. Sample collection from 5 to 16 feet was accomplished using the HSA drilling method and split spoon samplers. The split spoon samplers were decontaminated between each sample. Four soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 6.3 ppm, no odor, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 2.3 ppm, no odor, required interval;
- 8 feet bgl to 10 feet bgl: PID reading – 1.3 ppm, no odor, interval immediately above saturation; and
- 14 feet bgl to 16 feet bgl: PID reading – 1.1 ppm, no odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Silt/Clayey Silt: 0 – 2 feet bgl (very fine grain, low plasticity, soft, damp, brown, no odor);
- Silty Clay: 2 feet bgl – 5 feet bgl (low plasticity, firm, damp, brown, no odor, high plasticity at the base);
- Clay: 5 feet bgl – 7 feet bgl (high plasticity, stiff, damp, brown, no odor);
- Silty Clay: 7 feet bgl – 8 feet bgl (low plasticity, firm/crumbly, damp, brown, no odor, trace sand at base);
- Clayey Sand/Sandy Clay: 8 feet bgl – 10 feet bgl (fine grain, compact, damp to moist at base, brown, no odor);
- Sand: 10 feet bgl – 11 feet bgl (fine to medium grain, loose, damp to moist, brown, no odor);
- Clay: 11 feet bgl – 12 feet bgl (high plasticity, very soft, damp to moist, brown, no odor);
- Clay: 12 feet bgl – 13.5 feet bgl (high plasticity, very soft, moist to saturated in very soft lense, brown, no odor);
- Clay: 13.5 feet bgl – 15.5 feet bgl (high plasticity, stiff, damp, brown, no odor); and
- Silty Clay: 15.5 feet bgl – 16 feet bgl (low plasticity, firm, damp, brown, no odor).

The sampling was terminated at 16 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 6 feet bgl to 16 feet bgl. Groundwater samples were collected as discussed below in Section 4.4.1. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-3

On October 22, 2019 the CME 55 track drilling rig was set up on location SWMU 13-3. SWMU 13-3 is located south of and along the western half of the ditch. The ground surface at SWMU 13-3 is approximately 1.64 feet above the bottom of the drainage ditch. Sample collection from 0 – 5 feet bgl was accomplished using a decontaminated hand auger. Sample collection from 5 to 16 feet was

accomplished using the HSA drilling method and split spoon samplers. The split spoon samplers were decontaminated between each sample. Five soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 0.8 ppm, no odor, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 1.4 ppm, no odor, required interval;
- 8 feet bgl to 10 feet bgl: PID reading – 1.3 ppm, no odor, interval immediately above saturation;
- 14 feet bgl to 15.25 feet bgl: PID reading – 0.9 ppm, no odor, bottom of confining clay; and
- 15.25 feet bgl to 16 feet bgl: PID reading – 2.1 ppm, no odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Silt/Clayey Silt: 0 – 1.5 feet bgl (very fine grain, low plasticity, soft/loose, damp, brown, no odor);
- Silty Clay: 1.5 feet bgl – 5 feet bgl (high plasticity, firm, damp, brown, no odor);
- Clay: 5 feet bgl – 7 feet bgl (high plasticity, stiff, damp, brown, no odor);
- Silty Clay: 7 feet bgl – 8 feet bgl (low plasticity, firm/crumbly, damp, brown, no odor);
- Silty Clay: 8 feet bgl – 10 feet bgl (low plasticity, very soft, moist, brown, no odor);
- Sandy Clay: 10 feet bgl – 12.75 feet bgl (low plasticity, very soft, saturated in fine grain sand lenses throughout, brown, no odor);
- Clay: 12.75 feet bgl – 15.25 feet bgl (high plasticity, stiff, damp, brown, no odor); and
- Clayey Sand: 15.25 feet bgl – 16 feet bgl (fine grain, compact to loose, saturated, brown, no odor).

The sampling was terminated at 16 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 6 feet bgl to 16 feet bgl. Groundwater samples were collected as discussed below in Section 4.4.1. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-4

On October 23, 2019 the CME 55 track drilling rig was set up on location SWMU 13-4. SWMU 13-4 is located south of the drainage ditch near the middle of the ditch. The ground surface at SWMU 13-

4 is 1.93 feet above the bottom of the drainage ditch. Sample collection from 0 – 5 feet bgl was accomplished using a decontaminated hand auger. Sample collection from 5 to 16 feet was accomplished using the HSA drilling method and split spoon samplers. The split spoon samplers were decontaminated between each sample. Five soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 1.9 ppm, no odor, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 1.6 ppm, no odor, required interval;
- 8 feet bgl to 10 feet bgl: PID reading – 13.4/10.4 ppm, no odor, interval immediately above saturation;
- 14 feet bgl to 14.5 feet bgl: PID reading – 10.1 ppm, no odor, bottom of confining clay (above lower saturated interval); and
- 15.5 feet bgl to 16 feet bgl: no odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Silt/Clayey Silt: 0 – 1.5 feet bgl (very fine grain, low plasticity, soft, damp, brown, no odor);
- Clay: 1.5 feet bgl – 9 feet bgl (high plasticity, firm to stiff, damp, brown, no odor, very stiff and calcareous from 6 feet bgl to 8 feet bgl);
- Silty Clay: 9 feet bgl – 10 feet bgl (low plasticity, very soft, damp, brown, no odor);
- Clayey Sand: 10 feet bgl – 13.75 feet bgl (fine grain, compact, saturated, brown, no odor);
- Clay: 13.75 feet bgl – 14.5 feet bgl (moderate to high plasticity, firm, damp, brown, no odor);
- Silty Clay: 14.5 feet bgl – 15.5 feet bgl (low plasticity, soft, damp, brown, no odor); and
- Sand: 15.5 feet bgl – 16 feet bgl (fine to medium grain, loose, saturated, brown, no odor).

The sampling was terminated at 16 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 6 feet bgl to 16 feet bgl. Groundwater samples were collected as discussed below in Section 4.4.1. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-5

On October 23, 2019 the CME 55 track drilling rig was set up on location SWMU 13-5. SWMU 13-5 is located south of and along the eastern half of the ditch. The ground surface at SWMU 13-5 is

approximately 2.76 feet above the bottom of the drainage ditch. Sample collection from 0 – 5 feet bgl was accomplished using a decontaminated hand auger. Sample collection from 5 to 16 feet was accomplished using the HSA drilling method and split spoon samplers. The split spoon samplers were decontaminated between each sample. Five soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 5.0 ppm, no odor, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 7.2 ppm, no odor, required interval;
- 8 feet bgl to 10 feet bgl: PID reading – 15.6 ppm, no odor, highest PID reading:
- 10 feet bgl to 10.5 feet bgl: PID reading – 13.1 ppm, no odor, bottom of clay interval and interval immediately above saturation; and
- 14 feet bgl to 16 feet bgl: no odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Silt: 0 – 1.5 feet bgl (very fine grain, loose, dry to damp, brown, no odor);
- Silty Clay: 1.5 feet bgl – 5 feet bgl (low to moderate plasticity, firm, damp, brown, calcareous, no odor);
- Clay: 5 feet bgl – 10.5 feet bgl (high plasticity, stiff, damp, brown, no odor, increase in silt at 10 feet bgl);
- Clayey Sand/Sand: 10.5 feet bgl – 12 feet bgl (fine grain, compact to loose, saturated, brown, no odor);
- Silty Sand/Sandy Silt: 12 feet bgl – 14 feet bgl (very fine grain, loose, saturated, brown, no odor); and
- Clay: 14 feet bgl – 16 feet bgl (high plasticity, stiff, damp, brown, no odor).

The sampling was terminated at 16 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 6 feet bgl to 16 feet bgl. Groundwater samples were collected as discussed below in Section 4.4.1. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-6

On October 23, 2019 the CME 55 track drilling rig was set up on location SWMU 13-6. SWMU 13-6 is located east of the small retention pond (located south of the drainage ditch). The ground surface at SWMU 13-6 is approximately 2.31 feet above the bottom of the retention pond. Sample collection from 0 – 5 feet bgl was accomplished using a decontaminated hand auger. Sample collection from 5 to 18 feet was accomplished using the HSA drilling method and split spoon samplers. The split spoon samplers were decontaminated between each sample. Six soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 5.1 ppm, no odor, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 15.6 ppm, no odor, required interval;
- 2 feet bgl to 3 feet bgl: PID reading – 15.7 ppm, no odor, highest PID reading and interval immediately above saturation;
- 6 feet bgl to 8 feet bgl: PID reading – 11.3 ppm, exhibited a hydrocarbon odor;
- 10 feet bgl to 11 feet bgl: PID reading – 4.7 ppm, no odor, interval immediately above saturation; and
- 17 feet bgl to 18 feet bgl: PID reading – 1.2 ppm, no odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Silty Clay: 0 – 3 feet bgl (low plasticity, soft, damp, brown, no odor, moisture increases from 2 feet bgl to 3 feet bgl);
- Clayey Silt/Silty Clay: 3 feet bgl – 5 feet bgl (low plasticity, very soft/creamy, saturated, hydrocarbon odor);
- Clay: 5 feet bgl – 6 feet bgl (moderate to low plasticity, soft, damp, brown, faint odor);
- Clay: 6 feet bgl – 11 feet bgl (high plasticity, stiff, damp, brown, hydrocarbon odor, no odor detected from 8 feet bgl to 11 feet bgl);
- Clayey Sand: 11 feet bgl – 12 feet bgl (fine grain, compact, saturated, brown, no odor);
- Sand/Silty Sand: 12 feet bgl – 14 feet bgl (fine to medium grain, loose, saturated, brown, no odor, gravelly at base).

The sampling for the day ceased at 14 feet bgl. On October 24, 2019 sampling resumed. The lithology encountered consisted of the following:

- Silty Sand: 14 feet bgl – 17 feet bgl (fine grain, compact, damp to saturated, brown, no odor, high plasticity at the base); and
- Clay: 17 feet bgl – 18 feet bgl (high plasticity, stiff, damp, brown, no odor).

The sampling was terminated at 18 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 2 feet bgl to 17 feet bgl. Groundwater samples were collected as discussed below in Section 4.4.1. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-7

On October 24, 2019 the CME 55 track drilling rig was set up on location SWMU 13-7. SWMU 13-7 is located east of the small retention pond (located south of the drainage ditch). The ground surface at SWMU 13-7 is approximately 3.01 feet above the bottom of the retention pond. Sample collection from 0 – 3 feet bgl was accomplished using a decontaminated hand auger. Discrete soil samples could not be collected from 3 feet bgl to 5 feet bgl using the hand auger due to collapsing soil/sediment. Sample collection from 3 to 18 feet was accomplished using the HSA drilling method and split spoon samplers. The split spoon samplers were decontaminated between each sample. Six soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 0.9 ppm, no odor, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 2.3 ppm, no odor, required interval and immediately above saturation;
- 4 feet bgl to 6 feet bgl: Saturated, no PID reading, exhibited odor and was black;
- 10 feet bgl to 12 feet bgl: PID reading – 10.6 ppm, base of clay;
- 12 feet bgl to 13 feet bgl: PID reading – 8.0 ppm, no odor, interval immediately above saturation; and
- 17.5 feet bgl to 18 feet bgl: PID reading – 6.6 ppm, no odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Silty Clay: 0 – 2 feet bgl (low plasticity, soft, damp, brown, no odor);
- Clayey Silt: 2 feet bgl – 3 feet bgl (low plasticity, very soft, saturated, hydrocarbon odor);

- Sand: 3 feet bgl – 4 feet bgl (poor recovery, black sand in shoe, hydrocarbon odor/organic odor);
- Sand: 4 feet bgl – 7.5 feet bgl (medium grained, soft/loose, saturated, black, hydrocarbon odor/organic odor, CL clay at 6 feet bgl);
- Clay: 7.5 feet bgl – 12 feet bgl (high plasticity, firm, damp, brown, no odor);
- Silty Clay: 12 feet bgl – 13 feet bgl (low plasticity, soft, damp, brown);
- Silty Sand: 13 feet bgl – 14 feet bgl (very fine grain, loose to compact, saturated, brown, no odor;
- Clay: 14 feet bgl to 16 feet bgl – poor recovery – high plasticity clay in split spoon shoe
- Silty Sand 16 feet bgl to 17.5 feet bgl (very fine grain, loose to compact, saturated, brown, no odor); and
- Clay: 17.5 feet bgl – 18 feet bgl (high plasticity, firm, damp, no odor).

The sampling was terminated at 18 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 1.5 feet bgl to 16.5 feet bgl. Groundwater samples were collected as discussed below in Section 4.4.1. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-8

On October 24, 2019 soil samples were collected from boring location SWMU 13-8. SWMU 13-8 is located at the western end of the drainage ditch. The ground surface of SWMU 13-8 is the base of the drainage ditch. Sample collection from 0 – 3 feet bgl was accomplished using a decontaminated hand auger. Three soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 2.1 ppm, no odor, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 3.5 ppm, no odor, required interval; and
- 2 feet bgl to 3 feet bgl: PID reading – 2.6 ppm, no odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Silty Clay: 0 – 1 feet bgl (low plasticity, firm, damp, brown, no odor); and
- Clay: 1 feet bgl – 3 feet bgl (high plasticity, firm to stiff, damp, brown, no odor).

The sampling was terminated at 3 feet bgl. The borehole was filled with bentonite pellets and hydrated with potable water.

SWMU 13-9

On October 24, 2019 soil samples were collected from boring location SWMU 13-9. SWMU 13-9 is located at the western end of the drainage ditch. The ground surface of SWMU 13-9 is the base of the drainage ditch. Sample collection from 0 – 3 feet bgl was accomplished using a decontaminated hand auger. Three soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 3.3 ppm, hydrocarbon odor, stained black and grayish green, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 3.7 ppm, odor, required interval; and
- 2 feet bgl to 3 feet bgl: PID reading – 6.7 ppm, odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Silty Clay: 0 – 1 feet bgl (low plasticity, firm, damp, stained black and grayish green, hydrocarbon odor); and
- Clay: 1 feet bgl – 3 feet bgl (high plasticity, firm to stiff, damp, brown, no odor).

The sampling was terminated at 3 feet bgl. The borehole was filled with bentonite pellets and hydrated with potable water.

SWMU 13-10

On October 25, 2019 soil samples were collected from boring location SWMU 13-10. SWMU 13-10 is located approximately at the midpoint of the drainage ditch. The ground surface of SWMU 13-10 is the base of the drainage ditch. Sample collection from 0 – 3 feet bgl was accomplished using a decontaminated hand auger. Three soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 1.3 ppm, faint odor, stained black and greenish gray, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 1.7 ppm, odor, required interval; and
- 2 feet bgl to 3 feet bgl: PID reading – 1.7 ppm, odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Silty Clay: 0 – 1 feet bgl (low plasticity, firm, damp, stained black and greenish gray, faint odor); and
- Clay: 1 feet bgl – 3 feet bgl (high plasticity, firm, damp, brown, odor, sticky).

The sampling was terminated at 3 feet bgl. The borehole was filled with bentonite pellets and hydrated with potable water.

SWMU 13-11

On October 25, 2019 soil samples were collected from boring location SWMU 13-11. SWMU 13-11 is located in the eastern half of the drainage ditch. The ground surface of SWMU 13-11 is the base of the drainage ditch. Sample collection from 0 – 3 feet bgl was accomplished using a decontaminated hand auger. Three soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 2.6 ppm, odor, stained black and greenish gray, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 5.1 ppm, odor, required interval; and
- 2 feet bgl to 3 feet bgl: PID reading – 5.1 ppm, odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Clayey Silt/Sand: 0 – 1 feet bgl (low plasticity, fine grain, compact, damp, odor, stained black and greenish gray); and
- Clay: 1 feet bgl – 3 feet bgl (high plasticity, firm, damp, brown, odor).

The sampling was terminated at 3 feet bgl. The borehole was filled with bentonite pellets and hydrated with potable water.

SWMU 13-12

On October 25, 2019 soil samples were collected from boring location SWMU 13-12. SWMU 13-12 is located at the eastern end of the drainage ditch. The ground surface of SWMU 13-12 is the base of the drainage ditch. Sample collection from 0 – 3 feet bgl was accomplished using a

decontaminated hand auger. Four soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 2.9 ppm, no odor, required interval;
- 0.5 feet bgl to 1.5 feet bgl: PID reading – 16.3 ppm, light yellowish gray, faint odor, highest PID reading;
- 1.5 feet bgl to 2 feet bgl: PID reading – 5.3 ppm, no odor, required interval; and
- 2 feet bgl to 3 feet bgl: PID reading – 7.1 ppm, no odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Clayey Silt: 0 – 0.5 feet bgl (low plasticity, soft, damp, dark brown, no odor);
- Clayey Sand: 0.5 – 1.5 feet bgl (fine grain, light yellowish gray, faint odor, damp, crumbly); and
- Silty Clay: 1.5 feet bgl – 3 feet bgl (low to moderate plasticity, firm, damp, no odor).

The sampling was terminated at 3 feet bgl. The borehole was filled with bentonite pellets and hydrated with potable water.

SWMU 13-13

On October 25, 2019 soil samples were collected from boring location SWMU 13-13. SWMU 13-13 is located in the northern end of the retention pond. The ground surface of SWMU 13-13 is the base of the retention pond. Sample collection from 0 – 3 feet bgl was accomplished using a decontaminated hand auger. Three soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 13.7 ppm, odor, stained black, green and orange, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 204 ppm, hydrocarbon odor, highest PID reading, black, required interval; and
- 2 feet bgl to 3 feet bgl: PID reading – 45 ppm, hydrocarbon odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Silt/Sand: 0 – 0.5 feet bgl (shrinkage cracks present, fine grain, dry to damp, odor, becomes stained black, green and orange, soft at base);
- Clay/Silty Clay: 0.5 – 2 feet bgl (moderate to high plasticity, very soft, hydrocarbon odor, damp to moist, black); and
- Clayey Sand/Sandy Clay: 2 feet bgl – 3 feet bgl (low plasticity, soft, moist to saturated, brown, hydrocarbon odor).

The sampling was terminated at 3 feet bgl. The borehole was filled with bentonite pellets and hydrated with potable water.

SWMU 13-14

On October 25, 2019 soil samples were collected from boring location SWMU 13-14. SWMU 13-14 is located in the southern end of the retention pond. The ground surface of SWMU 13-14 is the base of the retention pond. Sample collection from 0 – 3 feet bgl was accomplished using a decontaminated hand auger. Three soil samples were collected for laboratory analysis from the following intervals:

- 0 – 0.5 feet bgl: PID reading – 6.3 ppm, odor, brown/ yellowish brown, trace black discoloration, required interval;
- 1.5 feet bgl to 2 feet bgl: PID reading – 18.7 ppm, faint odor, required interval; and
- 2 feet bgl to 3 feet bgl: PID reading – 13.3 ppm, faint odor, bottom of the borehole.

The lithology encountered consisted of the following:

- Sandy Clay: 0 – 0.5 feet bgl (low plasticity, soft, damp to very moist, odor, brown/yellowish brown, trace black discoloration); and
- Clayey Sand: 2 feet bgl – 3 feet bgl (very fine grain, soft, saturated, brown, faint odor).

The sampling was terminated at 3 feet bgl. The borehole was filled with bentonite pellets and hydrated with potable water.

4.4 Monitor Well Construction and Groundwater Sampling

Groundwater samples were collected from six temporary well completions in November 2019. The following list provides a brief summary of the well development and groundwater sample collection activities:

- SWMU 13-1; well was dry and was not sampled;
- SWMU 13-2; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 13-3; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 13-4; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 13-5; developed and sampled; yielded enough water for a full analytical suite;
- SWMU 13-6; developed and sampled; yielded enough water for a full analytical suite; and
- SWMU 13-7; developed and sampled; yielded enough water for a full analytical suite.

4.4.1 Groundwater Investigation

The drilling equipment was decontaminated between each borehole, as described in Appendix E. The well development and purging are also discussed in Appendix E. The installation of the temporary wells and the collection of groundwater samples are discussed below in numerical order. The fluid level measurements discussed below are provided in Table 2 with the field water quality measurements.

SWMU 13-1

On October 22, 2019 the CME 55 track drilling rig was set up on location SWMU 13-1. The boring was installed using the HSA drilling method. Groundwater was encountered in a clayey sand/sand (10 feet bgl to 14 feet). The sampling was terminated at 16 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 6 feet bgl to 16 feet bgl. The top of the screen was set approximately 4 feet above the uppermost saturated interval (clayey sand/sand – 10 feet bgl to 14 feet bgl). The screen was extended to a depth of 16 feet bgl which allowed for screening across the saturated interval. The screen terminated in a clay (14 feet bgl to 16 feet bgl) that was damp and did not exhibit visual or olfactory evidence of being impacted. The top of casing was 3 feet above the ground surface. Filter pack sand was installed around the screen and extended to 4 feet bgl. A bentonite seal was installed from ground level to 4 feet bgl.

On October 23, 2019, October 28, 2019, November 5, 2019, and November 11, 2019, the well was gauged and no fluids were detected. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-2

On October 22, 2019 the CME 55 track drilling rig was set up on location SWMU 13-2. The boring was installed using the HSA drilling method. The sampling was terminated at 16 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 6 feet bgl to 16 feet bgl. The top of the screen was set approximately 6 feet above the uppermost saturated interval (clay –12 feet bgl to 13.5 feet bgl). The screen was extended to a depth of 16 feet bgl which allowed for screening across saturated interval. The screen terminated in a silty clay (15.5 feet bgl to 16 feet bgl) that was damp and did not exhibit visual or olfactory evidence of being impacted. The top of casing was 3 feet above the ground surface. Filter pack sand was installed around the screen and extended to 4 feet bgl. A bentonite seal was installed from ground level to 4 feet bgl.

On October 23, 2019 the well was gauged. Groundwater was detected 14.86 feet below top of casing (btoc) / 11.86 bgl. The well was developed on October 23, 2019 and bailed dry after 3.10 gallons. Additional gauging was conducted with the following results:

- October 24, 2019 – No SPH was detected. Depth to groundwater was 17.11 feet btoc / 14.11 feet bgl;
- October 28, 2019 - No SPH was detected. Depth to groundwater was 15.48 feet btoc / 12.48 feet bgl; and
- November 5, 2019 – No SPH was detected. Depth to groundwater was 14.94 feet btoc / 11.94 feet bgl.

The well was purged on November 5, 2019 and sampled on November 6, 2019. The well yielded enough water to collect samples for all analyses. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-3

On October 22, 2019 the CME 55 track drilling rig was set up on location SWMU 13-3. The sampling was terminated at 16 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 6 feet bgl to 16 feet bgl. The top of the screen was set approximately 4 feet above the uppermost

saturated interval (sandy clay – 10 feet bgl to 12.75 feet bgl). The screen was extended to a depth of 16 feet bgl which allowed for screening across the uppermost saturated interval encountered (10 feet bgl to 12.75 feet bgl) and a lower saturated interval (15.25 feet bgl to 16 feet bgl). The screen terminated in saturated clayey sand (15.25 feet bgl to 16 feet bgl). This interval did not exhibit visual or olfactory evidence of being impacted. The top of casing was 3 feet above the ground surface. Filter pack sand was installed around the screen and extended to 4 feet bgl. A bentonite seal was installed from ground level to 4 feet bgl.

On October 23, 2019 the well was gauged. Groundwater was detected 12.52 feet btoc / 9.52 feet bgl. The well was developed on October 23, 2019. Sixty-six gallons of groundwater were removed during development. Additional gauging was conducted with the following results:

- October 24, 2019 – No SPH was detected. Depth to groundwater was 12.57 feet btoc / 9.57 feet bgl;
- October 28, 2019 - No SPH was detected. Depth to groundwater was 12.35 feet btoc / 9.35 feet bgl; and
- November 5, 2019 – No SPH was detected. Depth to groundwater was 12.77 feet btoc / 9.77 feet bgl.

The well was purged on November 5, 2019 and sampled on November 6, 2019. The well yielded enough water to collect samples for all analyses. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-4

On October 23, 2019 the CME 55 track drilling rig was set up on location SWMU 13-4. The sampling was terminated at 16 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 6 feet bgl to 16 feet bgl. The top of the screen was set approximately 4 feet above the uppermost saturated interval (clayey sand – 10 feet bgl to 13.75 feet bgl). The screen was extended to a depth of 16 feet bgl which allowed for screening across the uppermost saturated interval encountered (10 feet bgl to 13.75 feet bgl) and a lower saturated interval (15.5 feet bgl to 16 feet bgl). The screen terminated in saturated sand (15.5 feet bgl to 16 feet bgl). This interval did not exhibit visual or olfactory evidence of being impacted. The top of casing was 3 feet above the ground surface. Filter

pack sand was installed around the screen and extended to 4 feet bgl. A bentonite seal was installed from ground level to 4 feet bgl.

On October 24, 2019 the well was gauged. Groundwater was detected 12.78 feet btoc / 9.78 feet bgl. The well was developed on October 24, 2019. The well bailed dry after 3.5 gallons of groundwater were removed. Additional gauging was conducted with the following results:

- October 28, 2019 – No SPH was detected. Depth to groundwater was 12.64 feet btoc / 9.64 feet bgl. An additional 3.5 gallons of groundwater were developed from this well;
- October 29, 2019 - No SPH was detected. Depth to groundwater was 12.74 feet btoc / 9.74 feet bgl; and
- November 5, 2019 – No SPH was detected. Depth to groundwater was 12.77 feet btoc / 9.77 feet bgl.

The well was purged dry on November 5, 2019 and sampled on November 6, 2019. The well yielded enough water to collect samples for all analyses. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-5

On October 23, 2019 the CME 55 track drilling rig was set up on location SWMU 13-5. The sampling was terminated at 16 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 6 feet bgl to 16 feet bgl. The top of the screen was set approximately 4.5 feet above the uppermost saturated interval (clayey sand – 10.5 feet bgl to 12 feet bgl). The screen was extended to a depth of 16 feet bgl which allowed for screening across the uppermost saturated interval encountered. The screen terminated in clay (14 feet bgl to 16 feet bgl). This interval did not exhibit visual or olfactory evidence of being impacted. The top of casing was 3 feet above the ground surface. Filter pack sand was installed around the screen and extended to 4 feet bgl. A bentonite seal was installed from ground level to 4 feet bgl.

On October 24, 2019 the well was gauged. Groundwater was detected 13.14 feet btoc / 10.14 feet bgl. The well was developed on October 24, 2019. The well bailed dry after 6.5 gallons of groundwater were removed. Additional gauging was conducted with the following results:

- October 28, 2019 – No SPH was detected. Depth to groundwater was 12.85 feet btoc / 9.85 feet bgl;

- October 29, 2019 - No SPH was detected. Depth to groundwater was 12.78 feet btoc / 9.78 feet bgl. An additional 7 gallons of groundwater were developed from this well; and

- November 5, 2019 – No SPH was detected. Depth to groundwater was 12.96 feet btoc / 9.96 feet bgl.

On November 5, 2019 the well was purged. Approximately 6.3 gallons of groundwater were purged from the well. The well was sampled on November 7, 2019. The well yielded enough water to collect samples for all analyses. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-6

On October 23, 2019 the CME 55 track drilling rig was set up on location SWMU 13-6. The sampling for the day ceased at 14 feet bgl. On October 24, 2019 sampling resumed. The sampling was terminated at 18 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 2 feet bgl to 17 feet bgl. The top of the screen was set approximately 1 foot above the uppermost saturated interval (clayey silt/silty clay – 3 feet bgl to 5 feet bgl). The screen was extended to a depth of 17 feet bgl which allowed for screening across the uppermost saturated interval encountered and the lowermost saturated interval (11 feet bgl to 17 feet bgl). The screen terminated in clay (17 feet bgl to 18 feet bgl). This interval did not exhibit visual or olfactory evidence of being impacted. The top of casing was 2 feet above the ground surface. Filter pack sand was installed around the screen and extended to 1 foot bgl. A bentonite seal was installed from ground level to 1 foot bgl.

On October 28, 2019 the well was gauged. No SPH was detected. Groundwater was detected 13.98 feet btoc / 11.98 feet bgl. The well was developed on October 28, 2019. The well bailed dry after 1.1 gallons of groundwater were removed. Additional gauging was conducted with the following results:

- October 29, 2019 – No SPH was detected. Depth to groundwater was 13.94 feet btoc / 11.94 feet bgl; and

- November 6, 2019 – No SPH was detected. Depth to groundwater was 13.96 feet btoc / 11.96 feet bgl.

On November 6, 2019 the well was purged. Approximately 0.75 gallons of groundwater were purged from the well. The well was sampled on November 7, 2019. The well yielded enough water to collect samples for all analyses. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

SWMU 13-7

On October 24, 2019 the CME 55 track drilling rig was set up on location SWMU 13-7. The sampling was terminated at 18 feet bgl. A temporary monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 1.5 feet bgl to 16.5 feet bgl. The top of the screen was set approximately 0.5 foot above the uppermost saturated interval (clayey silt – 2 feet bgl to 3 feet bgl). The screen was extended to a depth of 16.5 feet bgl which allowed for screening across the uppermost saturated interval encountered and the lowermost saturated interval (13 feet bgl to 17.5 feet bgl). The screen terminated in silty sand (16 feet bgl to 17.5 feet bgl). This interval did not exhibit visual or olfactory evidence of being impacted. The top of casing was 3 feet above the ground surface. Filter pack sand was installed around the screen and extended to 1 foot bgl. A bentonite seal was installed from ground level to 1 foot bgl.

On October 28, 2019 the well was gauged. No SPH was detected. Groundwater was detected 15.44 feet btoc / 12.44 feet bgl. The well was developed on October 28, 2019. The well bailed dry after 2.6 gallons of groundwater were removed. Additional gauging was conducted with the following results:

- October 29, 2019 – No SPH was detected. Depth to groundwater was 15.39 feet btoc / 12.39 feet bgl. An additional 2.2 gallons of groundwater were developed from this well; and

- November 6, 2019 – No SPH was detected. Depth to groundwater was 15.40 feet btoc / 12.40 feet bgl.

On November 6, 2019 the well was purged. Approximately 1.5 gallons of groundwater were purged from the well. The well was sampled on November 7, 2019. The well yielded enough water to

collect samples for all analyses. On November 12, 2019 the well casing and screen were removed and the borehole was grouted.

Section 5
Regulatory Criteria

The applicable screening and potential cleanup levels are specified in NMED's *Risk Assessment Guidance for Site Investigations and Remediation* dated March 2019 and in the Environmental Protection Agency's (EPA) Regional Screening Levels dated November 2019.

For non-residential properties (e.g., the Gallup Refinery), the soil screening levels must be protective of commercial/industrial workers throughout the upper one foot of surface soils and construction workers throughout the upper ten feet based on NMED criteria. NMED residential soil screening levels are applied to the upper ten feet and soil screening levels for protection of groundwater apply throughout the vadose zone. EPA soil screening levels for direct contact exposure apply to the upper two feet of the vadose zone. To achieve closure as "corrective action complete without controls," the affected media must meet residential screening levels, which are presented in Table 3. Table 3 also provides a list of the available NMED and EPA soil screening levels for non-residential properties. While Table 3 indicates the various depths to which the individual soil screening levels are applicable, Table 5 discussed below does not include this level of detail. Table 3 has soil screening levels for the soil-to-groundwater pathway that are based on a dilution/attenuation factor (DAF) of 1.0, which is NMED's most conservative screening level for this pathway.

The groundwater cleanup levels are based on New Mexico Water Quality Control Commission (WQCC) standards (20.6.2.7 WW NMAC, 20.6.2.3103, and 20.6.2.4103) unless there is a federal maximum contaminant level (MCL), in which case the lower of the two values is selected as the cleanup level. If neither a WCQQ standard nor an MCL is available, then the cleanup level is based on a NMED Tap Water Screening Level. If a NMED Tap Water Screening Level is not available for a constituent, then an EPA Regional Screening Level is used. If an EPA Regional Screening Level is for a carcinogenic compound, then the screening level is multiplied by 10 to bring the risk level to 1E-05 to be consistent with the NMED screening levels. Table 4 presents the groundwater cleanup levels.

The screening levels that are compared to individual soil sample results are presented in Table 5. The screening levels included in Table 5 are based on residential and non-residential land use. For the non-residential screening levels, the lower of the construction worker scenario and commercial/industrial scenario screening levels for each constituent is included in the data tables if

NMED screening levels are available. If NMED soil screening levels are not available for a particular constituent, then EPA soils screening levels are used. If an EPA soil screening level is for a carcinogenic compound, then the screening level is multiplied by 10 to bring the risk level to 1E-05 to be consistent with the NMED screening levels. The screening levels in Table 5 have not been segregated based on depth of the soil sample as discussed above for Table 3. The screening levels that are compared to individual groundwater sample results are presented in Table 6.

A review of the NMED guidelines for TPH indicates that the TPH screening levels were developed based on screening levels and compositional assumptions developed by the Massachusetts Department of Environmental Protection (MADEP). The analytical results, as presented in Table 5, are reported for gasoline range organics (C6-C10), diesel range organics (>C10-C28), and motor oil range organics (>C28-C35). The applicable TPH screening levels for comparison to the individual soil samples are selected from Table 6-2 of the NMED guidance (NMED, 2019).

As there could have been a variety of petroleum types (e.g., various refined products) in contact with the refinery wastewater water that flowed through SWMU No. 13, the screening level for "unknown oil" was selected for comparison to the gasoline range, diesel range and motor oil range soil analytical results. The motor oil range analytical results are compared to the "unknown oil" screening level as directed by NMED. However, it is noted that the laboratory analyses for motor oil range organics only reports results for the >C28 to C35 hydrocarbon range, while the "unknown oil" screening level is based on a hydrocarbon mixture assumed to include only C11-C22 aromatics.

Some of the individual constituents reported by the laboratory in the soil results do not have screening levels but were all non-detect. With respect to groundwater, there were also detections of constituents that do not have screening levels, but all were non-detect.

Section 6
Site Impacts

This section discusses the chemical analyses performed and presents the analytical results that were obtained through the analysis of soil and groundwater samples. The results for soils and groundwater analyses are compared to applicable screening levels, as described in Section 5.0.

6.1 Soil Analytical Results

Soil samples were analyzed by Hall Environmental Analysis Laboratory in Albuquerque, New Mexico using the following methods for organic constituents:

- SW-846 Method 8260/5035 volatile organic compounds;
- SW-846 Method 8270C semi-volatile organic compounds; and
- SW-846 Method 8015D gasoline, diesel, and motor oil range petroleum hydrocarbons.

Soil samples were analyzed for the following metals using the indicated analytical methods, respectively.

Analyte	Analytical Method
Antimony	SW-846 Method 6010B
Arsenic	SW-846 Method 6010B
Barium	SW-846 Method 6010B
Beryllium	SW-846 Method 6010B
Cadmium	SW-846 Method 6010B
Chromium	SW-846 Method 6010B
Cobalt	SW-846 Method 6010B
Cyanide	SW-846 Method 9012B
Iron	SW-846 Method 6010B
Lead	SW-846 Method 6010B
Mercury	SW-846 Method 7471
Manganese	SW-846 Method 6010B
Nickel	SW-846 Method 6010B

Analyte	Analytical Method
Selenium	SW-846 Method 6010B
Silver	SW-846 Method 6010B
Vanadium	SW-846 Method 6010B
Zinc	SW-846 Method 6010B

The analytical results for soil samples are summarized in Table 5. The individual results that exceed the applicable cleanup levels are highlighted and/or bolded, as noted in the table footnotes. Maps showing the distribution of constituents detected in soils above the lowest applicable screening levels are included as Figures 8 through 11. The concentrations shown on figures that exceed the screening levels in Table 5 are underlined. The laboratory analytical reports are included in Appendix H and the data validation of the results, which includes the analytical results for the associated QA/QC samples, is included in Appendix I. The constituents that have concentrations in soils above screening levels are discussed below.

Chromium (total) was detected at a concentration of 110 mg/kg, which is above the residential soil screening level of 96.6 mg/kg, in sample SWMU 13-4 (0-0.5'). It was detected at 270 mg/kg and 160 mg/kg, which exceeds the non-residential screening level of 134 mg/kg, in samples SWMU 13-9 (0-0.5') and SWMU 13-10 (0-0.5'). The detected concentrations range from 4.8 to 270 mg/kg. The concentrations are plotted on Figure 8.

All manganese sample results are less than the residential soil screening level of 10,500 mg/kg. Five soil samples [SWMU 13-1 (1.5-2'), SWMU 13-2 (1.5-2'), SWMU 13-5 (1.5-2'), SWMU 13-7 (17.5-18'), and SWMU 13-12 (0-0.5')] have concentrations ranging from 520 mg/kg to 920 mg/kg, which exceed the non-residential screening level of 464 mg/kg. The detected concentrations range from 170 mg/kg to 920 mg/kg. The concentrations are plotted on Figure 9.

Diesel Range Organics were detected at concentrations above the residential soil screening level of 1,000 mg/kg in three soil samples [SWMU 13-4 (0-0.5'), SWMU 13-9 (0-0.5'), and SWMU 13-10 (0-0.5')] at concentrations of 1,200 mg/kg, 2,400 mg/kg, and 2,300 mg/kg , respectively, as indicated with highlighting in Table 5. Concentrations exceed the non-residential screening level of 3,800 mg/kg in samples SWMU 13-11 (0-0.5') and SWMU 13-13 (0-0.5') at concentrations of 4,300 mg/kg and 5,500 mg/kg, respectively. The detected concentrations range from 1.9 mg/kg to 5,500 mg/kg. The concentrations are plotted on Figure 10.

Motor Oil Range Organics were detected at concentrations above the residential soil screening level of 1,000 mg/kg in three soil samples [SWMU 13-4 (0-0.5'), SWMU 13-9 (0-0.5'), and SWMU 13-10 (0-0.5')] at concentrations of 1,300 mg/kg, 1,900 mg/kg, and 2,600 mg/kg, respectively. Concentrations exceed the non-residential screening level of 3,800 mg/kg in samples SWMU 13-11 (0-0.5') and SWMU 13-13 (0-0.5') at concentrations of 4,400 mg/kg and 5,400 mg/kg, respectively. The detected concentrations range from 65 mg/kg to 5,400 mg/kg. The concentrations are plotted on Figure 11.

6.2 Groundwater Analytical Results

The groundwater samples were analyzed for organic constituents by the following methods:

- SW-846 Method 8260 volatile organic compounds;
- SW-846 Method 8270 semi-volatile organic compounds;
- SW-846 Method 8015D gasoline range organics; and
- SW-846 Method 8015M/D diesel and motor oil range organics.

Groundwater samples were analyzed for the following total and dissolved metals using the indicated analytical methods.

Analyte	Analytical Method
Antimony	SW-846 Method 200.8
Arsenic	SW-846 Method 200.8
Barium	SW-846 Method 200.7
Beryllium	SW-846 Method 200.7
Cadmium	SW-846 Method 200.7
Chromium	SW-846 Method 200.7
Cobalt	SW-846 Method 200.7
Iron	SW-846 Method 200.7
Lead	SW-846 Method 200.8
Manganese	SW-846 Method 200.7
Nickel	SW-846 Method 200.7

Analyte	Analytical Method
Selenium	SW-846 Method 200.8
Silver	SW-846 Method 200.7
Vanadium	SW-846 Method 200.7
Zinc	SW-846 Method 200.7

Groundwater samples were also analyzed for the following total metals using the indicated analytical methods.

Analyte	Analytical Method
Cyanide	SW-846 Method 9012B
Mercury	SW-846 Method 245.1

In addition, groundwater samples were analyzed for chloride, fluoride, nitrate, nitrite, and sulfate using EPA method 300. Groundwater samples were also evaluated in the field using field test kits for nitrate and nitrite as discussed in Appendix E.

The analytical results and the applicable cleanup levels are presented in Table 6. The individual results that exceed the applicable cleanup levels are bolded. Maps depicting the distribution of the various constituents detected in groundwater samples above the screening levels are provided in Figures 12 through 15, with the concentrations that exceed the screening levels underlined. The results for the associated QA/QC samples and the data validation are provided in Appendix I. The laboratory analytical reports are included in Appendix H. The constituents with reported concentrations that exceed screening levels are discussed below.

Total arsenic was detected above the screening level of 10 micrograms per liter (ug/l) in one sample collected at SWMU 13-7 at a concentration of 22 ug/l. The detected total arsenic concentrations range from 3 ug/l to 22 ug/l. The total analyses are shown on Figure 12. One sample (SWMU 13-7) has a dissolved arsenic concentration above the screening level at 14 ug/l, with dissolved detections ranging from 1.6 ug/l to 14 ug/l. The dissolved analyses are shown on Figure 14.

Beryllium (total analyses only) was detected above the screening level of 4 ug/l in one groundwater sample collected at SWMU 13-2 at a concentration of 6.7 ug/l. None of the samples from the

dissolved analyses detected the presence of beryllium above the screening level. The detected total analyses range from 0.57 ug/l to 6.7 ug/l. The total analyses are shown on Figure 12.

Iron was detected above the screening level in samples analyzed for total (four exceedances at SWMU 13-2, SWMU 13-4, SWMU 13-6, and SWMU13-7) and dissolved analyses (one exceedance at SWMU 13-7). The total iron analyses range from 150 ug/l to 20,000 ug/l in comparison to a screening level of 1,000 ug/l. The dissolved analyses range from 11 ug/l to 1,600 ug/l vs. a screening level of 1,000 ug/l. The total analyses are shown on Figure 12 and the dissolved analyses results are shown on Figure 14.

Lead (total analyses) was detected at a concentration (44 ug/l) above the screening level (15 ug/l) in one of the groundwater samples collected that was collected at SWMU 13-2. The total lead analyses range from 0.8 ug/l to 44 ug/l. None of the dissolved analyses exceed the screening level of 15 ug/l, with the dissolved analyses for lead ranging from 0.38 ug/l to 0.81 ug/l. The total analyses are shown on Figure 12.

Manganese was detected above the screening level (200 ug/l) in both total and dissolved analyses collected at all six locations (SWMU 13-2, SWMU 13-3, SWMU 13-4, SWMU 13-5, SWMU 13-6, and SWMU13-7). The total analyses results range from 4,700 ug/l to 27,000 ug/l. The dissolved manganese concentrations range from 4,400 ug/l to 27,000 ug/l. The total analyses are shown on Figure 13 and the dissolved analyses results are shown on Figure 14.

Chloride was detected above the screening level (250,000 ug/l) in five of the groundwater samples (SWMU 13-3, SWMU 13-4, SWMU 13-5, SWMU 13-6, and SWMU13-7). The analytical results range from 5,700 ug/l to 6,100,000 ug/l. The concentrations are shown on Figure 13.

Sulfate was detected above the screening level (600,000 ug/l) in four of the groundwater samples (SWMU 13-2, SWMU 13-3, SWMU 13-4, and SWMU 13-6) with concentrations ranging from 660,000 ug/l to 1,200,000 ug/l. The detected analytical results range from 240,000 ug/l to 1,200,000 ug/l. The concentrations are shown on Figure 13.

Fluoride was detected in one groundwater sample (SWMU 13-7) and it was above the screening level (1,600 ug/l) with a concentration of 12,000 ug/l. The concentrations are shown on Figure 13.

Nitrate exceeded the screening level of 10,000 ug/l in samples SWMU 13-5 and SWMU 13-7 at concentrations of 14,000 ug/l and 12,000 ug/l, respectively, based on the field analyses using a

field test kit as described in Appendix E. However, the same samples were analyzed by the off-site laboratory and had reported concentrations of 170 ug/l for SWMU 13-5 and <30 ug/l for SWMU 13-7. The laboratory analytical results and the results using the field test kit are included in Table 6.

Gasoline Range Organics were detected above the screening level (39.8 ug/l) in five groundwater samples (SWMU 13-2, SWMU 13-3, SWMU 13-4, SWMU 13-5, and SWMU13-7). The detected concentrations range from 42 ug/L to 730 ug/L. The concentrations are shown on Figure 15.

Diesel Range Organics were detected above the screening level (39.8 ug/l) in four groundwater samples (SWMU 13-2, SWMU 13-3, SWMU 13-5, and SWMU13-7). The detected concentrations range from 280 ug/L to 610 ug/L. The concentrations are shown on Figure 15.

6.3 General Groundwater Chemistry

The measurement of field purging parameters included measurement of groundwater pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, turbidity, and temperature. The final results of the measurements taken before sample collection are included in Table 2.

Section 7
Conclusions and Recommendations

This section summarizes and provides an evaluation of the potential impacts as shown in field screening data and analytical data. This is followed by recommendations for any future actions.

7.1 Conclusions

Soils

The analytical results from soil samples indicate impacts to the environment from past operations at SWMU No. 13, which included flow of refinery wastewater through an unlined earthen ditch. As noted above in Section 6.1, two metals (chromium and manganese) were detected at concentrations above screening levels. The exceedance of screening levels for organic analyses was limited to diesel range and motor oil range organics. The exceedances occur primarily within the upper two feet with one exception of manganese that occurred at a depth of 17.5 feet to 18.0 feet at boring SWMU 13-7. The highest concentrations of organic constituents were detected in soil samples collected from within the drainage ditch vs. soil samples collected adjacent to the ditch in the deeper soil borings installed to support collection of groundwater samples.

Groundwater

Concentrations of five metals (arsenic, beryllium, iron, lead, and manganese) in the total metals analyses exceed screening levels, while three (arsenic, iron, and manganese) of the same constituents exceed screening levels in the dissolved metals analyses. Chloride and sulfate were found at concentrations exceeding screening levels in the majority of the groundwater samples, with fluoride present above the screening level in only one groundwater sample. The exceedances of groundwater screening levels occurred for at least one constituent in each of the temporary wells indicating potential groundwater impacts across the area of investigation.

While the soil samples indicate impacts from historical operations at SWMU No. 13, groundwater samples collected from temporary wells located immediately adjacent to the drainage ditch may also indicate impacts from the historical operations at SWMU No. 13. However, it is also noted that similar concentrations of gasoline range and diesel range organics have been detected in

groundwater samples collected at monitoring well OW-59 that is approximately 260 feet north-northeast and cross-gradient to SWMU No. 13.

7.2 Recommendations

Two permanent monitoring wells that are to be located near SWMU No. 13 are included in the *Work Plan SMW-2 and GWM-1 Areas* (DiSorbo, 2019b). These two wells will be installed upon NMED approval of the Work Plan and will provide additional information on groundwater and soil conditions near SWMU No. 13. It is recommended to review the results of the sampling conducted at these two additional locations and then prepare a new Work Plan to delineate the lateral extent of impacts observed at SMWU No. 13.

Section 8
References

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Tables

Table 1 - Vapor Screening Results
Marathon Petroleum Company - Gallup Refinery - SWMU 13
Gallup, New Mexico

Sample Interval Depth (ftbgl)	SWMU 13-1 (ppm)	SWMU 13-2 (ppm)	SWMU 13-3 (ppm)	SWMU 13-4 (ppm)	SWMU 13-5 (ppm)	SWMU 13-6 (ppm)	SWMU 13-7 (ppm)
0 - 0.5	1.4	6.3	0.8	1.9	5.0	5.1	0.9
0.5 - 1.5	1.1	4.8	0.8	1.5	5.9	9.2	1.3
1.5 - 2	1.2	2.3	1.4	1.6	7.2	15.6	2.3
2 - 4	1.1	2.9	1.3	2.3	7.7	15.7	38.4
4 - 5	1.2	3.1	1.3	2.3	4.5	SAT. - NR	SAT. - NR
5 - 6	89.7	1.5	3.0	4.7	15.6	10.1	SAT. - NR
6 - 8	4.3	2.7	4.0	11.0	11.9	11.3	9.0
8 - 10	4.7	1.3	1.3	13.4 / 10.4	15.6	7.5	14.6
10 - 12	2.4	2.1 /1.8	2.1	SAT. - NR	13.1	4.7	10.6
12 - 14	2.7	1.2	1.8 / 1.8	SAT. - NR	SAT. - NR	SAT. - NR	8.0
14 - 16	2.8	1.1	0.9 / 2.1	10.1	11.4	SAT. - NR	7.3
16 - 18	TD @ 16 ftbgl	TD @ 16 ftbgl	TD @ 16 ftbgl	TD @ 16 ftbgl	TD @ 16 ftbgl	1.2	6.6
						TD @ 16 ftbgl	TD @ 16 ftbgl

Sample Interval Depth (ftbgl)	SWMU 13-8 (ppm)	SWMU 13-9 (ppm)	SWMU 13-10 (ppm)	SWMU 13-11 (ppm)	SWMU 13-12 (ppm)	SWMU 13-13 (ppm)	SWMU 13-14 (ppm)
0 - 0.5	2.1	3.3	1.3	2.6	2.9	13.7	6.3
0.5 - 1.5	2.0	3.6	1.1	4.8	16.3	181	4.5
1.5 - 2	3.5	3.7	1.7	5.1	5.3	204	18.7
2 - 3	2.6	6.7	1.7	5.1	7.1	45	13.3
	TD @ 3 ftbgl	TD @ 3 ftbgl	TD @ 3 ftbgl	TD @ 3 ftbgl	TD @ 3 ftbgl	TD @ 3 ftbgl	TD @ 3 ftbgl

ftbgl - feet below ground level ppm - parts per million

NR - NR - No sample recovery. No reading was collected. SAT. - NR - Interval was saturated. No reading was collected.

TABLE 2 - Groundwater Field Measurements
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

WELL	DATE	GROUND LEVEL ELEVATION (ft-msl)	TOP OF WELL CASING ELEVATION (ft-msl)	DEPTH TO PSH (btoc-ft)	DEPTH TO GROUNDWATER (btoc-ft)	DEPTH TO GROUNDWATER (bgl-ft) [2]	TOTAL WELL DEPTH (ft)	GROUND WATER ELEVATION (ft-msl)	WELL SCREEN INTERVAL (bgl-ft)	CASING STICKUP (agl-ft)	NITRATE [1] (mg/l)	NITRITE [1] (mg/l)	TEMPERATURE °F	SPECIFIC CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN (mg/L)	pH	OXYGEN REDUCTION POTENTIAL	TURBIDITY (NTU)
SWMU 13-1	11/05/19	6884.38	6887.38	ND	DRY	DRY	16.50	DRY	6 - 16	3	NM	NM	NM	NM	NM	NM	NM	NM
SWMU 13-2	11/05/19	6884.22	6887.22	ND	14.94	11.94	16.50	6872.28	6 - 16	3	NM	NM	57.7	16,613	4.08	6.4	191.3	777
SWMU 13-3	11/05/19	6883.78	6886.78	ND	12.53	9.53	16.50	6874.25	6 - 16	3	0	0	57.6	15,635	3.76	6.54	201.7	901
SWMU 13-4	11/05/19	6884.65	6887.65	ND	12.77	9.77	16.50	6874.88	6 - 16	3	2	0.04	57.3	15,356	4.41	6.52	236.2	130
SWMU 13-5	11/06/19	6885.36	6888.36	ND	12.96	9.96	16.50	6875.40	6 - 16	3	14	0	56.5	16,470	2.02	6.61	288.8	>1100
SWMU 13-6	11/06/19	6887.13	6889.13	ND	13.96	11.96	17.50	6875.17	1.5 -16.5	2	0	0	58.1	11,377	2.93	6.86	272	>40
SWMU 13-7	11/06/19	6888.17	6891.17	ND	15.40	12.40	18.00	6875.77	1.5 - 16.5	3	12	0.04	57	17,055	4.13	6.83	249.1	890

bgl - below ground level
agl - above ground level
PSH - phase separated hydrocarbon
ft - feet
ft-msl - feet above mean sea level
btoc - below top of casing
ND - none detected NTU - nephelometric turbidity unit
NM - not measured
mg/l - milligrams per liter
1 - Field Test Kit (Hach NI-12) was used to determine the concentrations of nitrate and nitrite

Table 3 - Soil Screening Levels
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	NMED Residential (0-10')	endpoint	EPA Residential (0-2')	endpoint	NMED IndOccSoil (0-1')	NMED IndOccSoil_Endpoint	NMED ConsWork Soil (0-10')	NMED ConsWork Soil_ Endpoint	EPA Industrial Soil (0-2')	EPA IndSoil_ key	NMED DAF1 SoilGW	EPA GW_Risk-based SSL SoilGW	NMED/ MCL-based SSL, DAF 1
Metals (mg/kg)													
Antimony	31.28571429	n	31	n	519.111111	n	141.575758	n	470	n	0.27104		0.27104
Arsenic	7.074957917	c	0.68	c*R	35.8843339	c	41.1506512	n	3	cR	0.291733		0.2917333
Barium	15558.08476	n	15000	n	254671.051	n	4391.7145	n	220000	nm	82.34667	160	82.346667
Beryllium	156.2157756	n	160	n	2583.16948	n	148.103365	n	2300	n	3.160693		3.1606933
Cadmium	70.52926266	n	71	n	1107.92874	n	72.1470065	n	980	n	0.375867		0.3758667
Chromium (Total)	96.60343409	c			504.62286	c	133.737855	n			180000		180000
Cobalt	23.44831516	n	23	n	388.402156	n	36.7434871	n	350	n	0.270092	0.27	-
Cyanide	11.15070404	n	23	n	63.3361859	n	12.0686831	n	150	n	0.035643	0.015	0.0356426
Iron	54750	n	55000	n	908444.444	n	247757.576	n	820000	nm	347.9428	350	
Lead	-	-	400	G	-	-	-	IEUBK	800	G	0.0026	#N/A	0.0026
Manganese	10547.69639	n	1800	n	160183.087	n	463.837179	n	26000	n	131.4807	28	
Mercury (elemental)	23.77624297	n	11	ns	112.076566	n	20.6835849	n	46	ns	0.104453	0.033	0.1044526
Nickel	1559.564767	n	1500	n	25681.9054	n	753.129017	n	22000	n	24.24168	26	-
Selenium	391.0700968	n	390	n	6488.81111	n	1753.13151	n	5800	n	0.258667	0.52	0.2586667
Silver	391.0714286	n	390	n	6488.88889	n	1769.69697	n	5800	n	0.687961	0.8	-
Vanadium	393.9295498	n	390	n	6525.03137	n	614.077939	n	5800	n	63.07862	86	-
Zinc	23464.28571	n	23000	n	389333.333	n	106181.818	n	350000	nm	370.5807	370	-
Volatiles (mg/kg)													
1,1,1,2-Tetrachloroethane	28.06299779	c	2	c	137.227781	c	658.515124	c	8.8	c	0.001801	0.00022	-
1,1,1-Trichloroethane	14374.90324	n	8100	ns	72532.238	n	13601.9086	n	36000	ns	0.063818		0.0638182
1,1,2,2-Tetrachloroethane	7.984465167	c	0.6	c	39.3976459	c	196.512399	c	2.7	c	0.00024	0.00003	-
1,1,2-Trichloroethane	2.61310964	n	1.1	c**	12.391786	n	2.30274072	n	5	c**	0.001341	0.000089	0.0013411
1,1-Dichloroethane	78.60621702	c	3.6	c	383.266467	c	1817.05898	c	16	c	0.006799	0.00078	-
1,1-Dichloroethene	439.9346968	n	230	n	2255.40774	n	423.909375	n	1000	n	0.002396		0.0023964
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorobenzene, 1,2,3-	-	-	63	n	-	-	-	-	930	n	-	0.021	-
1,2,3-Trichloropropane	0.051049053	c	-	-	1.21125926	c	6.3146991	n	-	-	2.91E-06	3.2E-07	-
1,2,4-Trichlorobenzene	82.90549359	n	-	-	422.891355	n	79.1109174	n	-	-	0.154975	0.0034	0.1549752
Trimethylbenzene, 1,2,4-	-	-	300	ns	-	-	-	-	1800	ns	-	0.081	-
1,2-Dibromoethane (Ethylene dibromide)	0.672476199	c	0.036	c	3.30948158	c	16.3184125	c	0.16	c	1.18E-05		1.179E-05
1,2-Dichlorobenzene	2149.557119	n	1800	ns	12967.4635	n	2495.84131	n	9300	ns	0.453963	0.3	0.453963
1,2-Dichloroethane	8.315434498	c	-	-	40.6737882	c	53.8326771	n	-	-	0.001191	0.000048	0.0011911
1,2-Dichloropropane	17.7717301	c	2.5	c**	86.8228257	c	25.4468715	n	11	c**	0.001387	0.00028	0.0013874
Trimethylbenzene, 1,3,5-	-	-	270	ns	-	-	-	-	1500	ns	-	0.087	-
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloropropane, 1,3-	-	-	1600	ns	-	-	-	-	23000	ns	-	0.13	-
1,4-Dichlorobenzene	1290	c	2.6	c	6730	c	24800	n	11	c	0.056061	0.00046	0.0560611
1-Methylnaphthalene	171.5924997	c	18	c	812.956959	c	6058.73325	c	73	c	0.044656	0.006	-
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3 - Soil Screening Levels
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

2-Butanone (Methyl ethyl ketone, MEK)	37418.18384	n	27000	n	410979.561	n	91656.7106	n	190000	nms	1.003665	1.2	-
o-Chlorotoluene	1564.285714	n	-	-	25955.5556	n	7078.78788	n	-	-	0.178177	0.23	-
Hexanone, 2-	-	-	200	n	-	-	-	-	1300	n	-	0.0088	-
2-Methylnaphthalene	231.7975423	n	240	n	3367.96454	n	1004.01865	n	3000	n	0.137851	0.19	-
Chlorotoluene, p-	-	-	1600	ns	-	-	-	-	23000	ns	-	0.24	-
4-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl isobutyl ketone	5808.948357	n	33000	ns	81647.6456	n	20233.6053	n	140000	nms	0.239827	1.4	-
Acetone	66313.24226	n	61000	n	960090.734	n	241548.31	n	670000	nms	2.489842	2.9	-
Benzene	17.79460341	c	1.2	c*	87.2403585	c	141.859846	n	5.1	c*	0.002089	0.00023	0.0020891
Bromobenzene	-	-	290	n	-	-	-	-	1800	ns	-	0.042	-
Bromodichloromethane	6.192908208	c	0.29	c	30.1752832	c	142.609614	c	1.3	c	0.00031	0.000036	-
Tribromomethane (Bromoform)	674.1123176	c	19	c*	1760.351	c	5381.24856	n	86	c	0.007344	0.00087	-
Bromomethane	17.72689001	n	6.8	n	94.5152335	n	17.8608572	n	30	n	0.001715	0.0019	-
Carbon disulfide	1554.163366	n	770	ns	8541.0293	n	1621.48136	n	3500	ns	0.220874	0.24	-
Carbon tetrachloride	10.73452785	c	0.65	c	52.5035714	c	201.542918	n	2.9	c	0.001837	0.00018	0.0018371
Chlorobenzene (Monochlorobenzene)	378.4101248	n	280	n	2157.37076	n	411.626087	n	1300	ns	0.053863	0.053	0.0538634
Ethyl chloride	18995.90966	n	14000	ns	89543.0085	n	16644.4307	n	57000	ns	5.370846	5.9	-
Chloroform	5.899429115	c	0.32	c	28.6649065	c	133.938741	c	1.4	c	0.000546	0.000061	-
Chloromethane	41.14150758	c	110	n	200.776704	c	234.963523	n	460	n	0.004758	0.049	-
cis-1,2-Dichloroethene	156.4285714	n	160	n	2595.55556	n	707.878788	n	2300	n	0.017618	0.011	0.0176184
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	13.90308173	c	8.3	c	67.3660386	c	340.486242	c	39	c	0.000377	0.00023	-
Dibromomethane (Methylene Bromide)	-	-	24	n	-	c	-	-	99	n	0.001677	0.0021	-
Dichlorodifluoromethane	181.9388375	n	87	n	864.825195	n	160.927034	n	370	n	0.361467	0.3	-
Ethylbenzene	75.10635655	c	5.8	c	367.636701	c	1771.91001	c	25	c	0.615369	0.0017	0.6153693
Hexachloro-1,3-butadiene	61.63458291	n	1.2	c*	52.081725	c	269.062428	n	5.3	c	0.002066	0.00027	-
Cumene (isopropylbenzene)	2364.349048	n	1900	ns	14223.1558	n	2737.88125	n	9900	ns	0.569049	0.74	-
tert-Butyl methyl ether (MTBE)	974.8113199	c	47	c	4817.93886	c	24230.6892	c	210	c	0.027664	0.0032	-
Methylene chloride (Dichloromethane)	409.1270097	n	57	c**	5130.9539	n	1206.85225	n	1000	c**	0.001105		0.0011052
Naphthalene	1160	n	3.8	c*	16800	n	5020	n	17	c*	0.004115	0.00054	-
Butylbenzene, n-	-	-	3900	ns	-	-	-	-	58000	ns	-	3.2	-
Propyl benzene	-	-	3800	ns	-	-	-	-	24000	ns	-	1.2	-
Butylbenzene, sec-	-	-	7800	ns	-	-	-	-	120000	nms	-	5.9	-
Styrene	7264.479096	n	6000	ns	51298.2081	n	10166.3412	n	35000	ns	0.085526	1.3	0.0855262
Butylbenzene, tert-	-	-	7800	ns	-	-	-	-	120000	nms	-	1.6	-
Tetrachloroethene	110.83763	n	24	c**	628.785859	n	119.946456	n	100	c**	0.00199		0.0019899
Toluene	5228.442131	n	4900	ns	61340.2341	n	14041.3366	n	47000	ns	0.555037	0.76	0.5550372
trans-1,2-Dichloroethene	295.4386003	n	1600	n	1610.37937	n	305.259901	n	23000	ns	0.025169	0.11	0.0251692
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	6.774958369	n	0.94	c**	36.4574585	n	6.89887525	n	6	c**	0.001551	0.00018	0.0015508
Trichlorofluoromethane	1231.409945	n	23000	ns	6031.2254	n	1126.65819	n	350000	nms	0.78429	3.3	-
Vinyl chloride	0.741954602	c	0.059	c	28.4135373	c	160.964245	c	1.7	c	0.00067	6.5E-06	0.0006702

Table 3 - Soil Screening Levels
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

Xylenes	870.8212522	n	580	ns	4275.2674	n	798.345553	n	2500	ns	7.717531	0.19	7.7175307
Semi-volatiles (mg/kg)													
1,2,4-Trichlorobenzene	82.90549359	n	-	-	422.891355	n	79.1109174	n	-	-	0.154975	0.0033	0.1549752
1,2-Dichlorobenzene	2149.557119	n	1800	ns	12967.4635	n	2495.84131	n	9300	ns	0.453963	0.3	0.453963
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	1290	c	2.6	c	6730	c	24800	n	11	c	0.056061	0.00046	0.0560611
1-Methylnaphthalene	171.5924997	c	18	c	812.956959	c	6058.73325	c	73	c	0.044656	0.0058	-
2,4,5-Trichlorophenol	6163.458291	n	6300	n	91625.0902	n	26906.2428	n	82000	n	3.310022	4.4	-
2,4,6-Trichlorophenol	61.63458291	n	49	c**	916.250902	n	269.062428	n	210	c**	0.033724	0.015	-
2,4-Dichlorophenol	184.9037487	n	190	n	2748.75271	n	807.187284	n	2500	n	0.041271	0.054	-
2,4-Dimethylphenol	1232.691658	n	1300	n	18325.018	n	5381.24856	n	16000	n	0.322397	0.42	-
2,4-Dinitrophenol	123.2691658	n	130	n	1832.5018	n	538.124856	n	1600	n	0.033428	0.044	-
2,4-Dinitrotoluene	17.0988813	c	1.7	c*	82.2735947	c	535.556259	n	7.4	c	0.002462	0.00032	-
2,6-Dintitrotoluene	3.558669245	c	0.36	c*	17.1537797	c	80.9127625	n	1.5	c	0.000512	0.000067	-
b-Chloronaphthalene	6257.142857	n	4800	n	103822.222	n	28315.1515	n	60000	n	2.850999	3.8	-
2-Chlorophenol	391.0714286	n	390	n	6488.88889	n	1769.69697	n	5800	n	0.057615	0.074	-
2-Methylnaphthalene	231.7975423	n	240	n	3367.96454	n	1004.01865	n	3000	n	0.137851	0.19	-
Cresol, o-	-	-	3200	n	-	-	-	-	41000	n	-	0.75	-
Nitroaniline, 2-	-	-	630	n	-	-	-	-	8000	n	-	0.08	-
2-Nitrophenol	-	-	-	-	-	-	-	-	-	-	-	-	-
3,3-Dichlorobenzidine	11.83416498	c	1.2	c	57.0096943	c	409.56939	c	5.1	c	0.00621	0.00081	-
3+4-Methylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-
3-Nitroaniline	-	-	-	-	-	-	-	-	-	-	-	-	-
4,6-Dinitro-o-cresol	4.930766633	n	5.1	n	73.3000722	n	21.5249942	n	66	n	0.001989	-	-
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitroaniline, 4-	-	-	27	c**	-	-	-	-	110	c*	-	0.0016	-
4-Nitrophenol	-	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthene	3476.963135	n	3600	n	50519.4682	n	15060.2798	n	45000	n	0.001543	5.5	0.0015429
Acenaphthylene	-	-	-	-	-	-	-	-	-	-	-	-	-
Aniline	-	-	95	c**	-	-	-	-	400	c*	-	0.0046	-
Anthracene	17384.81567	n	18000	n	252597.341	n	75301.399	n	230000	nm	42.53903	58	-
Benzo(a)anthracene	1.530646717	c	1.1	c	32.3	c	239.712408	c	21	c	0.031842	0.0043	-
Benzo(a)pyrene	1.117362054	c	0.11	c	23.5753073	c	172.897367	c	2.1	c	0.176255	0.004	0.1762547
Benzo(b)fluoranthene	1.530646717	c	1.1	c	32.2953975	c	239.712408	c	21	c	0.308604	0.041	-
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	15.30605168	c	11	c	322.940213	c	2312.63791	c	210	c	3.024274	0.4	-
Benzoic acid	-	-	250000	nm	-	-	-	-	3300000	nm	-	15	-
Benzyl alcohol	-	-	6300	n	-	-	-	-	82000	n	-	0.48	-
Bis(2-chloroethoxy)methane	-	-	190	n	-	-	-	-	2500	n	-	0.013	-
Bis(2-chloroisopropyl) ether	99.31972789	c	-	-	519.111111	c	3539.39394	c	-	-	0.002377	-	-
Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate, DEHP]	380.3915288	c	39	c*	1832.49106	c	5381.24856	n	160	c	1.07744	1.3	1.07744
Butyl Benzyl Phthalate	-	-	290	c*	-	-	-	-	1200	c	-	0.23	-
Carbazole	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3 - Soil Screening Levels
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

Chrysene	153.0605168	c	110	c	3229.40213	c	23126.3791	c	2100	c	9.297301	1.2	-
Dibenz(a,h)anthracene	0.15306463	c	0.11	c	3.22953836	c	23.9623983	c	2.1	c	0.098427	0.013	-
Dibenzofuran	-	-	73	n	-	-	-	-	1000	n	-	0.15	-
Diethyl phthalate	49307.66633	n	51000	n	733000.722	n	215249.942	n	660000	nm	4.894328	6.1	-
Dimethyl phthalate (DMP, Phthalic Acid)	61634.58291	n	-	-	916250.902	n	269062.428	n	-	-	0.178474	-	-
Di-n-butyl phthalate (Dibutyl phthalate)	6163.458291	n	6300	n	91625.0902	n	26906.2428	n	82000	n	1.688941	-	-
Di-n-octyl phthalate	-	-	630	n	-	-	-	-	8200	n	-	57	-
Fluoranthene	2317.975423	n	2400	n	33679.6454	n	10040.1865	n	30000	n	66.86188	89	-
Fluorene	2317.975423	n	2400	n	33679.6454	n	10040.1865	n	30000	n	4.002187	5.4	-
Hexachlorobenzene	3.328412568	c	0.21	c	733.000722	n	116.741691	c	0.96	c	0.009474	0.00012	0.0094737
Hexachloro-1,3-butadiene	61.63458291	n	1.2	c*	52.081725	c	269.062428	n	5.3	c	0.002066	0.00026	-
Hexachlorocyclopentadiene	2.304307921	n	1.8	n	5491.92789	n	867.023021	n	7.5	n	0.12024	0.0013	0.1202397
Hexachloroethane	133.1365601	c	1.8	c*	641.375125	n	188.217514	n	8	c*	0.001598	0.0002	-
Indeno(1,2,3-c,d)pyrene	1.530646717	c	1.1	c	32.2953975	c	239.712408	c	21	c	1.004349	0.13	-
Isophorone	5605.803004	c	570	c*	27005.2897	c	53658.312	n	2400	c*	0.211621		
Naphthalene	1160	n	3.8	c*	16800	n	5020	n	17	c*	0.004115	0.00054	-
Nitrobenzene	60.42982743	c	5.1	c*	293.286096	c	352.525062	n	22	c*	0.00072	0.000092	-
N-Nitrosodiphenylamine	1086.819491	c	110	c	5235.62444	c	37855.1115	c	470	c	0.502482	0.066	-
Pentachlorophenol	9.854740573	c	1	c	44.5097584	c	346.199821	c	4	c	0.007612	0.0004	0.0076118
Phenanthrene	1738.481567	n	-	-	25259.7341	n	7530.1399	n	-	-	4.295901	-	-
Phenol	18490.07715	n	19000	n	274861.313	n	77383.595	n	250000	nm	2.616296	3.3	-
Pyrene	1738.481567	n	1800	n	25259.7341	n	7530.1399	n	23000	n	9.591486	13	-
Pyridine	-	-	78	n	-	-	-	-	1200	n	-	0.0068	-
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)	1000	-	-	-	3800	-	-	-	-	-	-	-	-
Diesel Range Organics (DRO)	1000	-	-	-	3800	-	-	-	-	-	-	-	-
Motor Oil Range Organics (MRO)	1000	-	-	-	3800	-	-	-	-	-	-	-	-

- No screening level available

NMED - New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (March 2019)

EPA - Environmental Protection Agency Regional Screening Levels (Nov. 2019)

NMED TPH Soil Screening Levels "unknown oil"

c -carcinogen

cs - carcinogenic, SSL may exceed saturation

c* - where: n SL < 100X c SL

c** - where n SL < 10X c SL

n - noncarcinogenic

ns - noncarcinogenic, SSL may exceed saturation

nl - noncarcinogenic, SSL may exceed ceiling limit

nm - concentration may exceed ceiling limit

Table 4 - Groundwater Screening Levels
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL	Screening Levels	Source
Metals (ug/l) TOTAL								
Antimony	6	7.263235	n	7.8	n	6	6	(3)
Arsenic	10	0.855366	c	0.052	c	10	10	(3)
Barium	2000	3277.353	n	3800	n	2000	2000	(3)
Beryllium	4	12.38532	n	25	n	4	4	(3)
Cadmium	5	6.24	n	9.2	n	5	5	(3)
Chromium	50	5.701555	c	22000	n	100	50	(3)
Cobalt	50	5.979008	n	6	n	-	50	(3)
Cyanide	200	1.46442	n	1.5	n	200	200	(3)
Iron	1000	13821.88	n	14000	n	-	1000	(3)
Lead	15	-	-	15	L	15	15	(3)
Manganese	200	2017.4	n	430	n	-	200	(3)
Mercury	2	0.625714	n	0.63	n	2	2	(3)
Nickel	-	371.957	n	200	n	-	372	(4)
Selenium	50	98.72771	n	100	n	50	50	(3)
Silver	50	81.1913	n	94	n	-	50	(3)
Vanadium	-	63.06769	n	86	n	-	63.1	(4)
Zinc	10000	5960.445	n	6000	n	-	10000	(3)
Chloride	250000	-	-	-	-	-	250000	(3)
Fluoride	1600	1184.733	n	800	n	4000	1600	(3)
Sulfate	600000	-	-	-	-	-	600000	(3)
Nitrogen, Nitrate (As N)	10000	31600	n	32000	n	10000	10000	(3)
Nitrogen, Nitrite (As N)	1000	1970	n	2000	n	1000	1000	(3)
Metals (ug/l) DISSOLVED								
Antimony (D)	6	7.263235	n	7.8	n	6	6	(3)
Arsenic (D)	10	0.855366	c	0.052	c	10	10	(3)
Barium (D)	2000	3277.353	n	3800	n	2000	2000	(3)
Beryllium (D)	4	12.38532	n	25	n	4	4	(3)
Cadmium (D)	5	6.24	n	9.2	n	5	5	(3)

Table 4 - Groundwater Screening Levels
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL	Screening Levels	Source
Calcium (D)	-	-	-	-	-	-	-	-
Chromium (D)	50	5.701555	c	22000	n	100	50	(3)
Cobalt (D)	50	5.979008	n	6	n	-	50	(3)
Cyanide (D)	200	1.46442	n	1.5	n	200	200	(3)
Iron (D)	1000	13821.88	n	14000	L	-	1000	(3)
Lead (D)	15	-	-	15	n	15	15	(3)
Magnesium (D)	-	-	-	-	-	-	-	-
Manganese (D)	200	2017.4	n	430	n	-	200	(3)
Nickel (D)	-	371.957	n	200	n	-	372	(4)
Potassium (D)	-	-	-	-	-	-	-	-
Selenium (D)	50	98.72771	n	100	n	50	50	(3)
Sodium (D)	-	-	-	-	-	-	-	-
Silver (D)	50	81.1913	n	94	n	-	50	(3)
Vanadium (D)	-	63.06769	n	86	n	-	63.1	(4)
Zinc (D)	10000	5960.445	n	6000	n	-	10000	(3)
Volatiles (ug/l)								
1,1,1,2-Tetrachloroethane	-	5.737156	c	0.57	c	-	5.74	(4)
1,1,1-Trichloroethane	200	8002.781	n	8000	n	200	200	(3)
1,1,2,2-Tetrachloroethane	10	0.756639	c	0.076	c	-	10	(3)
1,1,2-Trichloroethane	5	0.414843	c	0.28	c**	5	5	(3)
1,1-Dichloroethane	25	27.50549	c	2.8	c	-	25	(3)
1,1-Dichloroethene	7	284.421	n	280	n	7	7	(3)
1,1-Dichloropropene	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	-	7	n	-	7	(1)
1,2,4-Trichlorobenzene (V)	70	3.983762	n	1.2	c**	70	70	(3)
1,2,4-Trimethylbenzene	-	-	-	56	n	-	56	(1)
1,2-Dibromoethane (EDB)	0.05	0.074669	c	0.0075	c	0.05	0.05	(3)
1,2-Dichlorobenzene (V)	600	302.4524	n	300	n	600	600	(3)
1,2-Dichloroethane (EDC)	5	1.708649	c	0.17	c*	5	5	(3)

Table 4 - Groundwater Screening Levels
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL	Screening Levels	Source
1,2-Dichloropropane	5	4.376231	c	0.85	c*	5	5	(3)
1,3,5-Trimethylbenzene	-	-	-	60	n	-	60	(1)
1,3-Dichlorobenzene (V)	-	-	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	370	n	-	370	(1)
1,4-Dichlorobenzene (V)	75	4.818051	c	0.48	c	75	75	(2)
1-Methylnaphthalene (V)	-	11.37539	c	1.1	c	-	11.37	(4)
2,2-Dichloropropane	-	-	-	-	-	-	-	-
2-Butanone	-	5564.701	n	5600	n	-	5564	(4)
2-Chlorotoluene	-	233.1325	-	240	n	-	233	(4)
2-Hexanone	-	-	-	38	n	-	38	(1)
2-Methylnaphthalene (V)	-	35.11469	n	36	n	-	35.11	(4)
4-Chlorotoluene	-	-	-	250	n	-	250	(1)
4-Isopropyltoluene	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	-	1243.433	n	-	-	-	1243	(4)
Acetone	-	14063.57	n	14000	n	-	14063	(4)
Benzene	5	4.552198	c	0.46	c*	5	5	(3)
Bromobenzene	-	-	-	62	n	-	62	(1)
Bromodichloromethane	-	1.34391	c	0.13	c	-	1.34	(4)
Bromoform	-	32.85098	-	3.3	c*	-	32.85	(4)
Bromomethane	-	7.544565	n	7.5	n	-	7.54	(4)
Carbon disulfide	-	809.5351	n	810	n	-	810	(4)
Carbon Tetrachloride	5	4.550271	c	0.46	c	5	5	(3)
Chlorobenzene	-	77.57247	n	78	n	100	100	(2)
Chloroethane	-	20857.14	n	-	-	-	20900	(4)
Chloroform	100	2.293155	c	0.22	c	-	100	(3)
Chloromethane	-	20.31275	c	190	n	-	20.3	(4)
cis-1,2-DCE	70	36.4848	n	36	n	70	70	(3)
cis-1,3-Dichloropropene	-	4.708265	c	0.47	c	-	4.71	(4)
Dibromochloromethane	-	1.678071	c	0.87	c	-	1.68	(4)

Table 4 - Groundwater Screening Levels
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL	Screening Levels	Source
Dibromomethane	-	-	-	8.3	n	-	8.3	(1)
Dichlorodifluoromethane	-	197.2025	n	200	n	-	197	(4)
Ethylbenzene	700	14.99225	c	1.5	c	700	700	(3)
Hexachlorobutadiene (V)	-	1.387235	c	0.14	c*	-	1.39	(4)
Isopropylbenzene	-	446.8488	n	450	n	-	447	(4)
Methyl tert-butyl ether (MTBE)	100	142.9942	c	14	c	-	100	(4)
Methylene Chloride	5	117.9703	c	11	c**	5	5	(3)
Naphthalene (V)	30	1.651584	c	0.17	c*	-	30	(3)
n-Butylbenzene	-	-	-	1000	-	-	1000	(1)
n-Propylbenzene	-	-	-	660	-	-	660	(1)
sec-Butylbenzene	-	-	-	2000	-	-	2000	(1)
Styrene	100	1205.035	n	1200	n	100	100	(3)
tert-Butylbenzene	-	-	-	690	n	-	690	(1)
Tetrachloroethene (PCE)	5	112.9005	c	11	c**	5	5	(3)
Toluene	1000	1093.245	n	1100	n	1000	1000	(3)
trans-1,2-DCE	100	93.18158	n	360	n	100	100	(3)
trans-1,3-Dichloropropene	-	4.708265	c	0.47	c*	-	4.71	(4)
Trichloroethene (TCE)	5	2.591925	c	0.49	c**	5	5	(3)
Trichlorofluoromethane	-	1136.825	n	5200	n	-	1140	(4)
Vinyl chloride	2	0.323527	c	0.019	c	2	2	(3)
Xylenes, Total	620	192.995	n	190	n	10000	620	(3)
Semivolatiles (ug/l)								
1,2,4-Trichlorobenzene	-	11.54803	c	1.2	c	70	70	(2)
1,2-Dichlorobenzene	600	370.1408	n	300	n	600	600	(3)
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	75	4.818051	c	0.48	c	75	75	(3)
1-Methylnaphthalene	-	11.37539	c	1.1	c	-	11.38	(4)
2,4,5-Trichlorophenol	-	1165.977	n	1200	n	-	1166	(4)
2,4,6-Trichlorophenol	-	11.87956	n	4.1	c**	-	11.9	(4)

Table 4 - Groundwater Screening Levels
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL	Screening Levels	Source
2,4-Dichlorophenol	-	45.3006	n	46	n	-	45.3	(4)
2,4-Dimethylphenol	-	353.8786	n	360	n	-	354	(4)
2,4-Dinitrophenol	-	38.66536	n	39	n	-	38.7	(4)
2,4-Dinitrotoluene	-	2.36907	c	0.24	c	-	2.37	(4)
2,6-Dinitrotoluene	-	0.48538	n	0.049	c	-	0.485	(4)
2-Chloronaphthalene	-	732.5619	n	750	n	-	733	(4)
2-Chlorophenol	-	90.99948	n	91	n	-	91	(4)
2-Methylnaphthalene	-	35.11469	n	36	n	-	35.11	(4)
2-Methylphenol	-	-	-	930	n	-	930	(1)
2-Nitroaniline	-	-	-	190	n	-	190	(1)
2-Nitrophenol	-	-	-	-	-	-	-	-
3,3´-Dichlorobenzidine	-	1.252389	c	0.13	c	-	1.25	(4)
3+4-Methylphenol	-	-	-	930	n	-	930	(1)
3-Nitroaniline	-	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	-	1.52438	n	-	-	-	1.52	(4)
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	-	-	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	-
4-Nitroaniline	-	-	-	3.8	c*	-	38	(5)
4-Nitrophenol	-	-	-	-	-	-	-	-
Acenaphthene	-	534.6011	n	530	n	-	535	(4)
Acenaphthylene	-	-	-	-	-	-	-	-
Aniline	-	-	-	13	c*	-	130	(5)
Anthracene	-	1721.281	n	1800	n	-	1721	(4)
Benz(a)anthracene	-	0.119923	c	0.03	c	-	0.12	(4)
Benzo(a)pyrene	0.2	0.250515	c	0.025	c	0.2	0.2	(3)
Benzo(b)fluoranthene	-	0.343171	c	0.25	c	-	0.343	(4)
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	-	3.431709	c	2.5	c	-	3.43	(4)

Table 4 - Groundwater Screening Levels
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL	Screening Levels	Source
Benzoic acid	-	-	-	75000	n	-	75000	(1)
Benzyl alcohol	-	-	-	2000	n	-	2000	(1)
Bis(2-chloroethoxy)methane	-	-	-	59	n	-	59	(1)
Bis(2-chloroisopropyl)ether	-	9.809669	c	-	-	-	9.81	(4)
Bis(2-ethylhexyl)phthalate	-	55.64024	c	5.6	c*	6	6	(2)
Butyl benzyl phthalate	-	-	-	16	c	-	160	(5)
Carbazole	-	-	-	-	-	-	-	-
Chrysene	-	34.31709	c	25	c	-	34.3	(4)
Dibenz(a,h)anthracene	-	0.034317	c	0.025	c	-	0.0343	(4)
Dibenzofuran	-	-	-	7.9	n	-	7.9	(1)
Diethyl phthalate	-	14800.52	n	15000	n	-	14800	(4)
Dimethyl phthalate	-	611.5601	n	-	-	-	611.56	(4)
Di-n-butyl phthalate	-	884.7986	n	-	-	-	885	(4)
Di-n-octyl phthalate	-	-	-	200	n	-	200	(1)
Fluoranthene	-	802.1978	n	800	n	-	802	(4)
Fluorene	-	287.642	n	290	n	-	288	(4)
Hexachlorobenzene	-	0.097601	c	0.0098	c	1	1	(2)
Hexachlorobutadiene	-	1.387235	c	0.14	c*	-	1.39	(4)
Hexachlorocyclopentadiene	-	0.410975	n	0.41	n	50	50	(2)
Hexachloroethane	-	3.284195	c	0.33	c**	-	3.28	(4)
Indeno(1,2,3-cd)pyrene	-	0.343171	c	0.25	c	-	0.343	(4)
Isophorone	-	780.6306	c	78	c	-	780.63	(4)
Naphthalene	30	1.651584	c	0.17	c*	-	30	(3)
Nitrobenzene	-	1.403846	c	0.14	c	-	1.4	(4)
N-Nitrosodiphenylamine	-	121.9219	c	12	c	-	121.92193	(4)
Phenanthrene	-	170.4146	n	-	-	-	170	(4)
Pentachlorophenol	1	0.412922	c	0.041	c	1	1	(3)
Phenol	-	5761.054	n	5800	n	-	5760	(4)
Pyrene	-	117.4227	n	120	n	-	117	(4)

Table 4 - Groundwater Screening Levels
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_key	EPA Screening Levels.Tap Water	EPA TapW_key	MCL	Screening Levels	Source
Pyridine	-	-	-	20	n	-	20	(1)
TPH (ug/l)								
Gasoline Range Organics (GRO)	-	-	-	-	-	-	10.1	(7)
Diesel Range Organics (DRO)	-	-	-	-	-	-	85.8	(6)
Motor Oil Range Organics (MRO)	-	-	-	-	-	-	85.8	(6)

- No screening level or analytical result available

450 - bolded value exceeds screening level

(1) EPA - Regional Screening Levels (November 2019) -Tap Water

(2) EPA - Regional Screening Levels (November 2019) - MCL

(3) NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/l TDS Concentration or less (December 2018)

(4) NMED Tap Water Screening Level - Risk Assessment Guidance for Site Investigations and Remediation (March 2019)

(5) EPA Screening Level - Tap Water x 10 for carcinogenic compounds

(6) NMED Soil Screening Guidance - "unknown oil" (March 2019)

(7) NMED Soil Screening Guidance - "gasoline" (March 2019)

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-1 (0-0.5')		SWMU13-1 (1.5-2')		SWMU 13-1 (5-6')		SWMU 13-1 (8-10')		SWMU 13-1 (14-16')		SWMU 13-2 (0-0.5')		SWMU 13-2 (1.5-2')		SWMU 13-2 (8-10')		SWMU 13-2 (14-16')		SWMU 13-3 (0-0.5')		SWMU 13-3 (1.5-2')		SWMU 13-3 (8-10')		SWMU 13-3 (14-15.25')		SWMU 13-3 (15.25-16')		SWMU 13-4 (0-0.5')		SWMU 13-4 (1.5-2')		SWMU 13-4 (8-10')		SWMU 13-4 (14-15.5')	
					Lab ID		1910d16-001		1910d16-002		1910d16-003		1910D16-004		1910d16-005		1910d16-006		1910d16-007		1910d16-008		1910d16-009		1910d16-010		1910D16-011		1910D16-012		1910d16-013		1910D16-014		1910d68-001		1910d68-002		1910d68-003		1910d68-004	
					Sample Date		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019	
Metals (mg/kg)																																										
Antimony	3.13E+01	(1)	1.42E+02	(5)	5.42E+00	(10)	< 0.7354	u	< 0.7329	u	< 0.7334	u	< 0.7321	u	< 0.7307	u	< 0.7328	u	< 0.7291	u	< 0.7362	u	< 0.7382	u	< 0.7358	u	< 0.7422	u	< 0.7393	u	< 0.7373	u	< 0.7425	u	< 0.7241	u	< 0.7321	u	< 0.7193	u	< 0.7508	u
Arsenic	7.07E+00	(1)	3.59E+01	(4)	5.83E+00	(8)	< 2.8523	u	3.3	J	< 2.8449	u	< 2.8399	u	< 2.8342	u	< 2.8424	u	< 2.828	u	< 2.8555	u	< 2.8632	u	< 2.854	u	< 2.8791	u	< 2.8678	u	< 2.86	u	< 2.8802	u	< 2.8088	u	< 2.8396	u	< 2.7899	u	< 2.9123	u
Barium	1.56E+04	(1)	4.39E+03	(5)	1.65E+03	(10)	310	v	220	v	180	v	330	v	230	v	350	v	550	v	320	v	270	v	260	v	230	v	290	v	180	v	190	v	300	v	270	v	190	v	240	v
Beryllium	1.56E+02	(1)	1.48E+02	(5)	6.32E+01	(10)	1.1	v	0.86	v	1.3	v	0.67	v	1.3	v	0.94	v	0.88	v	0.79	v	1	v	1.4	v	1.5	v	1.2	v	1.2	v	0.59	v	1.6	v	1.3	v	1.6	v	1.2	v
Cadmium	7.05E+01	(1)	7.21E+01	(5)	7.52E+00	(10)	< 0.0485	u	< 0.0483	u	< 0.0484	u	< 0.0483	u	< 0.0482	u	< 0.0483	u	< 0.0481	u	< 0.0486	u	< 0.0487	u	< 0.0485	u	< 0.049	u	< 0.0488	u	< 0.0486	u	< 0.049	u	< 0.0478	u	< 0.0483	u	< 0.0474	u	< 0.0495	u
Chromium (Total)	9.66E+01	(1)	1.34E+02	(5)	3.60E+06	(10)	11	v	8.3	v	12	v	5.4	v	12	v	8.6	v	7.9	v	5.6	v	7.8	v	30	v	26	v	13	v	12	v	4.8	v	**110**	v	14	v	16	v	12	v
Cobalt	2.34E+01	(1)	3.67E+01	(5)	5.40E+00	(8)	5.2	v	4.3	v	5.5	v	5.2	v	5.3	v	4.2	v	4.3	v	3.8	v	4.5	v	6.1	v	6.6	v	5	v	4.8	v	3	v	7.9	v	5.5	v	6.4	v	4.8	v
Cyanide	1.12E+01	(1)	1.21E+01	(5)	7.13E-01	(8)	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	0.52	v	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	0.75	v	< 0.25	u	< 0.25	u	< 0.25	u
Iron	5.48E+04	(1)	2.48E+05	(5)	6.96E+03	(8)	25000	v	12000	v	18000	v	9400	v	17000	v	13000	v	12000	v	11000	v	13000	v	19000	v	22000	v	16000	v	16000	v	8000	v	26000	v	18000	v	21000	v	17000	v
Lead	4.00E+02	(2)	8.00E+02	(6)	5.20E-02	(10)	2.8	v	2.1	v	3.9	v	3.8	v	1.5	v	3.6	v	3	v	3.6	v	3.5	v	0.87	v	1.4	v	2.9	v	1	v	1.7	v	5.2	v	3.4	v	2.1	v	2.8	v
Manganese	1.05E+04	(1)	4.64E+02	(5)	2.63E+03	(8)	460	v	710	v	260	v	370	v	310	v	350	v	920	v	340	v	330	v	280	v	360	v	340	v	310	v	320	v	440	v	380	v	310	v	260	v
Mercury (elemental)	2.38E+01	(1)	2.07E+01	(5)	2.09E+00	(8)	0.018	J	0.0089	J	0.005	J	0.0034	J	0.0057	J	0.0079	J	0.008	J	0.0071	J	0.0037	J	0.074	v	0.034	v	0.026	J	0.0059	J	< 0.0018	u	1.7	v	0.031	J	0.0059	J	0.0082	J
Nickel	1.56E+03	(1)	7.53E+02	(5)	4.85E+02	(8)	11	v	8.6	v	13	v	6	v	11	v	8.4	v	8.5	v	6.5	v	8.6	v	13	v	15	v	10	v	10	v	5.1	v	17	v	12	v	15	v	10	v
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.17E+00	(10)	< 2.509	u	< 2.5005	u	< 2.5025	u	< 2.498	u	< 2.493	u	< 2.5002	u	< 2.4876	u	< 2.5117	u	< 2.5185	u	< 2.5105	u	< 2.5325	u	< 2.5226	u	< 2.5157	u	< 2.5335	u	4	J	< 2.4977	u	< 2.4541	u	< 2.5617	u
Silver	3.91E+02	(1)	1.77E+03	(5)	1.38E+01	(8)	< 0.0641	u	< 0.0638	u	< 0.0639	u	< 0.0638	u	< 0.0637	u	< 0.0638	u	< 0.0635	u	< 0.0641	u	< 0.0643	u	< 0.0641	u	< 0.0647	u	< 0.0644	u	< 0.0642	u	< 0.0647	u	< 0.0631	u	< 0.0638	u	< 0.0627	u	< 0.0654	u
Vanadium	3.94E+02	(1)	6.14E+02	(5)	1.26E+03	(8)	21	v	17	v	18	v	12	v	21	v	17	v	20	v	13	v	16	v	26	v	27	v	19	v	20	v	11	v	36	v	21	v	24	v	21	v
Zinc	2.35E+04	(1)	1.06E+05	(5)	7.41E+03	(8)	22	v	14	v	18	v	9.9	v	18	v	14	v	14	v	10	v	13	v	41	v	29	v	18	v	16	v	9.2	v	120	v	20	v	21	v	17	v
Volatiles (mg/kg)																																										
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	3.60E-02	(8)	< 0.0028	u	< 0.0022	u	< 0.0033	u	< 0.0019	u	< 0.0019	u	< 0.0024	u	< 0.0021	u	< 0.0019	u	< 0.0017	u	< 0.002	u	< 0.0022	u	< 0.0018	u	< 0.0015	u	< 0.0019	u	< 0.0024	u	< 0.0023	u	< 0.0019	u	< 0.0019	u
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	1.28E+00	(10)	< 0.0037	u	< 0.0029	u	< 0.0045	u	< 0.0025	u	< 0.0025	u	< 0.0032	u	< 0.0029	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.0029	u	< 0.0025	u	< 0.0021	u	< 0.0025	u	< 0.0033	u	< 0.0031	u	< 0.0026	u	< 0.0025	u
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	4.81E-03	(8)	< 0.0042	u	< 0.0033	u	< 0.005	u	< 0.0028	u	< 0.0028	u	< 0.0036	u	< 0.0032	u	< 0.0029	u	< 0.0025	u	< 0.003	u	< 0.0033	u	< 0.0028	u	< 0.0023	u	< 0.0029	u	< 0.0037	u	< 0.0035	u	< 0.0029	u	< 0.0028	u
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	2.68E-02	(8)	< 0.0029	u	< 0.0023	u	< 0.0035	u	< 0.0019	u	< 0.002	u	< 0.0025	u	< 0.0022	u	< 0.002	u	< 0.0017	u	< 0.0021	u	< 0.0023	u	< 0.0019	u	< 0.0016	u	< 0.002	u	< 0.0026	u	< 0.0024	u	< 0.002	u	< 0.0019	u
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	1.36E-01	(8)	< 0.0026	u	< 0.0021	u	< 0.0032	u	< 0.0018	u	< 0.0018	u	< 0.0023	u	< 0.002	u	< 0.0018	u	< 0.0016	u	< 0.0019	u	< 0.0021	u	< 0.0017	u	< 0.0015	u	< 0.0018	u	< 0.0023	u	< 0.0022	u	< 0.0018	u	< 0.0018	u
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	4.79E-02	(10)	< 0.0165	u	< 0.013	u	< 0.0198	u	< 0.011	u	< 0.0111	u	< 0.0141	u	< 0.0127	u	< 0.0113	u	< 0.0098	u	< 0.0118	u	< 0.0129	u	< 0.0109	u	< 0.0091	u	< 0.0113	u	< 0.0145	u	< 0.0137	u	< 0.0115	u	< 0.011	u
1,1-Dichloropropene	-	-	-	-	-	-	< 0.0037	u	< 0.003	u	< 0.0045	u	< 0.0025	u	< 0.0025	u	< 0.0032	u	< 0.0029	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.0029	u	< 0.0025	u	< 0.0021	u	< 0.0026	u	< 0.0033	u	< 0.0031	u	< 0.0026	u	< 0.0025	u
Trichlorobenzene, 1,2,3-	6.30E+01	(2)	9.30E+02	(6)	4.20E-01	(9)	< 0.0036	u	< 0.0028	u	< 0.0043	u	< 0.0024	u	< 0.0024	u	< 0.0031	u	< 0.0028	u	< 0.0025	u	< 0.0022	u	< 0.0026	u	< 0.0028	u	< 0.0024	u	< 0.002	u	< 0.0025	u	< 0.0032	u	< 0.003	u	< 0.0025	u	< 0.0024	u
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	5.82E-05	(8)	< 0.0067	u	< 0.0053	u	< 0.008	u	< 0.0044	u	< 0.0045	u	< 0.0057	u	< 0.0051	u	< 0.0046	u	< 0.004	u	< 0.0048	u	< 0.0052	u	< 0.0044	u	< 0.0037	u	< 0.0046	u	< 0.0059	u	< 0.0055	u	< 0.0046	u	< 0.0045	u
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 0.0042	u	< 0.0033	u	< 0.005	u	< 0.0028	u	< 0.0028	u	< 0.0036	u	< 0.0032	u	< 0.0029	u	< 0.0025	u	< 0.003	u	< 0.0033	u	< 0.0027	u	< 0.0023	u	< 0.0028	u	< 0.0037	u	< 0.0035	u	< 0.0029	u	< 0.0028	u
Trimethylbenzene, 1,2,4-	3.00E+02	(2)	1.80E+03	(6)	1.62E+00	(9)	< 0.0038	u	< 0.003	u	< 0.0045	u	< 0.0025	u	< 0.0025	u	< 0.0032	u	< 0.0029	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.003	u	< 0.0025	u	< 0.0021	u	< 0.0026	u	< 0.0033	u	< 0.0031	u	< 0.0026	u	< 0.0025	u
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.39E-03	(8)	< 0.0042	u	< 0.0033	u	< 0.0051	u	< 0.0028	u	< 0.0028	u	< 0.0036	u	< 0.0033	u	< 0.0029	u	< 0.0025	u	< 0.003	u	< 0.0033	u	< 0.0028	u	< 0.0023	u	< 0.0029	u	< 0.0037	u	< 0.0035	u	< 0.0029	u	< 0.0028	u
1,2-Dibromoethane (Ethylene dibromide)	6.72E-01	(1)	3.31E+00	(4)	2.36E-04	(10)	< 0.0038	u	< 0.003	u	< 0.0045	u	< 0.0025	u	< 0.0025	u	< 0.0032	u	< 0.0029	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.0029	u	< 0.0025	u	< 0.0021	u	< 0.0026	u	< 0.0033	u	< 0.0031	u	< 0.0026	u	< 0.0025	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 0.0034	u	< 0.0027	u	< 0.0041	u	< 0.0022	u	< 0.0023	u	< 0.0029	u	< 0.0026	u	< 0.0023	u	< 0.002	u	< 0.0024	u	< 0.0026	u	< 0.0022	u	< 0.0019	u	< 0.0023	u	< 0.003	u	< 0.0028	u	< 0.0024	u	< 0.0023	u
1,2-Dichloroethane	8.32E+00	(1)	4.07E+01	(4)	2.38E-02	(8)	< 0.0042	u	< 0.0033	u	< 0.0051	u	< 0.0028	u	< 0.0028	u	< 0.0036	u	< 0.0032	u	< 0.0029	u	< 0.0025	u	< 0.003	u	< 0.0033	u	< 0.0028	u	< 0.0023	u	< 0.0029	u	< 0.0037	u	< 0.0035	u	< 0.0029	u	< 0.0028	u
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	2.77E-02	(8)	< 0.003	u	< 0.0024	u	< 0.0036	u	< 0.002	u	< 0.002	u	< 0.0026	u	< 0.0023	u	< 0.0021	u	< 0.0018	u	< 0.0022	u	< 0.0024	u	< 0.002	u	< 0.0017	u	< 0.0021	u	< 0.0026	u	< 0.0025	u	< 0.0021	u	< 0.002	u
Trimethylbenzene, 1,3,5-	2.70E+02	(2)	1.50E+03	(6)	1.74E+00	(9)	< 0.004	u	< 0.0031	u	< 0.0048	u	< 0.0027	u	< 0.0027	u	< 0.0034	u	< 0.0031	u	< 0.0027	u	< 0.0024	u	< 0.0029	u	< 0.0031	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.0035	u	< 0.0033	u	< 0.0028	u	< 0.0027	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.0036	u	< 0.0028	u	< 0.0043	u	< 0.0024	u	< 0.0024	u	< 0.0031	u	< 0.0028	u	< 0.0025	u	< 0.0021	u	< 0.0026	u	< 0.0028	u	< 0.0024	u	< 0.002	u	< 0.0025	u	< 0.0031	u	< 0.003	u	< 0.0025	u	< 0.0024	u
Dichloropropane, 1,3-	1.60E+03	(2)	2.30E+04	(6)	2.60E+00	(9)	< 0.0045	u	< 0.0035	u	< 0.0054	u	< 0.003	u	< 0.003	u	< 0.0038	u	< 0.0034	u	< 0.0031	u	< 0.0027	u	< 0.0032	u	< 0.0035	u	< 0.0029	u	< 0.0025	u	< 0.0031	u	< 0.0039	u	< 0.0037	u	< 0.0031	u	< 0.003	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 0.0034	u	< 0.0027	u	< 0.0041	u	< 0.0023	u	< 0.0023	u	< 0.003	u	< 0.0027	u	< 0.0024	u	< 0.0021	u	< 0.0025	u	< 0.0027	u	< 0.0023	u	< 0.0019	u	< 0.0024	u	< 0.003	u	< 0.0029	u	< 0.0024	u	< 0.0023	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(4)	8.93E-01	(8)	< 0.0237	u	< 0.0187	u	< 0.0285	u	< 0.0158	u	< 0.0159	u	< 0.0203	u	< 0.0183	u	< 0.0163	u	< 0.0141	u	< 0.017	u	< 0.0186	u	< 0.0156	u	< 0.0131	u	< 0.0162	u	< 0.0208	u	< 0.0197	u	< 0.0165	u	< 0.0159	u
2,2-Dichloropropane	-	-	-	-	-	-	< 0.0134	u	< 0.0106	u	< 0.0161	u	< 0.0089	u	< 0.009	u	< 0.0115	u	< 0.0103	u	< 0.0092	u	< 0.008	u	< 0.0096	u	< 0.0105	u	< 0.0088	u	< 0.0074	u	< 0.0092	u	< 0.0118	u	< 0.0111	u	< 0.0093	u	< 0.009	u
2-Butanone (Methyl ethyl ketone, MEK)	3.74E+04	(1)	9.17E+04	(5)	2.01E+01	(8)	0.069	J	0.04	J	< 0.0573	u	< 0.0317	u	0.04	J	< 0.0409	u	< 0.0368	u	0.045	J	0.034	J	0.059	J	< 0.0374	u	0.033	J	< 0.0263	u	< 0.0326	u	0.05	J	0.045	J	0.039	J	< 0.0319	u
o-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	3.56E+00	(8)	< 0.0036	u	< 0.0028	u	< 0.0043	u	< 0.0024	u	< 0.0024	u	< 0.0031	u	< 0.0028	u	< 0.0025	u	< 0.0021	u	< 0.0026	u	< 0.0028	u	< 0.0024	u	< 0.002	u	< 0.0025	u	< 0.0031	u	< 0.003	u	< 0.0025	u	< 0.0024	u
Hexanone, 2-	2.00E+02	(2)	1.30E+03	(6)	1.76E-01	(9)	< 0.0068	u	< 0.0054	u	< 0.0082	u	< 0.0046	u	< 0.0046	u	< 0.0059	u	< 0.0053	u	< 0.0047	u	< 0.0041	u	< 0.0049	u	< 0.0054	u	< 0.0045	u	< 0.0038	u	< 0.0047	u	< 0.006	u	< 0.0057	u	< 0.0048	u	< 0.0046	u
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	< 0.018	u	< 0.0142	u	< 0.0216	u	< 0.012	u	< 0.0121	u	< 0.0154	u	< 0.0139	u	< 0.0124	u	< 0.0107	u	< 0.0129	u	< 0.0141	u	< 0.0119	u	< 0.0099	u	< 0.0123	u	< 0.0158	u	< 0.015	u	< 0.0126	u	< 0.0121	u
Chlorotoluene, p-	1.60E+03	(2)	2.30E+04	(6)	4.80E+00	(9)	< 0.0034	u	< 0.0027	u	< 0.0041	u	< 0.0022	u	< 0.0023	u	< 0.0029	u	< 0.0026	u	< 0.0023	u	< 0.002	u	< 0.0024	u	< 0.0026	u	< 0.0022	u	< 0.0019	u	< 0.0023	u	< 0.003	u	< 0.0028	u	< 0.0024	u	< 0.0023	u
4-Isopropyltoluene	-	-	-	-	-	-	< 0.0034	u	< 0.0027	u	< 0.0041	u	< 0.0023	u	< 0.0023	u	< 0.0029	u	< 0.0026	u	< 0.0023	u	< 0.002	u	< 0.0024	u	< 0.0027	u	< 0.0023	u	< 0.0019	u	< 0.0023	u	< 0.003	u	< 0.0028	u	< 0.0024	u	< 0.0023	u
Methyl isobutyl ketone	5.81E+03	(1)	2.02E+04	(5)	4.80E+00	(8)	< 0.0078	u	< 0.0061	u	< 0.0093	u	< 0.0052	u	< 0.0052	u	< 0.0067	u	< 0.006	u	< 0.0054	u	< 0.0046	u	< 0.0056	u	< 0.0061	u	< 0.0051	u	< 0.0043	u	< 0.0053	u	< 0.0068	u	< 0.0065	u	< 0.0054	u	< 0.0052	u
Acetone	6.63E+04	(1)	2.42E+05	(5)	4.98E+01	(8)	< 0.0341	u	< 0.0269	u	1.8	v	< 0.0227	u	< 0.0229	u	< 0.0293	u	< 0.0263	u	< 0.0235	u	< 0.0204	u	< 0.0245	u	< 0.0268	u	< 0.0225	u	< 0.0189	u	< 0.0234	u	< 0.03	u	< 0.0284	u	< 0.0238	u	< 0.0229	u
Benzene	1.78E+01	(1)	8.72E+01	(4)	4.18E-02	(8)	< 0.0034	u	< 0.0027	u	< 0.004	u	< 0.0022	u	< 0.0023	u	< 0.0029	u	< 0.0026	u	< 0.0023	u	< 0.002	u	< 0.0024	u	< 0.0026	u	< 0.0022	u	< 0.0019	u	< 0.0023	u	< 0.003	u	< 0.0028	u	< 0.0023	u	< 0.0023	u
Bromobenzene	2.90E+02	(2)	1.80E+03	(6)	8.40E-01	(9)	< 0.0039	u	< 0.0031	u	< 0.0047	u	< 0.0026	u	< 0.0027	u	< 0.0034	u	< 0.003	u	< 0.0027	u	< 0.0024	u	< 0.0028	u	< 0.0031	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.0035	u	< 0.0033	u	< 0.0028	u	< 0.0026	u
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	6.21E-03	(8)	< 0.0038	u	< 0.003	u	< 0.0045	u	< 0.0025	u	< 0.0025	u	< 0.0032	u	< 0.0029	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.0029	u	< 0.0025	u	< 0.0021	u	< 0.0026	u	< 0.0033	u	< 0.0031	u	< 0.0026	u	< 0.0025	u
Tribromomethane (Bromoform)	6.74E+02	(1)	1.76E+03	(4)	1.47E-01	(8)	< 0.0037	u	< 0.0029	u	< 0.0045	u	< 0.0025	u	< 0.0025	u	< 0.0032	u	< 0.0029	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.0029	u	< 0.0025	u	< 0.0021	u	< 0.0025	u	< 0.0033	u	< 0.0031	u	< 0.0026	u	< 0.0025	u
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	3.43E-02	(8)	< 0.0099	u	< 0.0078	u	< 0.0119	u	< 0.0066	u	< 0.0067	u	< 0.0085	u	< 0.0077	u	< 0.0068	u	< 0.0059	u	< 0.0071	u	< 0.0078	u	< 0.0066	u	< 0.0055	u	< 0.0068	u	< 0.0087	u	< 0.0083	u	< 0.0069	u	< 0.0067	u
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	4.42E+00	(8)	< 0.0136	u	< 0.0107	u	< 0.0163	u	< 0.0091	u	< 0.0091	u	< 0.0117	u	< 0.0105	u	< 0.0094	u	< 0.0081	u	< 0.0098	u	< 0.0107	u	< 0.009	u	< 0.0075	u	< 0.0093	u	< 0.0119	u	< 0.0113	u	< 0.0095	u	< 0.0091	u
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	3.67E-02	(8)	< 0.0039	u	< 0.0031	u	< 0.0047	u	< 0.0026	u	< 0.0026	u	< 0.0033	u	< 0.003	u	< 0.0027	u	< 0.0023	u	< 0.0028	u	< 0.0031	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.0034	u	< 0.0032	u	< 0.0027	u	< 0.0026	u
Chlorobenzene (Monochlorobenzene	3.78E+02	(1)	4.12E+02	(5)	1.08E+00	(8)	< 0.0053	u	< 0.0042	u	< 0.0063	u	< 0.0035	u	< 0.0035	u	< 0.0045	u	< 0.0041	u	< 0.0036	u	< 0.0031	u	< 0.0038	u	< 0.0041	u	< 0.0035	u	< 0.0029	u	< 0.0036	u	< 0.0046	u	< 0.0044	u	< 0.0037	u	< 0.0035	u
Ethyl chloride	1.90E+04	(1)	1.66E+04	(5)	1.07E+02	(8)	< 0.0061	u	< 0.0048	u	< 0.0073	u	< 0.004	u	< 0.0041	u	< 0.0052	u	< 0.0047	u	< 0.0042	u	< 0.0036	u	< 0.0044	u	< 0.0048	u	< 0.004	u	< 0.0034	u	< 0.0042	u	< 0.0053	u	< 0.005	u	< 0.0042	u	< 0.0041	u
Chloroform	5.90E+00	(1)	2.87E+01	(4)	1.09E-02	(8)	< 0.0033	u	< 0.0026	u	< 0.004	u	< 0.0022	u	< 0.0022	u	< 0.0028	u	< 0.0026	u	< 0.0023	u	< 0.002	u	< 0.0024	u	< 0.0026	u	< 0.0022	u	< 0.0018	u	< 0.0023	u	< 0.0029	u	< 0.0028	u	< 0.0023	u	< 0.0022	u
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	9.52E-02	(8)	< 0.0039	u	< 0.0031	u	< 0.0047	u	< 0.0026	u	< 0.0026	u	< 0.0034	u	< 0.003	u	< 0.0027	u	< 0.0024	u	< 0.0028	u	< 0.0031	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.0035	u	< 0.0033	u	< 0.0027	u	< 0.0026	u
cis-1,2-Dichloroethene	1.56E+02	(1)	7.08E+02	(5)	3.52E-01	(8)	< 0.0056	u	< 0.0044	u	< 0.0068	u	< 0.0038	u	< 0.0038	u	< 0.0048	u	< 0.0043	u	< 0.0039	u	< 0.0034	u	< 0.004	u	< 0.0044	u	< 0.0037	u	< 0.0031	u	< 0.0039	u	< 0.0049	u	< 0.0047	u	< 0.0039	u	< 0.0038	u
cis-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0035	u	< 0.0027	u	< 0.0042	u	< 0.0023	u	< 0.0023	u	< 0.003	u	< 0.0027	u	< 0.0024	u	< 0.0021	u	< 0.0025	u	< 0.0027	u	< 0.0023	u	< 0.0019	u	< 0.0024	u	< 0.0031	u	< 0.0029	u	< 0.0024	u	< 0.0023	u
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	7.55E-03	(8)	< 0.0029	u	< 0.0023	u	< 0.0035	u	< 0.0019	u	< 0.002	u	< 0.0025	u	< 0.0023	u	< 0.002	u	< 0.0017	u	< 0.0021	u	< 0.0023	u	< 0.0019	u	< 0.0016	u	< 0.002	u	< 0.0026	u	< 0.0024	u	< 0.002	u	< 0.002	u
Dibromomethane (Methylene Bromide)	2.40E+01	(2)	9.90E+01	(6)	4.20E-02	(9)	< 0.0044	u	< 0.0035	u	< 0.0053	u	< 0.003	u	< 0.003	u	< 0.0038	u	< 0.0034	u	< 0.0031	u	< 0.0026	u	< 0.0032	u	< 0.0035	u	< 0.0029	u	< 0.0024	u	< 0.003	u	< 0.0039	u	< 0.0037	u	< 0.0031	u	< 0.003	u
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	7.23E+00	(8)	< 0.0096	u	< 0.0075	u	< 0.0115	u	< 0.0064	u	< 0.0064	u	< 0.0082	u	< 0.0074	u	< 0.0066	u	< 0.0057	u	< 0.0069	u	< 0.0075	u	< 0.0063	u	< 0.0053	u	< 0.0065	u	< 0.0084	u	< 0.0079	u	< 0.0067	u	< 0.0064	u

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-1 (0-0.5')		SWMU13-1 (1.5-2')		SWMU 13-1 (5-6')		SWMU 13-1 (8-10')		SWMU 13-1 (14-16')		SWMU 13-2 (0-0.5')		SWMU 13-2 (1.5-2')		SWMU 13-2 (8-10')		SWMU 13-2 (14-16')		SWMU 13-3 (0-0.5')		SWMU 13-3 (1.5-2')		SWMU 13-3 (8-10')		SWMU 13-3 (14-15.25')		SWMU 13-3 (15.25-16')		SWMU 13-4 (0-0.5')		SWMU 13-4 (1.5-2')		SWMU 13-4 (8-10')		SWMU 13-4 (14-15.5')	
Lab ID							1910d16-001		1910d16-002		1910d16-003		1910D16-004		1910d16-005		1910d16-006		1910d16-007		1910d16-008		1910d16-009		1910d16-010		1910D16-011		1910D16-012		1910d16-013		1910D16-014		1910d68-001		1910d68-002		1910d68-003		1910d68-004	
Sample Date							10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019	
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.23E+01	(8)	< 0.0024	u	< 0.0019	u	< 0.0029	u	< 0.0016	u	< 0.0016	u	< 0.0021	u	< 0.0018	u	< 0.0016	u	< 0.0014	u	< 0.0017	u	< 0.0019	u	< 0.0016	u	< 0.0013	u	< 0.0016	u	< 0.0021	u	< 0.002	u	< 0.0017	u	< 0.0016	u
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	< 0.0042	u	< 0.0033	u	< 0.005	u	< 0.0028	u	< 0.0028	u	< 0.0036	u	< 0.0032	u	< 0.0029	u	< 0.0025	u	< 0.003	u	< 0.0033	u	< 0.0028	u	< 0.0023	u	< 0.0029	u	< 0.0037	u	< 0.0035	u	< 0.0029	u	< 0.0028	u
Cumene (isopropylbenzene)	2.36E+03	(1)	2.74E+03	(5)	1.14E+01	(8)	< 0.003	u	< 0.0023	u	< 0.0036	u	< 0.002	u	< 0.002	u	< 0.0025	u	< 0.0023	u	< 0.002	u	< 0.0018	u	< 0.0021	u	< 0.0023	u	< 0.002	u	< 0.0016	u	< 0.002	u	< 0.0026	u	< 0.0025	u	< 0.0021	u	< 0.002	u
tert-Butyl methyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	5.53E-01	(8)	< 0.0098	u	< 0.0077	u	< 0.0117	u	< 0.0065	u	< 0.0066	u	< 0.0084	u	< 0.0075	u	< 0.0067	u	< 0.0058	u	< 0.007	u	< 0.0077	u	< 0.0064	u	< 0.0054	u	< 0.0067	u	< 0.0086	u	< 0.0081	u	< 0.0068	u	< 0.0065	u
Methylene chloride (Dichloromethan	4.09E+02	(1)	1.21E+03	(5)	2.21E-02	(10)	< 0.0073	u	0.0067	J	< 0.0087	u	0.0055	J	0.0056	J	< 0.0062	u	< 0.0056	u	0.0052	J	< 0.0043	u	< 0.0052	u	0.0067	J	< 0.0048	u	0.0043	J	< 0.005	u	< 0.0064	u	< 0.006	u	< 0.0051	u	< 0.0049	u
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	< 0.0082	u	< 0.0065	u	< 0.0099	u	< 0.0055	u	< 0.0055	u	< 0.0071	u	< 0.0064	u	< 0.0057	u	< 0.0049	u	< 0.0059	u	< 0.0065	u	< 0.0054	u	< 0.0046	u	< 0.0056	u	< 0.0072	u	< 0.0069	u	< 0.0058	u	< 0.0055	u
Butylbenzene, n-	3.90E+03	(2)	5.80E+04	(6)	6.40E+01	(9)	< 0.0038	u	< 0.003	u	< 0.0046	u	< 0.0026	u	< 0.0026	u	< 0.0033	u	< 0.003	u	< 0.0026	u	< 0.0023	u	< 0.0028	u	< 0.003	u	< 0.0025	u	< 0.0021	u	< 0.0026	u	< 0.0034	u	< 0.0032	u	< 0.0027	u	< 0.0026	u
Propyl benzene	3.80E+03	(2)	2.40E+04	(6)	2.40E+01	(9)	< 0.0033	u	< 0.0026	u	< 0.0039	u	< 0.0022	u	< 0.0022	u	< 0.0028	u	< 0.0025	u	< 0.0023	u	< 0.002	u	< 0.0024	u	< 0.0026	u	< 0.0022	u	< 0.0018	u	< 0.0022	u	< 0.0029	u	< 0.0027	u	< 0.0023	u	< 0.0022	u
Butylbenzene, sec-	7.80E+03	(2)	1.20E+05	(6)	1.18E+02	(9)	< 0.0046	u	< 0.0037	u	< 0.0056	u	< 0.0031	u	< 0.0031	u	< 0.004	u	< 0.0036	u	< 0.0032	u	< 0.0028	u	< 0.0033	u	< 0.0036	u	< 0.0031	u	< 0.0026	u	< 0.0032	u	< 0.0041	u	< 0.0039	u	< 0.0032	u	< 0.0031	u
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.71E+00	(10)	< 0.0032	u	< 0.0025	u	< 0.0039	u	< 0.0022	u	< 0.0022	u	< 0.0028	u	< 0.0025	u	< 0.0022	u	< 0.0019	u	< 0.0023	u	< 0.0025	u	< 0.0021	u	< 0.0018	u	< 0.0022	u	< 0.0028	u	< 0.0027	u	< 0.0023	u	< 0.0022	u
Butylbenzene, tert-	7.80E+03	(2)	1.20E+05	(6)	3.20E+01	(9)	< 0.0039	u	< 0.0031	u	< 0.0047	u	< 0.0026	u	< 0.0026	u	< 0.0033	u	< 0.003	u	< 0.0027	u	< 0.0023	u	< 0.0028	u	< 0.003	u	< 0.0026	u	< 0.0021	u	< 0.0027	u	< 0.0034	u	< 0.0032	u	< 0.0027	u	< 0.0026	u
Tetrachloroethene	1.11E+02	(1)	1.20E+02	(5)	3.98E-02	(10)	< 0.0033	u	< 0.0026	u	< 0.004	u	< 0.0022	u	< 0.0022	u	< 0.0028	u	< 0.0025	u	< 0.0023	u	< 0.002	u	< 0.0024	u	< 0.0026	u	< 0.0022	u	< 0.0018	u	< 0.0023	u	< 0.0029	u	< 0.0027	u	< 0.0023	u	< 0.0022	u
Toluene	5.23E+03	(1)	1.40E+04	(5)	1.11E+01	(10)	< 0.0039	u	< 0.0031	u	< 0.0047	u	< 0.0026	u	< 0.0026	u	< 0.0034	u	< 0.003	u	< 0.0027	u	< 0.0023	u	< 0.0028	u	< 0.0031	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.0035	u	< 0.0033	u	< 0.0027	u	< 0.0026	u
trans-1,2-Dichloroethene	2.95E+02	(1)	3.05E+02	(5)	5.03E-01	(8)	< 0.0038	u	< 0.003	u	< 0.0045	u	< 0.0025	u	< 0.0025	u	< 0.0032	u	< 0.0029	u	< 0.0026	u	< 0.0022	u	< 0.0027	u	< 0.003	u	< 0.0025	u	< 0.0021	u	< 0.0026	u	< 0.0033	u	< 0.0031	u	< 0.0026	u	< 0.0025	u
trans-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0044	u	< 0.0034	u	< 0.0052	u	< 0.0029	u	< 0.0029	u	< 0.0037	u	< 0.0034	u	< 0.003	u	< 0.0026	u	< 0.0031	u	< 0.0034	u	< 0.0029	u	< 0.0024	u	< 0.003	u	< 0.0038	u	< 0.0036	u	< 0.003	u	< 0.0029	u
Trichloroethylene	6.77E+00	(1)	6.90E+00	(5)	3.10E-02	(8)	< 0.0048	u	< 0.0038	u	< 0.0057	u	< 0.0032	u	< 0.0032	u	< 0.0041	u	< 0.0037	u	< 0.0033	u	< 0.0028	u	< 0.0034	u	< 0.0037	u	< 0.0031	u	< 0.0026	u	< 0.0033	u	< 0.0042	u	< 0.004	u	< 0.0033	u	< 0.0032	u
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	1.57E+01	(8)	< 0.014	u	< 0.011	u	< 0.0168	u	< 0.0093	u	< 0.0094	u	< 0.012	u	< 0.0108	u	< 0.0096	u	< 0.0083	u	< 0.01	u	< 0.011	u	< 0.0092	u	< 0.0077	u	< 0.0096	u	< 0.0123	u	< 0.0116	u	< 0.0097	u	< 0.0094	u
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	1.34E-02	(8)	< 0.0027	u	< 0.0021	u	< 0.0032	u	< 0.0018	u	< 0.0018	u	< 0.0023	u	< 0.0021	u	< 0.0019	u	< 0.0016	u	< 0.0019	u	< 0.0021	u	< 0.0018	u	< 0.0015	u	< 0.0018	u	< 0.0024	u	< 0.0022	u	< 0.0019	u	< 0.0018	u
Xylenes	8.71E+02	(1)	7.98E+02	(5)	1.54E+02	(8)	< 0.0104	u	< 0.0082	u	< 0.0125	u	< 0.0069	u	< 0.007	u	< 0.0089	u	< 0.008	u	< 0.0071	u	< 0.0062	u	< 0.0075	u	< 0.0081	u	< 0.0069	u	< 0.0057	u	< 0.0071	u	< 0.0091	u	< 0.0086	u	< 0.0072	u	< 0.007	u
Semi-volatiles (mg/kg)																																								
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 1.5909	u	< 0.3172	u	< 0.1449	u	< 0.1514	u	< 0.1519	u	< 0.309	u	< 0.1512	u	< 0.1549	u	< 0.1533	u	< 0.7637	u	< 0.3042	u	< 0.3019	u	< 0.1576	u	< 0.1501	u	< 1.5344	u	< 0.1596	u	< 0.1515	u	< 0.1477	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 1.2297	u	< 0.2452	u	< 0.112	u	< 0.1171	u	< 0.1174	u	< 0.2388	u	< 0.1169	u	< 0.1197	u	< 0.1185	u	< 0.5903	u	< 0.2351	u	< 0.2334	u	< 0.1218	u	< 0.116	u	< 1.186	u	< 0.1234	u	< 0.1171	u	< 0.1142	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 1.0778	u	< 0.2149	u	< 0.0982	u	< 0.1026	u	< 0.1029	u	< 0.2093	u	< 0.1024	u	< 0.105	u	< 0.1038	u	< 0.5174	u	< 0.2061	u	< 0.2045	u	< 0.1068	u	< 0.1017	u	< 1.0395	u	< 0.1081	u	< 0.1026	u	< 0.1001	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 1.0904	u	< 0.2174	u	< 0.0993	u	< 0.1038	u	< 0.1041	u	< 0.2118	u	< 0.1036	u	< 0.1062	u	< 0.1051	u	< 0.5234	u	< 0.2085	u	< 0.2069	u	< 0.108	u	< 0.1029	u	< 1.0516	u	< 0.1094	u	< 0.1038	u	< 0.1013	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(7)	8.93E-01	(8)	< 1.5322	u	< 0.3055	u	< 0.1396	u	< 0.1459	u	< 0.1463	u	< 0.2976	u	< 0.1456	u	< 0.1492	u	< 0.1476	u	< 0.7355	u	< 0.2929	u	< 0.2908	u	< 0.1518	u	< 0.1446	u	< 1.4778	u	< 0.1537	u	< 0.1459	u	< 0.1423	u
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	6.62E+01	(8)	< 1.3271	u	< 0.2646	u	< 0.1209	u	< 0.1263	u	< 0.1267	u	< 0.2578	u	< 0.1261	u	< 0.1292	u	< 0.1279	u	< 0.637	u	< 0.2537	u	< 0.2518	u	< 0.1315	u	< 0.1252	u	< 1.2799	u	< 0.1331	u	< 0.1264	u	< 0.1232	u
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	6.74E-01	(8)	< 1.0761	u	< 0.2146	u	< 0.098	u	< 0.1024	u	< 0.1027	u	< 0.209	u	< 0.1023	u	< 0.1048	u	< 0.1037	u	< 0.5165	u	< 0.2057	u	< 0.2042	u	< 0.1066	u	< 0.1015	u	< 1.0378	u	< 0.1079	u	< 0.1025	u	< 0.0999	u
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	8.25E-01	(8)	< 1.1906	u	< 0.2374	u	< 0.1084	u	< 0.1133	u	< 0.1137	u	< 0.2313	u	< 0.1132	u	< 0.1159	u	< 0.1147	u	< 0.5715	u	< 0.2276	u	< 0.2259	u	< 0.118	u	< 0.1124	u	< 1.1483	u	< 0.1194	u	< 0.1134	u	< 0.1106	u
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	6.45E+00	(8)	< 1.1282	u	< 0.225	u	< 0.1028	u	< 0.1074	u	< 0.1077	u	< 0.2191	u	< 0.1072	u	< 0.1099	u	< 0.1087	u	< 0.5416	u	< 0.2157	u	< 0.2141	u	< 0.1118	u	< 0.1065	u	< 1.0881	u	< 0.1132	u	< 0.1074	u	< 0.1048	u
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	6.69E-01	(8)	< 0.7438	u	< 0.1483	u	< 0.0677	u	< 0.0708	u	< 0.071	u	< 0.1445	u	< 0.0707	u	< 0.0724	u	< 0.0717	u	< 0.357	u	< 0.1422	u	< 0.1411	u	< 0.0737	u	< 0.0702	u	< 0.7173	u	< 0.0746	u	< 0.0708	u	< 0.0691	u
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	4.92E-02	(8)	< 1.2066	u	< 0.2406	u	< 0.1099	u	< 0.1149	u	< 0.1152	u	< 0.2344	u	< 0.1147	u	< 0.1175	u	< 0.1163	u	< 0.5792	u	< 0.2307	u	< 0.229	u	< 0.1196	u	< 0.1139	u	< 1.1637	u	< 0.121	u	< 0.1149	u	< 0.1121	u
2,6-Dintitrotoluene	3.56E+00	(1)	1.72E+01	(4)	1.02E-02	(8)	< 1.3473	u	< 0.2686	u	< 0.1227	u	< 0.1283	u	< 0.1286	u	< 0.2617	u	< 0.128	u	< 0.1312	u	< 0.1298	u	< 0.6467	u	< 0.2576	u	< 0.2557	u	< 0.1335	u	< 0.1271	u	< 1.2994	u	< 0.1351	u	< 0.1283	u	< 0.1251	u
b-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	5.70E+01	(8)	< 1.2774	u	< 0.2547	u	< 0.1163	u	< 0.1216	u	< 0.122	u	< 0.2481	u	< 0.1214	u	< 0.1244	u	< 0.1231	u	< 0.6132	u	< 0.2442	u	< 0.2424	u	< 0.1266	u	< 0.1205	u	< 1.232	u	< 0.1281	u	< 0.1216	u	< 0.1186	u
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	1.15E+00	(8)	< 1.2735	u	< 0.2539	u	< 0.116	u	< 0.1212	u	< 0.1216	u	< 0.2474	u	< 0.121	u	< 0.124	u	< 0.1227	u	< 0.6113	u	< 0.2435	u	< 0.2417	u	< 0.1262	u	< 0.1202	u	< 1.2282	u	< 0.1277	u	< 0.1213	u	< 0.1183	u
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	< 1.4914	u	< 0.2974	u	< 0.1358	u	< 0.142	u	< 0.1424	u	< 0.2897	u	< 0.1417	u	< 0.1452	u	< 0.1437	u	< 0.7159	u	< 0.2851	u	< 0.283	u	< 0.1478	u	< 0.1407	u	< 1.4384	u	< 0.1496	u	< 0.142	u	< 0.1385	u
Cresol, o-	3.20E+03	(2)	4.10E+04	(6)	1.50E+01	(9)	< 1.2141	u	< 0.2421	u	< 0.1106	u	< 0.1156	u	< 0.1159	u	< 0.2358	u	< 0.1154	u	< 0.1182	u	< 0.117	u	< 0.5828	u	< 0.2321	u	< 0.2304	u	< 0.1203	u	< 0.1146	u	< 1.1709	u	< 0.1218	u	< 0.1156	u	< 0.1127	u
Nitroaniline, 2-	6.30E+02	(2)	8.00E+03	(6)	1.60E+00	(9)	< 1.462	u	< 0.2915	u	< 0.1332	u	< 0.1392	u	< 0.1396	u	< 0.284	u	< 0.1389	u	< 0.1424	u	< 0.1409	u	< 0.7018	u	< 0.2795	u	< 0.2774	u	< 0.1449	u	< 0.138	u	< 1.41	u	< 0.1467	u	< 0.1392	u	< 0.1358	u
2-Nitrophenol	-	-	-	-	-	-	< 1.3979	u	< 0.2787	u	< 0.1273	u	< 0.1331	u	< 0.1335	u	< 0.2715	u	< 0.1328	u	< 0.1361	u	< 0.1347	u	< 0.671	u	< 0.2673	u	< 0.2653	u	< 0.1385	u	< 0.1319	u	< 1.3482	u	< 0.1402	u	< 0.1331	u	< 0.1298	u
3,3-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	1.24E-01	(8)	< 0.91	u	< 0.1814	u	< 0.0829	u	< 0.0866	u	< 0.0869	u	< 0.1767	u	< 0.0865	u	< 0.0886	u	< 0.0877	u	< 0.4368	u	< 0.174	u	< 0.1727	u	< 0.0902	u	< 0.0859	u	< 0.8776	u	< 0.0913	u	< 0.0866	u	< 0.0845	u
3+4-Methylphenol	-	-	-	-	-	-	< 1.2565	u	< 0.2505	u	< 0.1144	u	< 0.1196	u	< 0.12	u	< 0.244	u	< 0.1194	u	< 0.1223	u	< 0.1211	u	< 0.6031	u	< 0.2402	u	< 0.2384	u	< 0.1245	u	< 0.1186	u	< 1.2118	u	< 0.126	u	< 0.1196	u	< 0.1167	u
3-Nitroaniline	-	-	-	-	-	-	< 1.4125	u	< 0.2816	u	< 0.1286	u	< 0.1345	u	< 0.1349	u	< 0.2744	u	< 0.1342	u	< 0.1375	u	< 0.1361	u	< 0.678	u	< 0.2701	u	< 0.268	u	< 0.14	u	< 0.1333	u	< 1.3623	u	< 0.1417	u	< 0.1345	u	< 0.1312	u
4,6-Dinitro-o-cresol	4.93E+00	(1)	2.15E+01	(5)	3.98E-02	(8)	< 0.9456	u	< 0.1885	u	< 0.0861	u	< 0.09	u	< 0.0903	u	< 0.1837	u	< 0.0899	u	< 0.0921	u	< 0.0911	u	< 0.4539	u	< 0.1808	u	< 0.1794	u	< 0.0937	u	< 0.0892	u	< 0.912	u	< 0.0949	u	< 0.09	u	< 0.0878	u
4-Bromophenyl phenyl ether	-	-	-	-	-	-	< 1.2034	u	< 0.2399	u	< 0.1096	u	< 0.1146	u	< 0.1149	u	< 0.2337	u	< 0.1144	u	< 0.1172	u	< 0.1159	u	< 0.5776	u	< 0.2301	u	< 0.2284	u	< 0.1192	u	< 0.1136	u	< 1.1606	u	< 0.1207	u	< 0.1146	u	< 0.1118	u
4-Chloro-3-methylphenol	-	-	-	-	-	-	< 1.5706	u	< 0.3132	u	< 0.143	u	< 0.1495	u	< 0.1499	u	< 0.3051	u	< 0.1493	u	< 0.1529	u	< 0.1513	u	< 0.7539	u	< 0.3003	u	< 0.298	u	< 0.1556	u	< 0.1482	u	< 1.5148	u	< 0.1575	u	< 0.1496	u	< 0.1459	u
Chloroaniline, p-	2.70E+01	(3)	1.10E+02	(7)	3.20E-03	(9)	< 1.4502	u	< 0.2892	u	< 0.1321	u	< 0.138	u	< 0.1384	u	< 0.2817	u	< 0.1378	u	< 0.1412	u	< 0.1397	u	< 0.6961	u	< 0.2773	u	< 0.2752	u	< 0.1437	u	< 0.1368	u	< 1.3986	u	< 0.1455	u	< 0.1381	u	< 0.1347	u
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	< 1.1157	u	< 0.2225	u	< 0.1016	u	< 0.1062	u	< 0.1065	u	< 0.2167	u	< 0.106	u	< 0.1086	u	< 0.1075	u	< 0.5356	u	< 0.2133	u	< 0.2117	u	< 0.1106	u	< 0.1053	u	< 1.0761	u	< 0.1119	u	< 0.1062	u	< 0.1036	u
Nitroaniline, 4-	2.70E+02	(3)	1.10E+03	(7)	3.20E-02	(9)	< 1.3071	u	< 0.2606	u	< 0.119	u	< 0.1244	u	< 0.1248	u	< 0.2539	u	< 0.1242	u	< 0.1273	u	< 0.1259	u	< 0.6274	u	< 0.2499	u	< 0.248	u	< 0.1295	u	< 0.1233	u	< 1.2607	u	< 0.1311	u	< 0.1245	u	< 0.1214	u
4-Nitrophenol	-	-	-	-	-	-	< 1.3883	u	< 0.2768	u	< 0.1264	u	< 0.1322	u	< 0.1325	u	< 0.2696	u	< 0.1319	u	< 0.1352	u	< 0.1338	u	< 0.6664	u	< 0.2654	u	< 0.2634	u	< 0.1376	u	< 0.131	u	< 1.3389	u	< 0.1393	u	< 0.1322	u	< 0.1289	u
Acenaphthene	3.48E+03	(1)	1.51E+04	(5)	8.25E+01	(8)	< 1.228	u	< 0.2449	u	< 0.1118	u	< 0.1169	u	< 0.1172	u	< 0.2385	u	< 0.1167	u	< 0.1196	u	< 0.1183	u	< 0.5895	u	< 0.2348	u	< 0.233	u	< 0.1217	u	< 0.1159	u	< 1.1844	u	< 0.1232	u	< 0.1169	u	< 0.114	u
Acenaphthylene	-	-	-	-	-	-	< 1.122	u	< 0.2237	u	< 0.1022	u	< 0.1068	u	< 0.1071	u	< 0.2179	u	< 0.1066	u	< 0.1093	u	< 0.1081	u	< 0.5386	u	< 0.2145	u	< 0.2129	u	< 0.1112	u	< 0.1059	u	< 1.0821	u	< 0.1125	u	< 0.1068	u	< 0.1042	u
Aniline	9.50E+02	(3)	4.00E+03	(7)	9.20E-02	(9)	< 1.3163	u	< 0.2625	u	< 0.1199	u	< 0.1253	u	< 0.1257	u	< 0.2557	u	< 0.1251	u	< 0.1282	u	< 0.1268	u	< 0.6318	u	< 0.2517	u	< 0.2498	u	< 0.1304	u	< 0.1242	u	< 1.2695	u	< 0.132	u	< 0.1253	u	< 0.1222	u
Anthracene	1.74E+04	(1)	7.53E+04	(5)	8.51E+02	(8)	< 1.0946	u	< 0.2182	u	< 0.0997	u	< 0.1042	u	< 0.1045	u	< 0.2126	u	< 0.104	u	< 0.1066	u	< 0.1055	u	< 0.5254	u	< 0.2093	u	< 0.2077	u	< 0.1085	u	< 0.1033	u	< 1.0557	u	< 0.1098	u	< 0.1042	u	< 0.1016	u
Azobenzene	5.60E+01	(3)	2.60E+02	(7)	1.86E+06	(9)	< 1.4331	u	< 0.2857	u	< 0.1305	u	< 0.1364	u	< 0.1368	u	< 0.2784	u	< 0.1362	u	< 0.1395	u	< 0.1381	u	< 0.6879	u	< 0.274	u	< 0.2719	u	< 0.142	u	< 0.1352	u	< 1.3821	u	< 0.1438	u	< 0.1365	u	< 0.1331	u
Benzo(a)anthracene	1.53E+00	(1)	3.23E+01	(4)	6.37E-01	(8)	< 0.9863	u	< 0.1967	u	< 0.0898	u	< 0.0939	u	< 0.0942	u	< 0.1916	u	< 0.0937	u	< 0.096	u	< 0.095	u	< 0.4734	u	< 0.1886	u	< 0.1872	u	< 0.0977	u	< 0.0931	u	< 0.9513	u	< 0.0989	u	< 0.0939	u	< 0.0916	u
Benzo(a)pyrene	1.12E+00	(1)	2.36E+01	(4)	3.53E+00	(10)	< 0.9098	u	< 0.1814	u	< 0.0829	u	< 0.0866	u	< 0.0869	u	< 0.1767	u	< 0.0865	u	< 0.0886	u	< 0.0877	u	< 0.4367	u	< 0.1739	u	< 0.1726	u	< 0.0902	u	< 0.0859	u	< 0.8775	u	< 0.0913	u	< 0.0866	u	< 0.0845	u
Benzo(b)fluoranthene	1.53E+00	(1)	3.23E+01	(4)	6.17E+00	(8)	< 0.9054	u	< 0.1805	u	< 0.0825	u	< 0.0862	u	< 0.0864	u	< 0.1759	u	< 0.086	u	< 0.0882	u	< 0.0872	u	< 0.4346	u	< 0.1731	u	< 0.1718	u	< 0.0897	u	< 0.0854	u	< 0.8732	u	< 0.0908	u	< 0.0862	u	< 0.0841	u
Benzo(g,h,i)perylene	-	-	-	-	-	-	< 0.8781	u	< 0.1751	u	< 0.08	u	< 0.0836	u	< 0.0838	u	< 0.1706	u	< 0.0834	u	< 0.0855	u	< 0.0846	u	< 0.4215	u	< 0.1679	u	< 0.1666	u	< 0.087	u	< 0.0829	u	< 0.8469	u	< 0.0881	u	< 0.0836	u	< 0.0815	u
Benzo(k)fluoranthene	1.53E+01	(1)	3.23E+02	(4)	6.05E+01	(8)	< 0.9304	u	< 0.1855	u	< 0.0847	u	< 0.0886	u	< 0.0888	u	< 0.1807	u	< 0.0884	u	< 0.0906	u	< 0.0896	u	< 0.4466	u	< 0.1779	u	< 0.1766	u	< 0.0922	u	< 0.0878	u	< 0.8973	u	< 0.0933	u	< 0.0886	u	< 0.0864	u
Benzoic acid	2.50E+05	(2)	3.30E+06	(6)	3.00E+02	(9)	< 1.0573	u	< 0.2108	u	< 0.0963	u	< 0.1006	u	< 0.1009	u	< 0.2054	u	< 0.1005	u	< 0.103	u	< 0.1019	u	< 0.5075	u	< 0.2021	u	< 0.2006	u	< 0.1048	u	< 0.0998	u	< 1.0197	u	< 0.1061	u	< 0.1007	u	< 0.0982	u
Benzyl alcohol	6.30E+03	(2)	8.20E+04	(6)	9.60E+00	(9)	< 1.2701	u	< 0.2532	u	< 0.1157	u	< 0.1209	u	< 0.1213	u	< 0.2467	u	< 0.1207	u	< 0.1237	u	< 0.1224	u	< 0.6096	u	< 0.2428	u	< 0.241	u	< 0.1258	u	< 0.1198	u	< 1.2249	u	< 0.1274	u	< 0.1209	u	< 0.1179	u
Bis(2-chloroethoxy)methane	1.90E+02	(2)	2.50E+03	(6)	2.60E-01	(9)	< 1.5132	u	< 0.3017	u	< 0.1378	u	< 0.144	u	< 0.1445	u	< 0.2939	u	< 0.1438	u	< 0.1473	u	< 0.1458	u	< 0.7264	u	< 0.2893	u	< 0.2872	u	< 0.1499	u	< 0.1428	u	< 1.4594	u	< 0.1518	u	< 0.1441	u	< 0.1405	u
Bis(2-chloroethyl) ether	3.11E+00	(1)	1.95E+00	(5)	6.05E-04	(8)	< 1.2476	u	< 0.2488	u	< 0.1136	u	< 0.1188	u	< 0.1191	u	< 0.2423	u	< 0.1186	u	< 0.1215	u	< 0.1202	u	< 0.5989	u	< 0.2385	u	< 0.2367	u	< 0.1236	u	< 0.1177	u	< 1.2032	u	< 0.1251	u	< 0.1188	u	< 0.1159	u
Bis(2-chloroisopropyl) ether	9.93E+01	(1)	5.19E+02	(4)	4.75E-02	(8)	< 1.1654	u	< 0.2324	u	< 0.1061	u	< 0.1109	u	< 0.1113	u	< 0.2264	u	< 0.1108	u	< 0.1135	u	< 0.1123	u	< 0.5594	u	< 0.2228	u	< 0.2211	u	< 0.1155	u	< 0.11	u	< 1.1239	u	< 0.1169	u	< 0.111	u	< 0.1082	u
Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate, DEHP]	3.80E+02	(1)	1.83E+03	(4)	2.15E+01	(10)	< 1.4707	u	< 0.2932	u	< 0.1339	u	< 0.14	u	0.14	J	< 0.2857	u	0.14	J	< 0.1432	u	< 0.1417	u	< 0.7059	u	< 0.2812	u	< 0.2791	u	0.31	J	< 0.1388	u	< 1.4184	u	< 0.1475	u	< 0.14	u	< 0.1366	u
Butyl Benzyl Phthalate	2.90E+03	(3)	1.20E+04	(7)	4.60E+00	(9)	< 1.0464	u	< 0.2086	u	< 0.0953	u	< 0.0996	u	< 0.0999	u	< 0.2032	u	< 0.0994	u	< 0.1019	u	< 0.1008	u	< 0.5023	u	< 0.2001	u	< 0.1986	u	< 0.1037	u	< 0.0987	u	< 1.0092	u	< 0.105	u	< 0.0996	u	< 0.0972	u
Carbazole	-	-	-	-	-	-	< 1.2005	u	< 0.2394	u	< 0.1093	u	< 0.1143	u	< 0.1146	u	< 0.2332	u	< 0.1141	u	< 0.1169	u	< 0.1157	u	< 0.5762	u	< 0.2295	u	< 0.2278	u	< 0.119	u	< 0.1133	u	< 1.1578	u	< 0.1204	u	< 0.1143	u	< 0.1115	u
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.86E+02	(8)	< 0.9028	u	< 0.18	u	< 0.0822	u	< 0.0859	u	< 0.0862	u	< 0.1753	u	< 0.0858	u	< 0.0879	u	< 0.087	u	< 0.4333	u	< 0.1726	u	< 0.1713	u	< 0.0895	u	< 0.0852	u	< 0.8707	u	< 0.0906	u	< 0.086	u	< 0.0838	u

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-1 (0-0.5')		SWMU13-1 (1.5-2')		SWMU13-1 (5-6')		SWMU 13-1 (8-10')		SWMU 13-1 (14-16')		SWMU 13-2 (0-0.5')		SWMU 13-2 (1.5-2')		SWMU 13-2 (8-10')		SWMU 13-2 (14-16')		SWMU 13-3 (0-0.5')		SWMU 13-3 (1.5-2')		SWMU 13-3 (8-10')		SWMU 13-3 (14-15.25')		SWMU 13-3 (15.25-16')		SWMU 13-4 (0-0.5')		SWMU 13-4 (1.5-2')		SWMU 13-4 (8-10')		SWMU 13-4 (14-15.5')	
					Lab ID		1910d16-001		1910d16-002		1910d16-003		1910D16-004		1910d16-005		1910d16-006		1910d16-007		1910d16-008		1910d16-009		1910d16-010		1910D16-011		1910D16-012		1910d16-013		1910D16-014		1910d68-001		1910d68-002		1910d68-003		1910d68-004	
					Sample Date		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/22/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019	
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	1.97E+00	(8)	< 0.9307	u	< 0.1856	u	< 0.0848	u	< 0.0886	u	< 0.0889	u	< 0.1808	u	< 0.0884	u	< 0.0906	u	< 0.0897	u	< 0.4467	u	< 0.1779	u	< 0.1766	u	< 0.0922	u	< 0.0878	u	< 0.8976	u	< 0.0934	u	< 0.0886	u	< 0.0864	u
Dibenzofuran	7.30E+01	(2)	1.00E+03	(6)	3.00E+00	(9)	< 1.3415	u	< 0.2675	u	< 0.1222	u	< 0.1277	u	< 0.1281	u	< 0.2606	u	< 0.1275	u	< 0.1306	u	< 0.1292	u	< 0.6439	u	< 0.2565	u	< 0.2546	u	< 0.1329	u	< 0.1266	u	< 1.2938	u	< 0.1346	u	< 0.1277	u	< 0.1246	u
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	9.79E+01	(8)	< 1.4608	u	< 0.2913	u	< 0.133	u	< 0.1391	u	< 0.1395	u	< 0.2837	u	< 0.1388	u	< 0.1422	u	< 0.1407	u	< 0.7012	u	< 0.2793	u	< 0.2772	u	< 0.1447	u	< 0.1378	u	< 1.4089	u	< 0.1465	u	< 0.1391	u	< 0.1357	u
Dimethyl phthalate (DMP, Phthalic Acid)	6.16E+04	(1)	2.69E+05	(5)	3.57E+00	(8)	< 1.3651	u	< 0.2722	u	< 0.1243	u	< 0.1299	u	< 0.1303	u	< 0.2651	u	< 0.1297	u	< 0.1329	u	< 0.1315	u	< 0.6553	u	< 0.261	u	< 0.2591	u	< 0.1353	u	< 0.1288	u	< 1.3166	u	< 0.1369	u	< 0.13	u	< 0.1268	u
Di-n-butyl phthalate (Dibutyl phthalate)	6.16E+03	(1)	2.69E+04	(5)	3.38E+01	(8)	< 1.5279	u	< 0.3047	u	< 0.1392	u	< 0.1454	u	< 0.1459	u	< 0.2968	u	< 0.1452	u	< 0.1488	u	< 0.1472	u	< 0.7334	u	< 0.2921	u	< 0.2899	u	< 0.1514	u	0.15	J	< 1.4736	u	0.26	J	0.18	J	0.16	J
Di-n-octyl phthalate	6.30E+02	(2)	8.20E+03	(6)	1.14E+03	(9)	< 1.0445	u	< 0.2083	u	< 0.0951	u	< 0.0994	u	< 0.0997	u	< 0.2029	u	< 0.0993	u	< 0.1017	u	< 0.1006	u	< 0.5014	u	< 0.1997	u	< 0.1982	u	< 0.1035	u	< 0.0986	u	< 1.0074	u	< 0.1048	u	< 0.0995	u	< 0.097	u
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	1.34E+03	(8)	< 1.1465	u	< 0.2286	u	< 0.1044	u	< 0.1091	u	< 0.1095	u	< 0.2227	u	< 0.109	u	< 0.1116	u	< 0.1105	u	< 0.5503	u	< 0.2192	u	< 0.2176	u	< 0.1136	u	< 0.1082	u	< 1.1057	u	< 0.115	u	< 0.1092	u	< 0.1065	u
Fluorene	2.32E+03	(1)	1.00E+04	(5)	8.00E+01	(8)	< 1.1667	u	< 0.2326	u	< 0.1063	u	< 0.1111	u	< 0.1114	u	< 0.2266	u	< 0.1109	u	< 0.1136	u	< 0.1124	u	< 0.56	u	< 0.223	u	< 0.2214	u	< 0.1156	u	< 0.1101	u	< 1.1252	u	< 0.117	u	< 0.1111	u	< 0.1083	u
Hexachlorobenzene	3.33E+00	(1)	1.17E+02	(5)	1.89E-01	(8)	< 1.2672	u	< 0.2527	u	< 0.1154	u	< 0.1206	u	< 0.121	u	< 0.2461	u	< 0.1204	u	< 0.1234	u	< 0.1221	u	< 0.6083	u	< 0.2423	u	< 0.2405	u	< 0.1256	u	< 0.1196	u	< 1.2222	u	< 0.1271	u	< 0.1207	u	< 0.1177	u
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	< 1.4272	u	< 0.2846	u	< 0.13	u	< 0.1359	u	< 0.1363	u	< 0.2772	u	< 0.1356	u	< 0.139	u	< 0.1375	u	< 0.6851	u	< 0.2729	u	< 0.2708	u	< 0.1414	u	< 0.1347	u	< 1.3765	u	< 0.1432	u	< 0.1359	u	< 0.1325	u
Hexachlorocyclopentadiene	2.30E+00	(1)	8.67E+02	(5)	2.40E+00	(8)	< 1.1703	u	< 0.2333	u	< 0.1066	u	< 0.1114	u	< 0.1117	u	< 0.2273	u	< 0.1112	u	< 0.114	u	< 0.1128	u	< 0.5617	u	< 0.2237	u	< 0.2221	u	< 0.116	u	< 0.1104	u	< 1.1287	u	< 0.1174	u	< 0.1114	u	< 0.1087	u
Hexachloroethane	1.33E+02	(1)	1.88E+02	(5)	3.20E-02	(8)	< 1.1405	u	< 0.2274	u	< 0.1039	u	< 0.1086	u	< 0.1089	u	< 0.2215	u	< 0.1084	u	< 0.111	u	< 0.1099	u	< 0.5474	u	< 0.218	u	< 0.2164	u	< 0.113	u	< 0.1076	u	< 1.0999	u	< 0.1144	u	< 0.1086	u	< 0.1059	u
Indeno(1,2,3-c,d)pyrene	1.53E+00	(1)	3.23E+01	(4)	2.01E+01	(8)	< 1.0191	u	< 0.2032	u	< 0.0928	u	< 0.097	u	< 0.0973	u	< 0.1979	u	< 0.0968	u	< 0.0992	u	< 0.0982	u	< 0.4892	u	< 0.1948	u	< 0.1934	u	< 0.101	u	< 0.0962	u	< 0.9828	u	< 0.1022	u	< 0.097	u	< 0.0946	u
Isophorone	5.61E+03	(1)	2.70E+04	(4)	0.00E+00	(9)	< 1.5074	u	< 0.3006	u	< 0.1373	u	< 0.1435	u	< 0.1439	u	< 0.2928	u	< 0.1433	u	< 0.1468	u	< 0.1452	u	< 0.7236	u	< 0.2882	u	< 0.2861	u	< 0.1494	u	< 0.1422	u	< 1.4538	u	< 0.1512	u	< 0.1435	u	< 0.14	u
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	< 1.5481	u	< 0.3087	u	< 0.141	u	< 0.1474	u	< 0.1478	u	< 0.3007	u	< 0.1471	u	< 0.1507	u	< 0.1492	u	< 0.7431	u	< 0.296	u	< 0.2938	u	< 0.1534	u	< 0.1461	u	< 1.493	u	< 0.1553	u	< 0.1474	u	< 0.1438	u
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	1.44E-02	(8)	< 1.4157	u	< 0.2823	u	< 0.1289	u	< 0.1348	u	< 0.1352	u	< 0.275	u	< 0.1345	u	< 0.1379	u	< 0.1364	u	< 0.6795	u	< 0.2707	u	< 0.2686	u	< 0.1403	u	< 0.1336	u	< 1.3654	u	< 0.142	u	< 0.1348	u	< 0.1315	u
Nitroso-di-N-propylamine, N-	7.80E-01	(3)	3.30E+00	(7)	1.62E-04	(9)	< 1.4615	u	< 0.2914	u	< 0.1331	u	< 0.1391	u	< 0.1395	u	< 0.2839	u	< 0.1389	u	< 0.1423	u	< 0.1408	u	< 0.7016	u	< 0.2794	u	< 0.2773	u	< 0.1448	u	< 0.1379	u	< 1.4096	u	< 0.1466	u	< 0.1392	u	< 0.1357	u
N-Nitrosodiphenylamine	1.09E+03	(1)	5.24E+03	(4)	1.00E+01	(8)	< 1.0761	u	< 0.2146	u	< 0.098	u	< 0.1024	u	< 0.1027	u	< 0.209	u	< 0.1023	u	< 0.1048	u	< 0.1037	u	< 0.5166	u	< 0.2057	u	< 0.2042	u	< 0.1066	u	< 0.1015	u	< 1.0379	u	< 0.1079	u	< 0.1025	u	< 0.0999	u
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	1.52E-01	(8)	< 1.0551	u	< 0.2104	u	< 0.0961	u	< 0.1004	u	< 0.1007	u	< 0.2049	u	< 0.1003	u	< 0.1027	u	< 0.1017	u	< 0.5064	u	< 0.2017	u	< 0.2002	u	< 0.1045	u	< 0.0996	u	< 1.0175	u	< 0.1058	u	< 0.1005	u	< 0.098	u
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	8.59E+01	(8)	< 1.108	u	< 0.2209	u	< 0.1009	u	< 0.1055	u	< 0.1058	u	< 0.2152	u	< 0.1053	u	< 0.1079	u	< 0.1068	u	< 0.5318	u	< 0.2118	u	< 0.2103	u	< 0.1098	u	< 0.1046	u	< 1.0686	u	< 0.1111	u	< 0.1055	u	< 0.1029	u
Phenol	1.85E+04	(1)	7.74E+04	(5)	5.23E+01	(8)	< 1.2735	u	< 0.2539	u	< 0.116	u	< 0.1212	u	< 0.1216	u	< 0.2474	u	< 0.121	u	< 0.124	u	< 0.1227	u	< 0.6113	u	< 0.2435	u	< 0.2417	u	< 0.1262	u	< 0.1202	u	< 1.2283	u	< 0.1277	u	< 0.1213	u	< 0.1183	u
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.92E+02	(8)	< 0.9617	u	< 0.1918	u	< 0.0876	u	< 0.0915	u	< 0.0918	u	< 0.1868	u	< 0.0914	u	< 0.0936	u	< 0.0927	u	< 0.4616	u	< 0.1839	u	< 0.1825	u	< 0.0953	u	< 0.0908	u	< 0.9275	u	< 0.0965	u	< 0.0916	u	< 0.0893	u
Pyridine	7.80E+01	(2)	1.20E+03	(6)	1.36E-01	(9)	< 1.2328	u	< 0.2458	u	< 0.1123	u	< 0.1174	u	< 0.1177	u	< 0.2395	u	< 0.1172	u	< 0.12	u	< 0.1188	u	< 0.5918	u	< 0.2357	u	< 0.2339	u	< 0.1222	u	< 0.1163	u	< 1.189	u	< 0.1237	u	< 0.1174	u	< 0.1145	u
Total Petroleum Hydrocarbons (mg/kg)																																									
Gasoline Range Organics (GRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 1.2454	u	< 0.982	u	< 1.4982	u	< 0.8305	u	< 0.8379	u	< 1.0694	u	< 0.9614	u	< 0.8578	u	< 0.7436	u	< 0.8949	u	< 0.9775	u	< 0.8228	u	< 0.6888	u	< 0.8535	u	< 1.0949	u	< 1.0364	u	< 0.8692	u	< 0.8346	u
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	9.5	J	2.6	J	2.4	J	2.1	J	< 1.9305	u	1.9	J	3.1	J	3.2	J	2	J	110	v	21	v	2.4	J	2.1	J	2.1	J	**1200**	v	16	v	< 1.8315	u	3.1	J
Motor Oil Range Organics (MRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 48.2625	u	< 46.1681	u	< 43.3651	u	< 39.032	u	< 48.2625	u	< 43.8596	u	< 46.1681	u	< 48.3092	u	< 45.0857	u	160	v	< 45.6204	u	< 40.1284	u	< 43.8596	u	< 44.405	u	**1300**	v	< 48.1232	u	< 45.7875	u	< 48.2625	u

- No screening level or analytical result available
NMED - Risk Assessment Guidance for Site Investigations and Remediation (March 2019)
EPA - Regional Screening Levels (Nov. 2019)
(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels
(7) EPA Industrial - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
(8) SoilGW NMED Cw Dilution Attenuation Factor (DAF) = 20
(9) SoilGW Risk-based EPA DAF = 20
(10) SoilGW MCL-based NMED DAF = 20
(11) NMED Tables 6-2 and 6-4 TPH Soil Screening Levels "unknown oil" - see report Section 5 for use of screening levels

Bold represents value above Residential Screening Level
yellow highlight represents value above Non-Residential Screening Level
Bold with yellow highlight value exceeds Residential and Non-Residential Screening Levels

v = reportable detection above the Practical quantitation limit (PQL)
u - result is not detected at method detection limit (MDL)
j - estimated result at concentration above MDL but less than PQL

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-4 (15.5-16')		SWMU 13-5 (0-0.5')		SWMU 13-5 (1.5-2')		SWMU 13-5 (8-10')		SWMU 13-5 (10-10.5')		SWMU 13-5 (14-16')		SWMU 13-6 (0-0.5')		SWMU 13-6 (1.5-2')		SWMU 13-6 (2-3')		SWMU 13-6 (6-8')		SWMU 13-6 (10-11')		SWMU 13-6 (17-18')		SWMU 13-7 (0-0.5')		SWMU 13-7 (1.5-2')		SWMU 13-7 (4-6')		SWMU 13-7 (10-12')		SWMU 13-7 (12-13')	
					Lab ID		1910D68-005		1910d68-006		1910D68-007		1910d68-008		1910D68-009		1910D68-010		1910d68-011		1910d68-012		1910d68-013		1910d68-014		1910d68-015		1910e04-001		1910e04-002		1910E04-003		1910e04-005		1910E04-006		1910e04-007	
					Sample Date		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019	
Metals (mg/kg)																																								
Antimony	3.13E+01	(1)	1.42E+02	(5)	5.42E+00	(10)	< 0.7239	u	< 0.7064	u	< 0.7292	u	< 0.7667	u	< 0.7339	u	< 0.7159	u	< 0.7463	u	< 0.7506	u	< 0.7122	u	< 0.7564	u	< 0.7475	u	< 0.719	u	< 0.7464	u	< 0.7139	u	< 0.721	u	< 0.7431	u	< 0.7047	u
Arsenic	7.07E+00	(1)	3.59E+01	(4)	5.83E+00	(8)	< 2.808	u	< 2.7401	u	< 2.8283	u	< 2.9738	u	< 2.8466	u	< 2.7769	u	< 2.8948	u	< 2.9117	u	< 2.7624	u	< 2.9341	u	< 2.8995	u	< 2.7891	u	< 2.8951	u	< 2.7691	u	< 2.7967	u	< 2.8823	u	< 2.7333	u
Barium	1.56E+04	(1)	4.39E+03	(5)	1.65E+03	(10)	400	v	270	v	250	v	220	v	310	v	180	v	390	v	410	v	310	v	290	v	280	v	260	v	210	v	740	v	290	v	250	v	270	v
Beryllium	1.56E+02	(1)	1.48E+02	(5)	6.32E+01	(10)	0.59	v	1.5	v	0.99	v	1.4	v	1.2	v	1.3	v	0.97	v	0.78	v	0.81	v	1.3	v	1.3	v	1.3	v	1.1	v	0.86	v	0.72	v	1.4	v	1.3	v
Cadmium	7.05E+01	(1)	7.21E+01	(5)	7.52E+00	(10)	< 0.0478	u	< 0.0466	u	< 0.0481	u	< 0.0506	u	< 0.0484	u	< 0.0472	u	< 0.0492	u	< 0.0495	u	< 0.047	u	< 0.0499	u	< 0.0493	u	< 0.0474	u	< 0.0492	u	< 0.0471	u	< 0.0476	u	< 0.049	u	< 0.0465	u
Chromium (Total)	9.66E+01	(1)	1.34E+02	(5)	3.60E+06	(10)	5.4	v	62	v	8.8	v	14	v	13	v	13	v	12	v	9.3	v	7.6	v	12	v	12	v	13	v	11	v	8.9	v	11	v	14	v	14	v
Cobalt	2.34E+01	(1)	3.67E+01	(5)	5.40E+00	(8)	2.6	v	7.1	v	4.8	v	5.7	v	5.4	v	4.7	v	4.4	v	3.8	v	4	v	5.1	v	5.8	v	5.7	v	4.8	v	3.8	v	4.1	v	5.5	v	5.6	v
Cyanide	1.12E+01	(1)	1.21E+01	(5)	7.13E-01	(8)	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u	< 0.25	u
Iron	5.48E+04	(1)	2.48E+05	(5)	6.96E+03	(8)	8600	v	24000	v	14000	v	20000	v	17000	v	19000	v	15000	v	13000	v	12000	v	18000	v	19000	v	18000	v	17000	v	13000	v	11000	v	19000	v	18000	v
Lead	4.00E+02	(2)	8.00E+02	(6)	5.20E-02	(10)	2.6	v	1.2	v	5	v	2.3	v	3	v	1.3	v	2.8	v	3.1	v	3.7	v	3.8	v	2.9	v	1.7	v	1.8	v	1.7	v	2.5	v	2.7	v	2.8	v
Manganese	1.05E+04	(1)	4.64E+02	(5)	2.63E+03	(8)	210	v	320	v	630	v	330	v	350	v	230	v	360	v	350	v	410	v	320	v	330	v	430	v	320	v	380	v	360	v	310	v	300	v
Mercury (elemental)	2.38E+01	(1)	2.07E+01	(5)	2.09E+00	(8)	0.0033	J	0.15	v	0.011	J	0.0057	J	0.0073	J	0.006	J	0.019	J	0.0083	J	0.005	J	0.017	J	0.0044	J	0.0036	J	0.0046	J	0.021	J	0.0052	J	0.0034	J	0.0029	J
Nickel	1.56E+03	(1)	7.53E+02	(5)	4.85E+02	(8)	4.8	v	15	v	9.6	v	13	v	11	v	11	v	9.6	v	7.5	v	7.9	v	12	v	13	v	12	v	9.8	v	7.7	v	7.1	v	12	v	12	v
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.17E+00	(10)	< 2.47	u	< 2.4103	u	< 2.4878	u	< 2.6158	u	< 2.504	u	2.5	J	< 2.5463	u	< 2.5611	u	< 2.4298	u	< 2.5809	u	< 2.5505	u	< 2.4983	u	< 2.5466	u	< 2.4357	u	< 2.4601	u	< 2.5353	u	< 2.5414	u
Silver	3.91E+02	(1)	1.77E+03	(5)	1.38E+01	(8)	< 0.0631	u	< 0.0615	u	< 0.0635	u	< 0.0668	u	< 0.0639	u	< 0.0624	u	< 0.065	u	< 0.0654	u	< 0.062	u	< 0.0659	u	< 0.0651	u	< 0.0626	u	< 0.065	u	< 0.0622	u	< 0.0628	u	< 0.0647	u	< 0.0614	u
Vanadium	3.94E+02	(1)	6.14E+02	(5)	1.26E+03	(8)	13	v	33	v	16	v	22	v	22	v	21	v	20	v	17	v	17	v	20	v	20	v	23	v	20	v	19	v	15	v	21	v	22	v
Zinc	2.35E+04	(1)	1.06E+05	(5)	7.41E+03	(8)	8.6	v	65	v	15	v	19	v	18	v	18	v	18	v	16	v	13	v	17	v	18	v	19	v	20	v	14	v	15	v	19	v	18	v
Volatiles (mg/kg)																																								
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	3.60E-02	(8)	< 0.0033	u	< 0.0027	u	< 0.0025	u	< 0.002	u	< 0.0033	u	< 0.002	u	< 0.0022	u	< 0.0016	u	< 0.0017	u	< 0.0016	u	< 0.0017	u	< 0.0034	u	< 0.002	u	< 0.0017	u	< 0.0017	u	< 0.0016	u	< 0.0033	u
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	1.28E+00	(10)	< 0.0044	u	< 0.0035	u	< 0.0034	u	< 0.0026	u	< 0.0044	u	< 0.0026	u	< 0.003	u	< 0.0022	u	< 0.0023	u	< 0.0022	u	< 0.0023	u	< 0.0045	u	< 0.0027	u	< 0.0023	u	< 0.0022	u	< 0.0022	u	< 0.0044	u
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	4.81E-03	(8)	< 0.0049	u	< 0.004	u	< 0.0038	u	< 0.003	u	< 0.005	u	< 0.0029	u	< 0.0033	u	< 0.0025	u	< 0.0026	u	< 0.0024	u	< 0.0026	u	< 0.0051	u	< 0.003	u	< 0.0026	u	< 0.0025	u	< 0.0025	u	< 0.005	u
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	2.68E-02	(8)	< 0.0034	u	< 0.0028	u	< 0.0026	u	< 0.0021	u	< 0.0035	u	< 0.002	u	< 0.0023	u	< 0.0017	u	< 0.0018	u	< 0.0017	u	< 0.0018	u	< 0.0035	u	< 0.0021	u	< 0.0018	u	< 0.0017	u	< 0.0017	u	< 0.0034	u
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	1.36E-01	(8)	< 0.0031	u	< 0.0025	u	< 0.0024	u	< 0.0019	u	< 0.0031	u	< 0.0018	u	< 0.0021	u	< 0.0015	u	< 0.0017	u	< 0.0015	u	< 0.0016	u	< 0.0032	u	< 0.0019	u	< 0.0016	u	< 0.0016	u	< 0.0016	u	< 0.0031	u
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	4.79E-02	(10)	< 0.0195	u	< 0.0157	u	< 0.015	u	< 0.0117	u	< 0.0196	u	< 0.0116	u	< 0.0132	u	< 0.0097	u	< 0.0104	u	< 0.0096	u	< 0.0101	u	< 0.02	u	< 0.0118	u	< 0.0102	u	< 0.0098	u	< 0.0097	u	< 0.0196	u
1,1-Dichloropropene	-	-	-	-	-	-	< 0.0044	u	< 0.0036	u	< 0.0034	u	< 0.0027	u	< 0.0045	u	< 0.0026	u	< 0.003	u	< 0.0022	u	< 0.0024	u	< 0.0022	u	< 0.0023	u	< 0.0046	u	< 0.0027	u	< 0.0023	u	< 0.0022	u	< 0.0022	u	< 0.0045	u
Trichlorobenzene, 1,2,3-	6.30E+01	(2)	9.30E+02	(6)	4.20E-01	(9)	< 0.0043	u	< 0.0034	u	< 0.0033	u	< 0.0026	u	< 0.0043	u	< 0.0025	u	< 0.0029	u	< 0.0021	u	< 0.0023	u	< 0.0021	u	< 0.0022	u	< 0.0044	u	< 0.0026	u	< 0.0022	u	< 0.0021	u	< 0.0021	u	< 0.0043	u
Trichlorobenzene, 1,2,3-	6.30E+01	(2)	9.30E+02	(6)	4.20E-01	(9)	< 0.0043	u	< 0.0034	u	< 0.0033	u	< 0.0026	u	< 0.0043	u	< 0.0025	u	< 0.0029	u	< 0.0021	u	< 0.0023	u	< 0.0021	u	< 0.0022	u	< 0.0044	u	< 0.0026	u	< 0.0022	u	< 0.0021	u	< 0.0021	u	< 0.0043	u
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	5.82E-05	(8)	< 0.0079	u	< 0.0064	u	< 0.0061	u	< 0.0047	u	< 0.0079	u	< 0.0047	u	< 0.0053	u	< 0.0039	u	< 0.0042	u	< 0.0039	u	< 0.0041	u	< 0.0081	u	< 0.0048	u	< 0.0041	u	< 0.004	u	< 0.0039	u	< 0.0079	u
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 0.0049	u	< 0.004	u	< 0.0038	u	< 0.003	u	< 0.005	u	< 0.0029	u	< 0.0033	u	< 0.0024	u	< 0.0026	u	< 0.0024	u	< 0.0026	u	< 0.0051	u	< 0.003	u	< 0.0026	u	< 0.0025	u	< 0.0025	u	< 0.0049	u
Trimethylbenzene, 1,2,4-	3.00E+02	(2)	1.80E+03	(6)	1.62E+00	(9)	< 0.0044	u	< 0.0036	u	< 0.0034	u	< 0.0027	u	< 0.0045	u	< 0.0026	u	< 0.003	u	< 0.0022	u	< 0.0024	u	< 0.0022	u	< 0.0023	u	< 0.0046	u	< 0.0027	u	< 0.0023	u	< 0.0022	u	< 0.0022	u	< 0.0045	u
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.39E-03	(8)	< 0.005	u	< 0.004	u	< 0.0038	u	< 0.003	u	< 0.005	u	< 0.003	u	< 0.0034	u	< 0.0025	u	< 0.0027	u	< 0.0025	u	< 0.0026	u	< 0.0051	u	< 0.003	u	< 0.0026	u	< 0.0025	u	< 0.0025	u	< 0.005	u
1,2-Dibromoethane (Ethylene dibromide)	6.72E-01	(1)	3.31E+00	(4)	2.36E-04	(10)	< 0.0044	u	< 0.0036	u	< 0.0034	u	< 0.0027	u	< 0.0045	u	< 0.0026	u	< 0.003	u	< 0.0022	u	< 0.0024	u	< 0.0022	u	< 0.0023	u	< 0.0046	u	< 0.0027	u	< 0.0023	u	< 0.0022	u	< 0.0022	u	< 0.0045	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 0.004	u	< 0.0032	u	< 0.0031	u	< 0.0024	u	< 0.004	u	< 0.0024	u	< 0.0027	u	< 0.002	u	< 0.0021	u	< 0.002	u	< 0.0021	u	< 0.0041	u	< 0.0024	u	< 0.0021	u	< 0.002	u	< 0.002	u	< 0.004	u
1,2-Dichloroethane	8.32E+00	(1)	4.07E+01	(4)	2.38E-02	(8)	< 0.005	u	< 0.004	u	< 0.0038	u	< 0.003	u	< 0.005	u	< 0.0029	u	< 0.0034	u	< 0.0025	u	< 0.0026	u	< 0.0024	u	< 0.0026	u	< 0.0051	u	< 0.003	u	< 0.0026	u	< 0.0025	u	< 0.0025	u	< 0.005	u
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	2.77E-02	(8)	< 0.0035	u	< 0.0029	u	< 0.0027	u	< 0.0021	u	< 0.0036	u	< 0.0021	u	< 0.0024	u	< 0.0018	u	< 0.0019	u	< 0.0017	u	< 0.0018	u	< 0.0036	u	< 0.0021	u	< 0.0019	u	< 0.0018	u	< 0.0018	u	< 0.0036	u
Trimethylbenzene, 1,3,5-	2.70E+02	(2)	1.50E+03	(6)	1.74E+00	(9)	< 0.0047	u	< 0.0038	u	< 0.0036	u	< 0.0028	u	< 0.0047	u	< 0.0028	u	< 0.0032	u	< 0.0023	u	< 0.0025	u	< 0.0023	u	< 0.0024	u	< 0.0048	u	< 0.0029	u	< 0.0025	u	< 0.0024	u	< 0.0024	u	< 0.0047	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.0042	u	< 0.0034	u	< 0.0032	u	< 0.0025	u	< 0.0043	u	< 0.0025	u	< 0.0029	u	< 0.0021	u	< 0.0023	u	< 0.0021	u	< 0.0022	u	< 0.0043	u	< 0.0026	u	< 0.0022	u	< 0.0021	u	< 0.0021	u	< 0.0042	u
Dichloropropane, 1,3-	1.60E+03	(2)	2.30E+04	(6)	2.60E+00	(9)	< 0.0053	u	< 0.0042	u	< 0.004	u	< 0.0032	u	< 0.0053	u	< 0.0031	u	< 0.0036	u	< 0.0026	u	< 0.0028	u	< 0.0026	u	< 0.0027	u	< 0.0054	u	< 0.0032	u	< 0.0028	u	< 0.0026	u	< 0.0026	u	< 0.0053	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 0.0041	u	< 0.0033	u	< 0.0031	u	< 0.0024	u	< 0.0041	u	< 0.0024	u	< 0.0028	u	< 0.002	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0042	u	< 0.0025	u	< 0.0021	u	< 0.002	u	< 0.002	u	< 0.0041	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(4)	8.93E-01	(8)	< 0.028	u	< 0.0226	u	< 0.0215	u	< 0.0168	u	< 0.0282	u	< 0.0166	u	< 0.0189	u	< 0.0139	u	< 0.0149	u	< 0.0138	u	< 0.0145	u	< 0.0287	u	< 0.0169	u	< 0.0147	u	0.035	J	< 0.014	u	< 0.0281	u
2,2-Dichloropropane	-	-	-	-	-	-	< 0.0158	u	< 0.0128	u	< 0.0122	u	< 0.0095	u	< 0.0159	u	< 0.0094	u	< 0.0107	u	< 0.0079	u	< 0.0084	u	< 0.0078	u	< 0.0082	u	< 0.0163	u	< 0.0096	u	< 0.0083	u	< 0.008	u	< 0.0079	u	< 0.0159	u
2-Butanone (Methyl ethyl ketone, MEK)	3.74E+04	(1)	9.17E+04	(5)	2.01E+01	(8)	< 0.0563	u	< 0.0454	u	0.049	J	< 0.0338	u	0.071	J	< 0.0334	u	< 0.0381	u	< 0.028	u	< 0.03	u	< 0.0277	u	< 0.0292	u	0.085	J	< 0.0341	u	< 0.0295	u	< 0.0283	u	< 0.0282	u	0.061	J
o-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	3.56E+00	(8)	< 0.0042	u	< 0.0034	u	< 0.0033	u	< 0.0025	u	< 0.0043	u	< 0.0025	u	< 0.0029	u	< 0.0021	u	< 0.0023	u	< 0.0021	u	< 0.0022	u	< 0.0044	u	< 0.0026	u	< 0.0022	u	< 0.0021	u	< 0.0021	u	< 0.0043	u
Hexanone, 2-	2.00E+02	(2)	1.30E+03	(6)	1.76E-01	(9)	< 0.0081	u	< 0.0065	u	< 0.0062	u	< 0.0049	u	< 0.0081	u	< 0.0048	u	< 0.0055	u	< 0.004	u	< 0.0043	u	< 0.004	u	< 0.0042	u	< 0.0083	u	< 0.0049	u	< 0.0042	u	< 0.0041	u	< 0.004	u	< 0.0081	u
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	< 0.0213	u	< 0.0172	u	< 0.0163	u	< 0.0128	u	< 0.0214	u	< 0.0126	u	< 0.0144	u	< 0.0106	u	< 0.0113	u	< 0.0105	u	< 0.011	u	< 0.0218	u	< 0.0129	u	< 0.0111	u	< 0.0107	u	< 0.0106	u	< 0.0214	u
Chlorotoluene, p-	1.60E+03	(2)	2.30E+04	(6)	4.80E+00	(9)	< 0.004	u	< 0.0032	u	< 0.0031	u	< 0.0024	u	< 0.004	u	< 0.0024	u	< 0.0027	u	< 0.002	u	< 0.0021	u	< 0.002	u	< 0.0021	u	< 0.0041	u	< 0.0024	u	< 0.0021	u	< 0.002	u	< 0.002	u	< 0.004	u
4-Isopropyltoluene	-	-	-	-	-	-	< 0.004	u	< 0.0033	u	< 0.0031	u	< 0.0024	u	< 0.0041	u	< 0.0024	u	< 0.0027	u	< 0.002	u	< 0.0021	u	< 0.002	u	< 0.0021	u	< 0.0041	u	< 0.0024	u	< 0.0021	u	< 0.002	u	< 0.002	u	< 0.004	u
Methyl isobutyl ketone	5.81E+03	(1)	2.02E+04	(5)	4.80E+00	(8)	< 0.0092	u	< 0.0074	u	< 0.0071	u	< 0.0055	u	< 0.0093	u	< 0.0055	u	< 0.0062	u	< 0.0046	u	< 0.0049	u	< 0.0045	u	< 0.0048	u	< 0.0094	u	< 0.0056	u	< 0.0048	u	< 0.0046	u	< 0.0046	u	< 0.0092	u
Acetone	6.63E+04	(1)	2.42E+05	(5)	4.98E+01	(8)	< 0.0403	u	< 0.0326	u	< 0.031	u	< 0.0242	u	< 0.0406	u	< 0.024	u	< 0.0273	u	< 0.0201	u	< 0.0215	u	< 0.0199	u	< 0.0209	u	< 0.0414	u	< 0.0244	u	< 0.0211	u	< 0.0203	u	< 0.0202	u	< 0.0405	u
Benzene	1.78E+01	(1)	8.72E+01	(4)	4.18E-02	(8)	< 0.004	u	< 0.0032	u	< 0.0031	u	< 0.0024	u	< 0.004	u	< 0.0024	u	< 0.0027	u	< 0.002	u	< 0.0021	u	< 0.002	u	< 0.0021	u	< 0.0041	u	< 0.0024	u	< 0.0021	u	< 0.002	u	< 0.002	u	< 0.004	u
Bromobenzene	2.90E+02	(2)	1.80E+03	(6)	8.40E-01	(9)	< 0.0047	u	< 0.0038	u	< 0.0036	u	< 0.0028	u	< 0.0047	u	< 0.0028	u	< 0.0032	u	< 0.0023	u	< 0.0025	u	< 0.0023	u	< 0.0024	u	< 0.0048	u	< 0.0028	u	< 0.0024	u	< 0.0023	u	< 0.0023	u	< 0.0047	u
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	6.21E-03	(8)	< 0.0044	u	< 0.0036	u	< 0.0034	u	< 0.0027	u	< 0.0045	u	< 0.0026	u	< 0.003	u	< 0.0022	u	< 0.0024	u	< 0.0022	u	< 0.0023	u	< 0.0046	u	< 0.0027	u	< 0.0023	u	< 0.0022	u	< 0.0022	u	< 0.0045	u
Tribromomethane (Bromoform)	6.74E+02	(1)	1.76E+03	(4)	1.47E-01	(8)	< 0.0044	u	< 0.0035	u	< 0.0034	u	< 0.0026	u	< 0.0044	u	< 0.0026	u	< 0.003	u	< 0.0022	u	< 0.0023	u	< 0.0022	u	< 0.0023	u	< 0.0045	u	< 0.0027	u	< 0.0023	u	< 0.0022	u	< 0.0022	u	< 0.0044	u
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	3.43E-02	(8)	< 0.0117	u	< 0.0095	u	< 0.009	u	< 0.0071	u	< 0.0118	u	< 0.007	u	< 0.0079	u	< 0.0058	u	< 0.0062	u	< 0.0058	u	< 0.0061	u	< 0.0121	u	< 0.0071	u	< 0.0061	u	< 0.0059	u	< 0.0059	u	< 0.0118	u
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	4.42E+00	(8)	< 0.0161	u	< 0.013	u	< 0.0123	u	< 0.0097	u	< 0.0162	u	< 0.0095	u	< 0.0109	u	< 0.008	u	< 0.0086	u	< 0.0079	u	< 0.0083	u	< 0.0165	u	< 0.0097	u	< 0.0084	u	< 0.0081	u	< 0.008	u	< 0.0161	u
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	3.67E-02	(8)	< 0.0046	u	< 0.0037	u	< 0.0035	u	< 0.0028	u	< 0.0046	u	< 0.0027	u	< 0.0031	u	< 0.0023	u	< 0.0025	u	< 0.0023	u	< 0.0024	u	< 0.0047	u	< 0.0028	u	< 0.0024	u	< 0.0023	u	< 0.0023	u	< 0.0046	u
Chlorobenzene (Monochlorobenzene	3.78E+02	(1)	4.12E+02	(5)	1.08E+00	(8)	< 0.0062	u	< 0.005	u	< 0.0048	u	< 0.0037	u	< 0.0063	u	< 0.0037	u	< 0.0042	u	< 0.0031	u	< 0.0033	u	< 0.0031	u	< 0.0032	u	< 0.0064	u	< 0.0038	u	< 0.0033	u	< 0.0031	u	< 0.0031	u	< 0.0063	u
Ethyl chloride	1.90E+04	(1)	1.66E+04	(5)	1.07E+02	(8)	< 0.0072	u	< 0.0058	u	< 0.0055	u	< 0.0043	u	< 0.0072	u	< 0.0043	u	< 0.0049	u	< 0.0036	u	< 0.0038	u	< 0.0035	u	< 0.0037	u	< 0.0074	u	< 0.0043	u	< 0.0038	u	< 0.0036	u	< 0.0036	u	< 0.0072	u
Chloroform	5.90E+00	(1)	2.87E+01	(4)	1.09E-02	(8)	< 0.0039	u	< 0.0032	u	< 0.003	u	< 0.0024	u	< 0.0039	u	< 0.0023	u	< 0.0026	u	< 0.0019	u	< 0.0021	u	< 0.0019	u	< 0.002	u	< 0.004	u	< 0.0024	u	< 0.002	u	< 0.002	u	< 0.002	u	< 0.0039	u
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	9.52E-02	(8)	< 0.0047	u	< 0.0038	u	< 0.0036	u	< 0.0028	u	< 0.0047	u	< 0.0028	u	< 0.0032	u	< 0.0023	u	< 0.0025	u	< 0.0023	u	< 0.0024	u	< 0.0048	u	< 0.0028	u	< 0.0024	u	< 0.0023	u	< 0.0023	u	< 0.0047	u
cis-1,2-Dichloroethene	1.56E+02	(1)	7.08E+02	(5)	3.52E-01	(8)	< 0.0067	u	< 0.0054	u	< 0.0051	u	< 0.004	u	< 0.0067	u	< 0.004	u	< 0.0045	u	< 0.0033	u	< 0.0035	u	< 0.0033	u	< 0.0035	u	< 0.0068	u	< 0.004	u	< 0.0035	u	< 0.0033	u	< 0.0033	u	< 0.0067	u
cis-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0041	u	< 0.0033	u	< 0.0032	u	< 0.0025	u	< 0.0041	u	< 0.0024	u	< 0.0028	u	< 0.002	u	< 0.0022	u	< 0.002	u	< 0.0021	u	< 0.0042	u	< 0.0025	u	< 0.0022	u	< 0.0021	u	< 0.0021	u	< 0.0041	u
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	7.55E-03	(8)	< 0.0035	u	< 0.0028	u	< 0.0027	u	< 0.0021	u	< 0.0035	u	< 0.0021	u	< 0.0023	u	< 0.0017	u	< 0.0018	u	< 0.0017	u	< 0.0018	u	< 0.0035	u	< 0.0021	u	< 0.0018	u	< 0.0017	u	< 0.0017	u	< 0.0035	u
Dibromomethane (Methylene Bromide)	2.40E+01	(2)	9.90E+01	(6)	4.20E-02	(9)	< 0.0052	u	< 0.0042	u	< 0.004	u	< 0.0031	u	< 0.0053	u	< 0.0031	u	< 0.0035	u	< 0.0026	u	< 0.0028	u	< 0.0026	u	< 0.0027	u	< 0.0054	u	< 0.0032	u	< 0.0027	u	< 0.0026	u	< 0.0026	u	< 0.0053	u
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	7.23E+00	(8)	< 0.0113	u	< 0.0091	u	< 0.0087	u	< 0.0068	u	< 0.0114	u	< 0.0067	u	< 0.0076	u	< 0.0056	u	< 0.006	u	< 0.0056	u	< 0.0059	u	< 0.0116	u	< 0.0068	u	< 0.0059	u	< 0.0057	u	< 0.0057	u	< 0.0113	u

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-4 (15.5-16')		SWMU 13-5 (0-0.5')		SWMU 13-5 (1.5-2')		SWMU 13-5 (8-10')		SWMU 13-5 (10-10.5')		SWMU 13-5 (14-16')		SWMU 13-6 (0-0.5')		SWMU 13-6 (1.5-2')		SWMU 13-6 (2-3')		SWMU 13-6 (6-8')		SWMU 13-6 (10-11')		SWMU 13-6 (17-18')		SWMU 13-7 (0-0.5')		SWMU 13-7 (1.5-2')		SWMU 13-7 (4-6')		SWMU 13-7 (10-12')		SWMU 13-7 (12-13")	
					Lab ID		1910D68-005		1910d68-006		1910D68-007		1910d68-008		1910D68-009		1910D68-010		1910d68-011		1910d68-012		1910d68-013		1910d68-014		1910d68-015		1910e04-001		1910e04-002		1910E04-003		1910e04-005		1910E04-006		1910e04-007	
					Sample Date		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019	
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.23E+01	(8)	< 0.0028	u	< 0.0023	u	< 0.0022	u	< 0.0017	u	< 0.0028	u	< 0.0017	u	< 0.0019	u	< 0.0014	u	< 0.0015	u	< 0.0014	u	< 0.0015	u	< 0.0029	u	< 0.0017	u	< 0.0015	u	< 0.0014	u	< 0.0014	u	< 0.0028	u
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	< 0.0049	u	< 0.004	u	< 0.0038	u	< 0.003	u	< 0.005	u	< 0.0029	u	< 0.0034	u	< 0.0025	u	< 0.0026	u	< 0.0024	u	< 0.0026	u	< 0.0051	u	< 0.003	u	< 0.0026	u	< 0.0025	u	< 0.0025	u	< 0.005	u
Cumene (isopropylbenzene)	2.36E+03	(1)	2.74E+03	(5)	1.14E+01	(8)	< 0.0035	u	< 0.0028	u	< 0.0027	u	< 0.0021	u	< 0.0035	u	< 0.0021	u	< 0.0024	u	< 0.0017	u	< 0.0019	u	< 0.0017	u	< 0.0018	u	< 0.0036	u	< 0.0021	u	< 0.0018	u	< 0.0018	u	< 0.0018	u	< 0.0035	u
tert-Butyl methyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	5.53E-01	(8)	< 0.0115	u	< 0.0093	u	< 0.0089	u	< 0.0069	u	< 0.0116	u	< 0.0069	u	< 0.0078	u	< 0.0057	u	< 0.0061	u	< 0.0057	u	< 0.006	u	< 0.0119	u	< 0.007	u	< 0.006	u	< 0.0058	u	< 0.0058	u	< 0.0116	u
Methylene chloride (Dichloromethan	4.09E+02	(1)	1.21E+03	(5)	2.21E-02	(10)	< 0.0086	u	< 0.0069	u	0.011	J	< 0.0052	u	< 0.0087	u	0.0077	J	< 0.0058	u	< 0.0043	u	0.005	J	< 0.0042	u	< 0.0045	u	< 0.0088	u	< 0.0052	u	0.0071	J	< 0.0043	u	0.0069	J	< 0.0086	u
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	< 0.0097	u	< 0.0079	u	< 0.0075	u	< 0.0059	u	< 0.0098	u	< 0.0058	u	< 0.0066	u	< 0.0048	u	< 0.0052	u	< 0.0048	u	< 0.0051	u	< 0.01	u	< 0.0059	u	< 0.0051	u	< 0.0049	u	< 0.0049	u	< 0.0098	u
Butylbenzene, n-	3.90E+03	(2)	5.80E+04	(6)	6.40E+01	(9)	< 0.0045	u	< 0.0037	u	< 0.0035	u	< 0.0027	u	< 0.0046	u	< 0.0027	u	< 0.0031	u	< 0.0023	u	< 0.0024	u	< 0.0022	u	< 0.0024	u	< 0.0047	u	< 0.0027	u	< 0.0024	u	< 0.0023	u	< 0.0023	u	< 0.0046	u
Propyl benzene	3.80E+03	(2)	2.40E+04	(6)	2.40E+01	(9)	< 0.0039	u	< 0.0031	u	< 0.003	u	< 0.0023	u	< 0.0039	u	< 0.0023	u	< 0.0026	u	< 0.0019	u	< 0.0021	u	< 0.0019	u	< 0.002	u	< 0.004	u	< 0.0023	u	< 0.002	u	< 0.002	u	< 0.0019	u	< 0.0039	u
Butylbenzene, sec-	7.80E+03	(2)	1.20E+05	(6)	1.18E+02	(9)	< 0.0055	u	< 0.0044	u	< 0.0042	u	< 0.0033	u	< 0.0055	u	< 0.0033	u	< 0.0037	u	< 0.0027	u	< 0.0029	u	< 0.0027	u	< 0.0028	u	< 0.0056	u	< 0.0033	u	< 0.0029	u	< 0.0028	u	< 0.0027	u	< 0.0055	u
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.71E+00	(10)	< 0.0038	u	< 0.0031	u	< 0.0029	u	< 0.0023	u	< 0.0038	u	< 0.0023	u	< 0.0026	u	< 0.0019	u	< 0.002	u	< 0.0019	u	< 0.002	u	< 0.0039	u	< 0.0023	u	< 0.002	u	< 0.0019	u	< 0.0019	u	< 0.0038	u
Butylbenzene, tert-	7.80E+03	(2)	1.20E+05	(6)	3.20E+01	(9)	< 0.0046	u	< 0.0037	u	< 0.0035	u	< 0.0028	u	< 0.0046	u	< 0.0027	u	< 0.0031	u	< 0.0023	u	< 0.0024	u	< 0.0023	u	< 0.0024	u	< 0.0047	u	< 0.0028	u	< 0.0024	u	< 0.0023	u	< 0.0023	u	< 0.0046	u
Tetrachloroethene	1.11E+02	(1)	1.20E+02	(5)	3.98E-02	(10)	< 0.0039	u	< 0.0031	u	< 0.003	u	< 0.0023	u	< 0.0039	u	< 0.0023	u	< 0.0026	u	< 0.0019	u	< 0.0021	u	< 0.0019	u	< 0.002	u	< 0.004	u	< 0.0024	u	< 0.002	u	< 0.002	u	< 0.0019	u	< 0.0039	u
Toluene	5.23E+03	(1)	1.40E+04	(5)	1.11E+01	(10)	< 0.0046	u	< 0.0038	u	< 0.0036	u	< 0.0028	u	< 0.0047	u	< 0.0028	u	< 0.0031	u	< 0.0023	u	< 0.0025	u	< 0.0023	u	< 0.0024	u	< 0.0048	u	< 0.0028	u	< 0.0024	u	< 0.0023	u	< 0.0023	u	< 0.0047	u
trans-1,2-Dichloroethene	2.95E+02	(1)	3.05E+02	(5)	5.03E-01	(8)	< 0.0044	u	< 0.0036	u	< 0.0034	u	< 0.0027	u	< 0.0045	u	< 0.0026	u	< 0.003	u	< 0.0022	u	< 0.0024	u	< 0.0022	u	< 0.0023	u	< 0.0046	u	< 0.0027	u	< 0.0023	u	< 0.0022	u	< 0.0022	u	< 0.0045	u
trans-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0051	u	< 0.0042	u	< 0.004	u	< 0.0031	u	< 0.0052	u	< 0.0031	u	< 0.0035	u	< 0.0026	u	< 0.0027	u	< 0.0025	u	< 0.0027	u	< 0.0053	u	< 0.0031	u	< 0.0027	u	< 0.0026	u	< 0.0026	u	< 0.0052	u
Trichloroethylene	6.77E+00	(1)	6.90E+00	(5)	3.10E-02	(8)	< 0.0056	u	< 0.0045	u	< 0.0043	u	< 0.0034	u	< 0.0057	u	< 0.0033	u	< 0.0038	u	< 0.0028	u	< 0.003	u	< 0.0028	u	< 0.0029	u	< 0.0058	u	< 0.0034	u	< 0.003	u	< 0.0028	u	< 0.0028	u	< 0.0057	u
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	1.57E+01	(8)	< 0.0165	u	< 0.0133	u	< 0.0127	u	< 0.0099	u	< 0.0166	u	< 0.0098	u	< 0.0112	u	< 0.0082	u	< 0.0088	u	< 0.0081	u	< 0.0086	u	< 0.017	u	< 0.01	u	< 0.0087	u	< 0.0083	u	< 0.0083	u	< 0.0166	u
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	1.34E-02	(8)	< 0.0032	u	< 0.0026	u	< 0.0024	u	< 0.0019	u	< 0.0032	u	< 0.0019	u	< 0.0022	u	< 0.0016	u	< 0.0017	u	< 0.0016	u	< 0.0016	u	< 0.0033	u	< 0.0019	u	< 0.0017	u	< 0.0016	u	< 0.0016	u	< 0.0032	u
Xylenes	8.71E+02	(1)	7.98E+02	(5)	1.54E+02	(8)	< 0.0123	u	< 0.0099	u	< 0.0094	u	< 0.0074	u	< 0.0124	u	< 0.0073	u	< 0.0083	u	< 0.0061	u	< 0.0065	u	< 0.006	u	< 0.0064	u	< 0.0126	u	< 0.0074	u	< 0.0064	u	< 0.0062	u	< 0.0061	u	< 0.0123	u
Semi-volatiles (mg/kg)																																							
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 0.1986	u	< 1.5543	u	< 0.1521	u	< 0.1483	u	< 0.1571	u	< 0.1593	u	< 1.5293	u	< 0.151	u	< 0.1577	u	< 0.1545	u	< 0.1535	u	< 0.1511	u	< 0.3139	u	< 0.1536	u	< 0.1606	u	< 0.1591	u	< 0.1545	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 0.1535	u	< 1.2014	u	< 0.1176	u	< 0.1146	u	< 0.1214	u	< 0.1231	u	< 1.1821	u	< 0.1167	u	< 0.1219	u	< 0.1194	u	< 0.1186	u	< 0.1168	u	< 0.2426	u	< 0.1187	u	< 0.1242	u	< 0.123	u	< 0.1194	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.1346	u	< 1.053	u	< 0.1031	u	< 0.1005	u	< 0.1064	u	< 0.1079	u	< 1.0361	u	< 0.1023	u	< 0.1069	u	< 0.1046	u	< 0.104	u	< 0.1024	u	< 0.2127	u	< 0.1041	u	< 0.1088	u	< 0.1078	u	< 0.1046	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 0.1361	u	< 1.0653	u	< 0.1043	u	< 0.1016	u	< 0.1076	u	< 0.1092	u	< 1.0482	u	< 0.1035	u	< 0.1081	u	< 0.1059	u	< 0.1052	u	< 0.1036	u	< 0.2151	u	< 0.1053	u	< 0.1101	u	< 0.109	u	< 0.1059	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(7)	8.93E-01	(8)	< 0.1913	u	< 1.497	u	< 0.1465	u	< 0.1428	u	< 0.1513	u	< 0.1534	u	< 1.4729	u	< 0.1454	u	< 0.1519	u	< 0.1488	u	< 0.1478	u	< 0.1456	u	< 0.3023	u	< 0.1479	u	< 0.1547	u	< 0.1532	u	< 0.1488	u
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	6.62E+01	(8)	< 0.1657	u	< 1.2965	u	< 0.1269	u	< 0.1237	u	< 0.131	u	< 0.1329	u	< 1.2757	u	< 0.126	u	< 0.1316	u	< 0.1288	u	< 0.128	u	< 0.1261	u	< 0.2618	u	< 0.1281	u	< 0.134	u	< 0.1327	u	< 0.1288	u
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	6.74E-01	(8)	< 0.1343	u	< 1.0513	u	< 0.1029	u	< 0.1003	u	< 0.1062	u	< 0.1078	u	< 1.0344	u	< 0.1021	u	< 0.1067	u	< 0.1045	u	< 0.1022	u	< 0.2123	u	< 0.1039	u	< 0.1086	u	< 0.1076	u	< 0.1045	u
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	8.25E-01	(8)	< 0.1487	u	< 1.1632	u	< 0.1139	u	< 0.111	u	< 0.1175	u	< 0.1192	u	< 1.1445	u	< 0.113	u	< 0.1181	u	< 0.1156	u	< 0.1149	u	< 0.1131	u	< 0.2349	u	< 0.1149	u	< 0.1202	u	< 0.1191	u	< 0.1156	u
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	6.45E+00	(8)	< 0.1409	u	< 1.1023	u	< 0.1079	u	< 0.1052	u	< 0.1114	u	< 0.113	u	< 1.0845	u	< 0.1071	u	< 0.1119	u	< 0.1095	u	< 0.1088	u	< 0.1072	u	< 0.2226	u	< 0.1089	u	< 0.1139	u	< 0.1128	u	< 0.1095	u
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	6.69E-01	(8)	< 0.0929	u	< 0.7266	u	< 0.0711	u	< 0.0693	u	< 0.0734	u	< 0.0745	u	< 0.715	u	< 0.0706	u	< 0.0737	u	< 0.0722	u	< 0.0718	u	< 0.0707	u	< 0.1467	u	< 0.0718	u	< 0.0751	u	< 0.0744	u	< 0.0722	u
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	4.92E-02	(8)	< 0.1506	u	< 1.1788	u	< 0.1154	u	< 0.1125	u	< 0.1191	u	< 0.1208	u	< 1.1599	u	< 0.1145	u	< 0.1196	u	< 0.1171	u	< 0.1164	u	< 0.1146	u	< 0.2381	u	< 0.1165	u	< 0.1218	u	< 0.1207	u	< 0.1171	u
2,6-Dintitrotoluene	3.56E+00	(1)	1.72E+01	(4)	1.02E-02	(8)	< 0.1682	u	< 1.3163	u	< 0.1288	u	< 0.1256	u	< 0.133	u	< 0.1349	u	< 1.2951	u	< 0.1279	u	< 0.1336	u	< 0.1308	u	< 0.13	u	< 0.128	u	< 0.2658	u	< 0.1301	u	< 0.136	u	< 0.1347	u	< 0.1308	u
b-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	5.70E+01	(8)	< 0.1595	u	< 1.248	u	< 0.1222	u	< 0.1191	u	< 0.1261	u	< 0.1279	u	< 1.2279	u	< 0.1212	u	< 0.1267	u	< 0.124	u	< 0.1232	u	< 0.1214	u	< 0.252	u	< 0.1233	u	< 0.129	u	< 0.1277	u	< 0.124	u
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	1.15E+00	(8)	< 0.159	u	< 1.2442	u	< 0.1218	u	< 0.1187	u	< 0.1257	u	< 0.1275	u	< 1.2242	u	< 0.1209	u	< 0.1263	u	< 0.1236	u	< 0.1229	u	< 0.121	u	< 0.2513	u	< 0.1229	u	< 0.1286	u	< 0.1274	u	< 0.1236	u
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	< 0.1862	u	< 1.4571	u	< 0.1426	u	< 0.139	u	< 0.1472	u	< 0.1493	u	< 1.4337	u	< 0.1416	u	< 0.1479	u	< 0.1448	u	< 0.1439	u	< 0.1417	u	< 0.2943	u	< 0.144	u	< 0.1506	u	< 0.1491	u	< 0.1448	u
Cresol, o-	3.20E+03	(2)	4.10E+04	(6)	1.50E+01	(9)	< 0.1516	u	< 1.1862	u	< 0.1161	u	< 0.1132	u	< 0.1199	u	< 0.1216	u	< 1.1671	u	< 0.1152	u	< 0.1204	u	< 0.1179	u	< 0.1171	u	< 0.1153	u	< 0.2395	u	< 0.1172	u	< 0.1226	u	< 0.1214	u	< 0.1179	u
Nitroaniline, 2-	6.30E+02	(2)	8.00E+03	(6)	1.60E+00	(9)	< 0.1825	u	< 1.4284	u	< 0.1398	u	< 0.1363	u	< 0.1443	u	< 0.1464	u	< 1.4054	u	< 0.1388	u	< 0.145	u	< 0.1419	u	< 0.1411	u	< 0.1389	u	< 0.2885	u	< 0.1411	u	< 0.1476	u	< 0.1462	u	< 0.1419	u
2-Nitrophenol	-	-	-	-	-	-	< 0.1745	u	< 1.3657	u	< 0.1337	u	< 0.1303	u	< 0.138	u	< 0.14	u	< 1.3437	u	< 0.1327	u	< 0.1386	u	< 0.1357	u	< 0.1349	u	< 0.1328	u	< 0.2758	u	< 0.1349	u	< 0.1411	u	< 0.1398	u	< 0.1357	u
3,3-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	1.24E-01	(8)	< 0.1136	u	< 0.889	u	< 0.087	u	< 0.0848	u	< 0.0898	u	< 0.0911	u	< 0.8747	u	< 0.0864	u	< 0.0902	u	< 0.0883	u	< 0.0878	u	< 0.0865	u	< 0.1795	u	< 0.0878	u	< 0.0919	u	< 0.091	u	< 0.0883	u
3+4-Methylphenol	-	-	-	-	-	-	< 0.1569	u	< 1.2275	u	< 0.1201	u	< 0.1171	u	< 0.124	u	< 0.1258	u	< 1.2078	u	< 0.1193	u	< 0.1246	u	< 0.122	u	< 0.1212	u	< 0.1194	u	< 0.2479	u	< 0.1213	u	< 0.1269	u	< 0.1256	u	< 0.122	u
3-Nitroaniline	-	-	-	-	-	-	< 0.1764	u	< 1.38	u	< 0.1351	u	< 0.1317	u	< 0.1394	u	< 0.1414	u	< 1.3578	u	< 0.1341	u	< 0.1401	u	< 0.1371	u	< 0.1363	u	< 0.1342	u	< 0.2787	u	< 0.1364	u	< 0.1426	u	< 0.1413	u	< 0.1371	u
4,6-Dinitro-o-cresol	4.93E+00	(1)	2.15E+01	(5)	3.98E-02	(8)	< 0.1181	u	< 0.9238	u	< 0.0904	u	< 0.0881	u	< 0.0933	u	< 0.0947	u	< 0.909	u	< 0.0897	u	< 0.0938	u	< 0.0918	u	< 0.0912	u	< 0.0898	u	< 0.1866	u	< 0.0913	u	< 0.0955	u	< 0.0946	u	< 0.0918	u
4-Bromophenyl phenyl ether	-	-	-	-	-	-	< 0.1502	u	< 1.1757	u	< 0.1151	u	< 0.1122	u	< 0.1188	u	< 0.1205	u	< 1.1568	u	< 0.1142	u	< 0.1193	u	< 0.1168	u	< 0.1161	u	< 0.1143	u	< 0.2374	u	< 0.1162	u	< 0.1215	u	< 0.1203	u	< 0.1168	u
4-Chloro-3-methylphenol	-	-	-	-	-	-	< 0.1961	u	< 1.5345	u	< 0.1502	u	< 0.1464	u	< 0.1551	u	< 0.1573	u	< 1.5098	u	< 0.1491	u	< 0.1557	u	< 0.1525	u	< 0.1515	u	< 0.1492	u	< 0.3099	u	< 0.1516	u	< 0.1586	u	< 0.1571	u	< 0.1525	u
Chloroaniline, p-	2.70E+01	(3)	1.10E+02	(7)	3.20E-03	(9)	< 0.1811	u	< 1.4168	u	< 0.1387	u	< 0.1352	u	< 0.1432	u	< 0.1452	u	< 1.394	u	< 0.1376	u	< 0.1438	u	< 0.1408	u	< 0.1399	u	< 0.1378	u	< 0.2861	u	< 0.14	u	< 0.1464	u	< 0.145	u	< 0.1408	u
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	< 0.1393	u	< 1.0901	u	< 0.1067	u	< 0.104	u	< 0.1101	u	< 0.1117	u	< 1.0725	u	< 0.1059	u	< 0.1106	u	< 0.1083	u	< 0.1076	u	< 0.106	u	< 0.2201	u	< 0.1077	u	< 0.1127	u	< 0.1116	u	< 0.1083	u
Nitroaniline, 4-	2.70E+02	(3)	1.10E+03	(7)	3.20E-02	(9)	< 0.1632	u	< 1.2771	u	< 0.125	u	< 0.1219	u	< 0.129	u	< 0.1309	u	< 1.2565	u	< 0.1241	u	< 0.1296	u	< 0.1269	u	< 0.1261	u	< 0.1242	u	< 0.2579	u	< 0.1262	u	< 0.132	u	< 0.1307	u	< 0.1269	u
4-Nitrophenol	-	-	-	-	-	-	< 0.1733	u	< 1.3563	u	< 0.1328	u	< 0.1294	u	< 0.1371	u	< 0.139	u	< 1.3345	u	< 0.1318	u	< 0.1377	u	< 0.1348	u	< 0.1339	u	< 0.1319	u	< 0.2739	u	< 0.134	u	< 0.1402	u	< 0.1388	u	< 0.1348	u
Acenaphthene	3.48E+03	(1)	1.51E+04	(5)	8.25E+01	(8)	< 0.1533	u	< 1.1998	u	< 0.1174	u	< 0.1145	u	< 0.1212	u	< 0.123	u	< 1.1805	u	< 0.1166	u	< 0.1218	u	< 0.1192	u	< 0.1185	u	< 0.1167	u	< 0.2423	u	< 0.1186	u	< 0.124	u	< 0.1228	u	< 0.1192	u
Acenaphthylene	-	-	-	-	-	-	< 0.1401	u	< 1.0962	u	< 0.1073	u	< 0.1046	u	< 0.1108	u	< 0.1124	u	< 1.0786	u	< 0.1065	u	< 0.1113	u	< 0.1089	u	< 0.1082	u	< 0.1066	u	< 0.2214	u	< 0.1083	u	< 0.1133	u	< 0.1122	u	< 0.1089	u
Aniline	9.50E+02	(3)	4.00E+03	(7)	9.20E-02	(9)	< 0.1643	u	< 1.286	u	< 0.1259	u	< 0.1227	u	< 0.1299	u	< 0.1318	u	< 1.2654	u	< 0.1249	u	< 0.1305	u	< 0.1278	u	< 0.127	u	< 0.1251	u	< 0.2597	u	< 0.1271	u	< 0.1329	u	< 0.1316	u	< 0.1278	u
Anthracene	1.74E+04	(1)	7.53E+04	(5)	8.51E+02	(8)	< 0.1367	u	< 1.0694	u	< 0.1047	u	< 0.102	u	< 0.1081	u	< 0.1096	u	< 1.0522	u	< 0.1039	u	< 0.1085	u	< 0.1063	u	< 0.1056	u	< 0.104	u	< 0.216	u	< 0.1057	u	< 0.1105	u	< 0.1095	u	< 0.1063	u
Azobenzene	5.60E+01	(3)	2.60E+02	(7)	1.86E+06	(9)	< 0.1789	u	< 1.4001	u	< 0.137	u	< 0.1336	u	< 0.1415	u	< 0.1435	u	< 1.3776	u	< 0.136	u	< 0.1421	u	< 0.1391	u	< 0.1383	u	< 0.1362	u	< 0.2828	u	< 0.1383	u	< 0.1447	u	< 0.1433	u	< 0.1391	u
Benzo(a)anthracene	1.53E+00	(1)	3.23E+01	(4)	6.37E-01	(8)	< 0.1231	u	< 0.9636	u	< 0.0943	u	< 0.0919	u	< 0.0974	u	< 0.0988	u	< 0.9481	u	< 0.0936	u	< 0.0978	u	< 0.0958	u	< 0.0952	u	< 0.0937	u	< 0.1946	u	< 0.0952	u	< 0.0996	u	< 0.0986	u	< 0.0958	u
Benzo(a)pyrene	1.12E+00	(1)	2.36E+01	(4)	3.53E+00	(10)	< 0.1136	u	< 0.8889	u	< 0.087	u	< 0.0848	u	< 0.0898	u	< 0.0911	u	< 0.8746	u	< 0.0864	u	< 0.0902	u	< 0.0883	u	< 0.0878	u	< 0.0864	u	< 0.1795	u	< 0.0878	u	< 0.0919	u	< 0.091	u	< 0.0883	u
Benzo(b)fluoranthene	1.53E+00	(1)	3.23E+01	(4)	6.17E+00	(8)	< 0.113	u	< 0.8845	u	< 0.0866	u	< 0.0844	u	< 0.0894	u	< 0.0907	u	< 0.8703	u	< 0.0859	u	< 0.0898	u	< 0.0879	u	< 0.0873	u	< 0.086	u	< 0.1786	u	< 0.0874	u	< 0.0914	u	< 0.0905	u	< 0.0879	u
Benzo(g,h,i)perylene	-	-	-	-	-	-	< 0.1096	u	< 0.8579	u	< 0.084	u	< 0.0819	u	< 0.0867	u	< 0.0879	u	< 0.8441	u	< 0.0833	u	< 0.0871	u	< 0.0852	u	< 0.0847	u	< 0.0834	u	< 0.1733	u	< 0.0848	u	< 0.0887	u	< 0.0878	u	< 0.0852	u
Benzo(k)fluoranthene	1.53E+01	(1)	3.23E+02	(4)	6.05E+01	(8)	< 0.1162	u	< 0.909	u	< 0.089	u	< 0.0867	u	< 0.0918	u	< 0.0932	u	< 0.8944	u	< 0.0883	u	< 0.0923	u	< 0.0903	u	< 0.0898	u	< 0.0884	u	< 0.1836	u	< 0.0898	u	< 0.0939	u	< 0.093	u	< 0.0903	u
Benzoic acid	2.50E+05	(2)	3.30E+06	(6)	3.00E+02	(9)	< 0.132	u	< 1.033	u	< 0.1011	u	< 0.0986	u	< 0.1044	u	< 0.1059	u	< 1.0164	u	< 0.1004	u	< 0.1048	u	< 0.1026	u	< 0.102	u	< 0.1005	u	< 0.2086	u	< 0.1021	u	< 0.1068	u	< 0.1057	u	< 0.1026	u
Benzyl alcohol	6.30E+03	(2)	8.20E+04	(6)	9.60E+00	(9)	< 0.1586	u	< 1.2408	u	< 0.1215	u	< 0.1184	u	< 0.1254	u	< 0.1272	u	< 1.2209	u	< 0.1205	u	< 0.1259	u	< 0.1233	u	< 0.1225	u	< 0.1207	u	< 0.2506	u	< 0.1226	u	< 0.1282	u	< 0.127	u	< 0.1233	u
Bis(2-chloroethoxy)methane	1.90E+02	(2)	2.50E+03	(6)	2.60E-01	(9)	< 0.1889	u	< 1.4784	u	< 0.1447	u	< 0.1411	u	< 0.1494	u	< 0.1515	u	< 1.4546	u	< 0.1436	u	< 0.15	u	< 0.1469	u	< 0.146	u	< 0.1438	u	< 0.2986	u	< 0.1461	u	< 0.1528	u	< 0.1513	u	< 0.1469	u
Bis(2-chloroethyl) ether	3.11E+00	(1)	1.95E+00	(5)	6.05E-04	(8)	< 0.1558	u	< 1.2189	u	< 0.1193	u	< 0.1163	u	< 0.1232	u	< 0.1249	u	< 1.1993	u	< 0.1184	u	< 0.1237	u	< 0.1211	u	< 0.1204	u	< 0.1185	u	< 0.2462	u	< 0.1204	u	< 0.126	u	< 0.1248	u	< 0.1211	u
Bis(2-chloroisopropyl) ether	9.93E+01	(1)	5.19E+02	(4)	4.75E-02	(8)	< 0.1455	u	< 1.1386	u	< 0.1114	u	< 0.1086	u	< 0.115	u	< 0.1167	u	< 1.1203	u	< 0.1106	u	< 0.1156	u	< 0.1131	u	< 0.1124	u	< 0.1107	u	< 0.2299	u	< 0.1125	u	< 0.1177	u	< 0.1165	u	< 0.1131	u
Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate, DEHP]	3.80E+02	(1)	1.83E+03	(4)	2.15E+01	(10)	< 0.1836	u	< 1.4368	u	< 0.1406	u	< 0.1371	u	< 0.1452	u	0.17	J	< 1.4137	u	< 0.1396	u	< 0.1458	u	< 0.1428	u	< 0.1419	u	< 0.1397	u	< 0.2902	u	< 0.142	u	< 0.1485	u	< 0.1471	u	< 0.1428	u
Butyl Benzyl Phthalate	2.90E+03	(3)	1.20E+04	(7)	4.60E+00	(9)	< 0.1306	u	< 1.0223	u	< 0.1001	u	< 0.0975	u	< 0.1033	u	< 0.1048	u	< 1.0059	u	< 0.0993	u	< 0.1038	u	< 0.1016	u	< 0.101	u	< 0.0994	u	< 0.2065	u	< 0.101	u	< 0.1057	u	< 0.1046	u	< 0.1016	u
Carbazole	-	-	-	-	-	-	< 0.1499	u	< 1.1729	u	< 0.1148	u	< 0.1119	u	< 0.1185	u	< 0.1202	u	< 1.154	u	< 0.1139	u	< 0.119	u	< 0.1165	u	< 0.1158	u	< 0.1141	u	< 0.2369	u	< 0.1159	u	< 0.1212	u	< 0.12	u	< 0.1165	u
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.86E+02	(8)	< 0.1127	u	< 0.882	u	< 0.0863	u	< 0.0842	u	< 0.0891	u	< 0.0904	u	< 0.8678	u	< 0.0857	u	< 0.0895	u	< 0.0876	u	< 0.0871	u	< 0.0858	u	< 0.1781	u	< 0.0872	u	< 0.0911	u	< 0.0903	u	< 0.0876	u

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-4 (15.5-16')		SWMU 13-5 (0-0.5')		SWMU 13-5 (1.5-2')		SWMU 13-5 (6-10')		SWMU 13-5 (10-10.5')		SWMU 13-5 (14-16')		SWMU 13-6 (0-0.5')		SWMU 13-6 (1.5-2')		SWMU 13-6 (2-3')		SWMU 13-6 (6-8')		SWMU 13-6 (10-11')		SWMU 13-6 (17-18')		SWMU 13-7 (0-0.5')		SWMU 13-7 (1.5-2')		SWMU 13-7 (4-6')		SWMU 13-7 (10-12')		SWMU 13-7 (12-13")	
					Lab ID		1910D68-005		1910d68-006		1910D68-007		1910d68-008		1910D68-009		1910D68-010		1910d68-011		1910d68-012		1910d68-013		1910d68-014		1910d68-015		1910e04-001		1910e04-002		1910E04-003		1910e04-005		1910E04-006		1910e04-007	
					Sample Date		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/23/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019	
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	1.97E+00	(8)	< 0.1162	u	< 0.9093	u	< 0.089	u	< 0.0868	u	< 0.0919	u	< 0.0932	u	< 0.8947	u	< 0.0883	u	< 0.0923	u	< 0.0904	u	< 0.0898	u	< 0.0884	u	< 0.1836	u	< 0.0898	u	< 0.094	u	< 0.0931	u	< 0.0904	u
Dibenzofuran	7.30E+01	(2)	1.00E+03	(6)	3.00E+00	(9)	< 0.1675	u	< 1.3106	u	< 0.1283	u	< 0.1251	u	< 0.1324	u	< 0.1343	u	< 1.2895	u	< 0.1273	u	< 0.133	u	< 0.1302	u	< 0.1294	u	< 0.1274	u	< 0.2647	u	< 0.1295	u	< 0.1354	u	< 0.1341	u	< 0.1302	u
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	9.79E+01	(8)	< 0.1824	u	< 1.4272	u	< 0.1397	u	< 0.1362	u	< 0.1442	u	< 0.1463	u	< 1.4042	u	< 0.1387	u	< 0.1448	u	< 0.1418	u	< 0.1409	u	< 0.1388	u	< 0.2882	u	< 0.141	u	< 0.1475	u	< 0.1461	u	< 0.1418	u
Dimethyl phthalate (DMP, Phthalic Acid)	6.16E+04	(1)	2.69E+05	(5)	3.57E+00	(8)	< 0.1704	u	< 1.3337	u	< 0.1305	u	< 0.1273	u	< 0.1348	u	< 0.1367	u	< 1.3123	u	< 0.1296	u	< 0.1354	u	< 0.1325	u	< 0.1317	u	< 0.1297	u	< 0.2693	u	< 0.1318	u	< 0.1378	u	< 0.1365	u	< 0.1325	u
Di-n-butyl phthalate (Dibutyl phthalate)	6.16E+03	(1)	2.69E+04	(5)	3.38E+01	(8)	< 0.1908	u	< 1.4928	u	< 0.1461	u	< 0.1424	u	0.17	J	0.19	J	< 1.4688	u	0.15	J	< 0.1515	u	< 0.1483	u	< 0.1474	u	0.16	J	< 0.3015	u	0.15	J	< 0.1543	u	0.19	J	< 0.1483	u
Di-n-octyl phthalate	6.30E+02	(2)	8.20E+03	(6)	1.14E+03	(9)	< 0.1304	u	< 1.0205	u	< 0.0999	u	< 0.0974	u	< 0.1031	u	< 0.1046	u	< 1.0041	u	< 0.0991	u	< 0.1036	u	< 0.1014	u	< 0.1008	u	< 0.0992	u	< 0.2061	u	< 0.1008	u	< 0.1055	u	< 0.1045	u	< 0.1014	u
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	1.34E+03	(8)	< 0.1431	u	< 1.1201	u	< 0.1096	u	< 0.1069	u	< 0.1132	u	< 0.1148	u	< 1.1021	u	< 0.1088	u	< 0.1137	u	< 0.1113	u	< 0.1106	u	< 0.1089	u	< 0.2262	u	< 0.1107	u	< 0.1158	u	< 0.1147	u	< 0.1113	u
Fluorene	2.32E+03	(1)	1.00E+04	(5)	8.00E+01	(8)	< 0.1457	u	< 1.1398	u	< 0.1116	u	< 0.1088	u	< 0.1152	u	< 0.1168	u	< 1.1215	u	< 0.1107	u	< 0.1157	u	< 0.1133	u	< 0.1126	u	< 0.1108	u	< 0.2302	u	< 0.1126	u	< 0.1178	u	< 0.1167	u	< 0.1133	u
Hexachlorobenzene	3.33E+00	(1)	1.17E+02	(5)	1.89E-01	(8)	< 0.1582	u	< 1.2381	u	< 0.1212	u	< 0.1181	u	< 0.1251	u	< 0.1269	u	< 1.2182	u	< 0.1203	u	< 0.1257	u	< 0.123	u	< 0.1223	u	< 0.1204	u	< 0.25	u	< 0.1223	u	< 0.1279	u	< 0.1267	u	< 0.123	u
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	< 0.1782	u	< 1.3944	u	< 0.1365	u	< 0.133	u	< 0.1409	u	< 0.1429	u	< 1.372	u	< 0.1355	u	< 0.1415	u	< 0.1386	u	< 0.1377	u	< 0.1356	u	< 0.2816	u	< 0.1378	u	< 0.1441	u	< 0.1427	u	< 0.1386	u
Hexachlorocyclopentadiene	2.30E+00	(1)	8.67E+02	(5)	2.40E+00	(8)	< 0.1461	u	< 1.1433	u	< 0.1119	u	< 0.1091	u	< 0.1155	u	< 0.1172	u	< 1.125	u	< 0.1111	u	< 0.116	u	< 0.1136	u	< 0.1129	u	< 0.1112	u	< 0.2309	u	< 0.113	u	< 0.1182	u	< 0.117	u	< 0.1136	u
Hexachloroethane	1.33E+02	(1)	1.88E+02	(5)	3.20E-02	(8)	< 0.1424	u	< 1.1142	u	< 0.1091	u	< 0.1063	u	< 0.1126	u	< 0.1142	u	< 1.0963	u	< 0.1082	u	< 0.1131	u	< 0.1107	u	< 0.11	u	< 0.1083	u	< 0.225	u	< 0.1101	u	< 0.1151	u	< 0.114	u	< 0.1107	u
Indeno(1,2,3-c,d)pyrene	1.53E+00	(1)	3.23E+01	(4)	2.01E+01	(8)	< 0.1272	u	< 0.9956	u	< 0.0975	u	< 0.095	u	< 0.1006	u	< 0.102	u	< 0.9796	u	< 0.0967	u	< 0.101	u	< 0.0989	u	< 0.0983	u	< 0.0968	u	< 0.2011	u	< 0.0984	u	< 0.1029	u	< 0.1019	u	< 0.0989	u
Isophorone	5.61E+03	(1)	2.70E+04	(4)	0.00E+00	(9)	< 0.1882	u	< 1.4727	u	< 0.1441	u	< 0.1405	u	< 0.1488	u	< 0.151	u	< 1.4491	u	< 0.1431	u	< 0.1495	u	< 0.1463	u	< 0.1454	u	< 0.1432	u	< 0.2974	u	< 0.1455	u	< 0.1522	u	< 0.1507	u	< 0.1463	u
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	< 0.1933	u	< 1.5125	u	< 0.148	u	< 0.1443	u	< 0.1528	u	< 0.155	u	< 1.4881	u	< 0.1469	u	< 0.1535	u	< 0.1503	u	< 0.1494	u	< 0.1471	u	< 0.3054	u	< 0.1495	u	< 0.1563	u	< 0.1548	u	< 0.1503	u
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	1.44E-02	(8)	< 0.1768	u	< 1.3831	u	< 0.1354	u	< 0.132	u	< 0.1398	u	< 0.1418	u	< 1.3609	u	< 0.1344	u	< 0.1404	u	< 0.1374	u	< 0.1366	u	< 0.1345	u	< 0.2793	u	< 0.1367	u	< 0.1429	u	< 0.1416	u	< 0.1374	u
Nitroso-di-N-propylamine, N-	7.80E-01	(3)	3.30E+00	(7)	1.62E-04	(9)	< 0.1825	u	< 1.4279	u	< 0.1398	u	< 0.1362	u	< 0.1443	u	< 0.1464	u	< 1.4049	u	< 0.1387	u	< 0.1449	u	< 0.1419	u	< 0.141	u	< 0.1389	u	< 0.2884	u	< 0.1411	u	< 0.1476	u	< 0.1462	u	< 0.1419	u
N-Nitrosodiphenylamine	1.09E+03	(1)	5.24E+03	(4)	1.00E+01	(8)	< 0.1344	u	< 1.0514	u	< 0.1029	u	< 0.1003	u	< 0.1062	u	< 0.1078	u	< 1.0345	u	< 0.1021	u	< 0.1067	u	< 0.1045	u	< 0.1038	u	< 0.1022	u	< 0.2123	u	< 0.1039	u	< 0.1087	u	< 0.1076	u	< 0.1045	u
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	1.52E-01	(8)	< 0.1317	u	< 1.0308	u	< 0.1009	u	< 0.0984	u	< 0.1042	u	< 0.1057	u	< 1.0142	u	< 0.1001	u	< 0.1046	u	< 0.1024	u	< 0.1018	u	< 0.1002	u	< 0.2082	u	< 0.1019	u	< 0.1065	u	< 0.1055	u	< 0.1024	u
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	8.59E+01	(8)	< 0.1383	u	< 1.0825	u	< 0.106	u	< 0.1033	u	< 0.1094	u	< 0.1109	u	< 1.0651	u	< 0.1052	u	< 0.1099	u	< 0.1076	u	< 0.1069	u	< 0.1053	u	< 0.2186	u	< 0.107	u	< 0.1119	u	< 0.1108	u	< 0.1076	u
Phenol	1.85E+04	(1)	7.74E+04	(5)	5.23E+01	(8)	< 0.159	u	< 1.2442	u	< 0.1218	u	< 0.1187	u	< 0.1257	u	< 0.1275	u	< 1.2242	u	< 0.1209	u	< 0.1263	u	< 0.1236	u	< 0.1229	u	< 0.121	u	< 0.2513	u	< 0.1229	u	< 0.1286	u	< 0.1274	u	< 0.1236	u
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.92E+02	(8)	< 0.1201	u	< 0.9396	u	< 0.092	u	< 0.0897	u	< 0.0949	u	< 0.0963	u	< 0.9245	u	< 0.0913	u	< 0.0954	u	< 0.0934	u	< 0.0928	u	< 0.0914	u	< 0.1898	u	< 0.0928	u	< 0.0971	u	< 0.0962	u	< 0.0934	u
Pyridine	7.80E+01	(2)	1.20E+03	(6)	1.36E-01	(9)	< 0.1539	u	< 1.2044	u	< 0.1179	u	< 0.1149	u	< 0.1217	u	< 0.1235	u	< 1.1851	u	< 0.117	u	< 0.1222	u	< 0.1197	u	< 0.1189	u	< 0.1171	u	< 0.2432	u	< 0.119	u	< 0.1245	u	< 0.1233	u	< 0.1197	u
Total Petroleum Hydrocarbons (mg/kg)																																								
Gasoline Range Organics (GRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 1.472	u	< 1.1887	u	< 1.1318	u	< 0.8854	u	< 1.4835	u	< 0.8747	u	< 0.9968	u	< 0.7328	u	< 0.784	u	< 0.7251	u	< 0.7642	u	< 1.5132	u	< 0.8912	u	< 0.7716	u	< 0.7407	u	< 0.7371	u	< 1.4792	u
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 1.81	u	87	v	20	v	< 1.955	u	< 1.9084	u	< 1.9102	u	20	v	11	v	< 1.7986	u	< 1.9342	u	< 1.9646	u	< 1.9102	u	< 1.759	u	< 1.9084	u	< 1.6964	u	< 1.8248	u	< 1.8051	u
Motor Oil Range Organics (MRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 45.2489	u	120	v	< 47.7555	u	< 48.8759	u	< 47.7099	u	< 47.7555	u	< 46.9484	u	< 46.6418	u	< 44.964	u	< 48.3559	u	< 49.1159	u	< 47.7555	u	< 43.9754	u	< 47.7099	u	< 42.4088	u	< 45.6204	u	< 45.1264	u

- No screening level or analytical result available
NMED - Risk Assessment Guidance for Site Investigations and Remediation (March 2019)
EPA - Regional Screening Levels (Nov. 2019)
(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels
(7) EPA Industrial - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
(8) SoilGW NMED Cw Dilution Attenuation Factor (DAF) = 20
(9) SoilGW Risk-based EPA DAF = 20
(10) SoilGW MCL-based NMED DAF = 20
(11) NMED Tables 6-2 and 6-4 TPH Soil Screening Levels "unknown oil" - see report Section 5 for use of screening levels

Bold represents value above Residential Screening Level
yellow highlight represents value above Non-Residential Screening Level
Bold with yellow highlight value exceeds Residential and Non-Residential Screening Levels

v = reportable detection above the Practical quantitation limit (PQL)
u - result is not detected at method detection limit (MDL)
j - estimated result at concentration above MDL but less than PQL

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-7 (17.5-18')		SWMU 13-8 (0-0.5')		SWMU 13-8 (1.5-2')		SWMU 13-8 (2-3')		SWMU 13-9 (0-0.5')		SWMU 13-9 (1.5-2')		SWMU 13-9 (2-3')		SWMU 13-10 (0-0.5')		SWMU 13-10 (1.5-2')		SWMU 13-10 (2-3')		SWMU 13-11 (0-0.5')		SWMU 13-11 (1.5-2')		SWMU 13-11 (2-3')		SWMU 13-12 (0-0.5')		SWMU 13-12 (0.5-1.5')		SWMU 13-12 (1.5-2')		SWMU 13-12 (2-3')	
					Lab ID		1910e04-008		1910e04-009		1910E04-010		1910e04-011		1910e04-012		1910e04-013		1910e04-014		1910e04-019		1910e04-020		1910e04-021		1910e04-022		1910e04-023		1910e04-024		1910e04-025		1910e04-026		1910E04-027		1910e04-028	
					Sample Date		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019	
Metals (mg/kg)																																								
Antimony	3.13E+01	(1)	1.42E+02	(5)	5.42E+00	(10)	< 0.7439	u	< 0.7368	u	< 0.7216	u	< 0.7473	u	< 0.7471	u	< 0.7201	u	< 0.7342	u	< 0.7583	u	< 0.7286	u	< 0.7727	u	< 0.7446	u	< 0.7449	u	< 0.7411	u	< 0.7403	u	< 0.7356	u	< 0.7473	u	< 0.7578	u
Arsenic	7.07E+00	(1)	3.59E+01	(4)	5.83E+00	(8)	< 2.8855	u	< 2.858	u	< 2.7989	u	< 2.8987	u	8.3	v	< 2.7932	u	< 2.8478	u	5.6	v	< 2.8261	u	3.5	J	< 2.8881	u	< 2.8893	u	< 2.8747	u	< 2.8715	u	< 2.8535	u	< 2.8987	u	< 2.9395	u
Barium	1.56E+04	(1)	4.39E+03	(5)	1.65E+03	(10)	370	v	280	v	170	v	270	v	260	v	210	v	210	v	220	v	150	v	240	v	310	v	170	v	230	v	340	v	260	v	330	v	250	v
Beryllium	1.56E+02	(1)	1.48E+02	(5)	6.32E+01	(10)	1.2	v	1.2	v	1.4	v	1.3	v	0.91	v	1.4	v	1.3	v	1.2	v	1.3	v	1.2	v	1.3	v	1.4	v	1.3	v	1.1	v	1.2	v	1.5	v	1.5	v
Cadmium	7.05E+01	(1)	7.21E+01	(5)	7.52E+00	(10)	< 0.0491	u	< 0.0486	u	< 0.0476	u	< 0.0493	u	< 0.0493	u	< 0.0475	u	< 0.0484	u	< 0.05	u	< 0.0481	u	< 0.051	u	< 0.0491	u	< 0.0491	u	< 0.0489	u	< 0.0488	u	< 0.0485	u	< 0.0493	u	< 0.05	u
Chromium (Total)	9.66E+01	(1)	1.34E+02	(5)	3.60E+06	(10)	12	v	32	v	13	v	14	v	270	v	18	v	13	v	160	v	16	v	12	v	81	v	16	v	14	v	15	v	27	v	19	v	18	v
Cobalt	2.34E+01	(1)	3.67E+01	(5)	5.40E+00	(8)	5.5	v	6	v	5.5	v	5.8	v	6.8	v	6	v	5.6	v	8.1	v	5.5	v	5.2	v	7.2	v	6.3	v	5.7	v	5.4	v	5.4	v	6.9	v	6.9	v
Cyanide	1.12E+01	(1)	1.21E+01	(5)	7.13E-01	(8)	< 0.25	u	1.2	v	< 0.25	u	< 0.25	u	8	v	< 0.25	u	< 0.25	u	0.69	v	< 0.25	u	< 0.25	u	1.2	v	< 0.25	u	< 0.25	u	< 0.25	u	0.44	v	< 0.25	u	< 0.25	u
Iron	5.48E+04	(1)	2.48E+05	(5)	6.96E+03	(8)	16000	v	19000	v	19000	v	19000	v	16000	v	19000	v	19000	v	21000	v	18000	v	17000	v	21000	v	22000	v	18000	v	17000	v	18000	v	22000	v	23000	v
Lead	4.00E+02	(2)	8.00E+02	(6)	5.20E-02	(10)	3.1	v	< 0.4863	u	4.2	v	3	v	7.5	v	1.6	v	2.7	v	3.4	v	3.4	v	3	v	3.8	v	1.7	v	2.7	v	3.5	v	< 0.4855	u	0.51	v	< 0.5001	u
Manganese	1.05E+04	(1)	4.64E+02	(5)	2.63E+03	(8)	620	v	450	v	300	v	290	v	170	v	270	v	340	v	270	v	360	v	350	v	300	v	310	v	320	v	520	v	270	v	380	v	360	v
Mercury (elemental)	2.38E+01	(1)	2.07E+01	(5)	2.09E+00	(8)	0.0023	J	0.19	v	0.0067	J	0.0035	J	8.3	v	0.0045	J	0.003	J	1.6	v	0.0051	J	0.0035	J	1.1	v	0.0042	J	0.0028	J	0.056	v	0.25	v	0.033	J	0.0044	J
Nickel	1.56E+03	(1)	7.53E+02	(5)	4.85E+02	(8)	11	v	12	v	13	v	13	v	18	v	13	v	12	v	19	v	13	v	12	v	16	v	14	v	13	v	11	v	12	v	15	v	14	v
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.17E+00	(10)	< 2.5915	u	< 2.514	u	< 2.462	u	< 2.5497	u	7.8	v	< 2.4569	u	< 2.505	u	4	J	< 2.4859	u	< 2.6364	u	< 2.5404	u	< 2.5414	u	< 2.5287	u	< 2.5259	u	< 2.51	u	< 2.5497	u	< 2.5857	u
Silver	3.91E+02	(1)	1.77E+03	(5)	1.38E+01	(8)	< 0.0648	u	< 0.0642	u	< 0.0629	u	< 0.0651	u	< 0.0651	u	< 0.0627	u	< 0.064	u	< 0.0661	u	< 0.0635	u	< 0.0673	u	< 0.0649	u	< 0.0649	u	< 0.0646	u	< 0.0645	u	< 0.0641	u	< 0.0651	u	< 0.066	u
Vanadium	3.94E+02	(1)	6.14E+02	(5)	1.26E+03	(8)	20	v	30	v	20	v	23	v	27	v	24	v	21	v	36	v	22	v	20	v	37	v	25	v	22	v	26	v	30	v	31	v	30	v
Zinc	2.35E+04	(1)	1.06E+05	(5)	7.41E+03	(8)	19	v	66	v	18	v	19	v	390	v	22	v	18	v	310	v	23	v	17	v	140	v	21	v	18	v	34	v	66	v	28	v	24	v
Volatiles (mg/kg)																																								
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	3.60E-02	(8)	< 0.0015	u	< 0.0023	u	< 0.0017	u	< 0.0017	u	< 0.0022	u	< 0.0018	u	< 0.0018	u	< 0.0021	u	< 0.0018	u	< 0.0019	u	< 0.0027	u	< 0.0022	u	< 0.002	u	< 0.0023	u	< 0.0023	u	< 0.0023	u	< 0.002	u
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	1.28E+00	(10)	< 0.002	u	< 0.0031	u	< 0.0023	u	< 0.0023	u	< 0.0029	u	< 0.0025	u	< 0.0024	u	< 0.0027	u	< 0.0024	u	< 0.0025	u	< 0.0037	u	< 0.0029	u	< 0.0027	u	< 0.0031	u	< 0.003	u	< 0.003	u	< 0.0027	u
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	4.81E-03	(8)	< 0.0022	u	< 0.0034	u	< 0.0026	u	< 0.0026	u	< 0.0033	u	< 0.0028	u	< 0.0027	u	< 0.0031	u	< 0.0027	u	< 0.0028	u	< 0.0041	u	< 0.0032	u	< 0.003	u	< 0.0034	u	< 0.0034	u	< 0.0034	u	< 0.003	u
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	2.68E-02	(8)	< 0.0015	u	< 0.0024	u	< 0.0018	u	< 0.0018	u	< 0.0023	u	< 0.0019	u	< 0.0019	u	< 0.0021	u	< 0.0019	u	< 0.0019	u	< 0.0029	u	< 0.0022	u	< 0.0021	u	< 0.0024	u	< 0.0024	u	< 0.0024	u	< 0.0021	u
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	1.36E-01	(8)	< 0.0014	u	< 0.0022	u	< 0.0017	u	< 0.0016	u	< 0.0021	u	< 0.0017	u	< 0.0017	u	< 0.0019	u	< 0.0017	u	< 0.0018	u	< 0.0026	u	< 0.002	u	< 0.0019	u	< 0.0022	u	< 0.0021	u	< 0.0022	u	< 0.0019	u
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	4.79E-02	(10)	< 0.0087	u	< 0.0135	u	< 0.0103	u	< 0.0103	u	< 0.0129	u	< 0.0109	u	< 0.0106	u	< 0.0122	u	< 0.0108	u	< 0.011	u	< 0.0163	u	< 0.0127	u	< 0.012	u	< 0.0135	u	< 0.0134	u	< 0.0135	u	< 0.0118	u
1,1-Dichloropropene	-	-	-	-	-	-	< 0.002	u	< 0.0031	u	< 0.0024	u	< 0.0023	u	< 0.0029	u	< 0.0025	u	< 0.0024	u	< 0.0028	u	< 0.0024	u	< 0.0025	u	< 0.0037	u	< 0.0029	u	< 0.0027	u	< 0.0031	u	< 0.0031	u	< 0.0031	u	< 0.0027	u
Trichlorobenzene, 1,2,3-	6.30E+01	(2)	9.30E+02	(6)	4.20E-01	(9)	< 0.0019	u	< 0.003	u	< 0.0023	u	< 0.0023	u	< 0.0028	u	< 0.0024	u	< 0.0023	u	< 0.0027	u	< 0.0024	u	< 0.0024	u	< 0.0036	u	< 0.0028	u	< 0.0026	u	< 0.003	u	< 0.0029	u	< 0.003	u	< 0.0026	u
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	5.82E-05	(8)	< 0.0035	u	< 0.0055	u	< 0.0042	u	< 0.0042	u	< 0.0052	u	< 0.0044	u	< 0.0043	u	< 0.0049	u	< 0.0044	u	< 0.0044	u	< 0.0066	u	< 0.0052	u	< 0.0048	u	< 0.0055	u	< 0.0054	u	< 0.0054	u	< 0.0048	u
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 0.0022	u	< 0.0034	u	< 0.0026	u	< 0.0026	u	< 0.0033	u	< 0.0028	u	< 0.0027	u	< 0.0031	u	< 0.0027	u	< 0.0028	u	< 0.0041	u	< 0.0032	u	< 0.003	u	< 0.0034	u	< 0.0034	u	< 0.0034	u	< 0.003	u
Trimethylbenzene, 1,2,4-	3.00E+02	(2)	1.80E+03	(6)	1.62E+00	(9)	< 0.002	u	< 0.0031	u	< 0.0024	u	< 0.0024	u	< 0.0029	u	< 0.0025	u	< 0.0024	u	< 0.0028	u	< 0.0025	u	< 0.0025	u	< 0.0037	u	< 0.0029	u	< 0.0027	u	< 0.0031	u	< 0.0031	u	< 0.0031	u	< 0.0027	u
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.39E-03	(8)	< 0.0022	u	< 0.0035	u	< 0.0027	u	< 0.0026	u	< 0.0033	u	< 0.0028	u	< 0.0027	u	< 0.0031	u	< 0.0028	u	< 0.0028	u	< 0.0042	u	< 0.0033	u	< 0.0031	u	< 0.0035	u	< 0.0034	u	< 0.0034	u	< 0.003	u
1,2-Dibromoethane (Ethylene dibromide)	6.72E-01	(1)	3.31E+00	(4)	2.36E-04	(10)	< 0.002	u	< 0.0031	u	< 0.0024	u	< 0.0023	u	< 0.0029	u	< 0.0025	u	< 0.0024	u	< 0.0028	u	< 0.0025	u	< 0.0025	u	< 0.0037	u	< 0.0029	u	< 0.0027	u	< 0.0031	u	< 0.0031	u	< 0.0031	u	< 0.0027	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 0.0018	u	< 0.0028	u	< 0.0021	u	< 0.0021	u	< 0.0026	u	< 0.0022	u	< 0.0022	u	< 0.0025	u	< 0.0022	u	< 0.0023	u	< 0.0033	u	< 0.0026	u	< 0.0025	u	< 0.0028	u	< 0.0027	u	< 0.0028	u	< 0.0024	u
1,2-Dichloroethane	8.32E+00	(1)	4.07E+01	(4)	2.38E-02	(8)	< 0.0022	u	< 0.0034	u	< 0.0026	u	< 0.0026	u	< 0.0033	u	< 0.0028	u	< 0.0027	u	< 0.0031	u	< 0.0027	u	< 0.0028	u	< 0.0041	u	< 0.0033	u	< 0.0031	u	< 0.0034	u	< 0.0034	u	< 0.0034	u	< 0.003	u
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	2.77E-02	(8)	< 0.0016	u	< 0.0025	u	< 0.0019	u	< 0.0019	u	< 0.0024	u	< 0.002	u	< 0.0019	u	< 0.0022	u	< 0.002	u	< 0.002	u	< 0.003	u	< 0.0023	u	< 0.0022	u	< 0.0025	u	< 0.0024	u	< 0.0024	u	< 0.0021	u
Trimethylbenzene, 1,3,5-	2.70E+02	(2)	1.50E+03	(6)	1.74E+00	(9)	< 0.0021	u	< 0.0033	u	< 0.0025	u	< 0.0025	u	< 0.0031	u	< 0.0026	u	< 0.0026	u	< 0.0029	u	< 0.0026	u	< 0.0027	u	< 0.0039	u	< 0.0031	u	< 0.0029	u	< 0.0033	u	< 0.0032	u	< 0.0033	u	< 0.0028	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.0019	u	< 0.0029	u	< 0.0022	u	< 0.0022	u	< 0.0028	u	< 0.0024	u	< 0.0023	u	< 0.0026	u	< 0.0023	u	< 0.0024	u	< 0.0035	u	< 0.0028	u	< 0.0026	u	< 0.0029	u	< 0.0029	u	< 0.0029	u	< 0.0026	u
Dichloropropane, 1,3-	1.60E+03	(2)	2.30E+04	(6)	2.60E+00	(9)	< 0.0024	u	< 0.0037	u	< 0.0028	u	< 0.0028	u	< 0.0035	u	< 0.003	u	< 0.0029	u	< 0.0033	u	< 0.0029	u	< 0.003	u	< 0.0044	u	< 0.0034	u	< 0.0032	u	< 0.0037	u	< 0.0036	u	< 0.0036	u	< 0.0032	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 0.0018	u	< 0.0028	u	< 0.0022	u	< 0.0022	u	< 0.0027	u	< 0.0023	u	< 0.0022	u	< 0.0025	u	< 0.0022	u	< 0.0023	u	< 0.0034	u	< 0.0027	u	< 0.0025	u	< 0.0028	u	< 0.0028	u	< 0.0028	u	< 0.0025	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(4)	8.93E-01	(8)	< 0.0126	u	< 0.0194	u	< 0.0149	u	< 0.0148	u	< 0.0185	u	< 0.0157	u	< 0.0152	u	< 0.0175	u	< 0.0155	u	< 0.0158	u	< 0.0234	u	< 0.0183	u	< 0.0172	u	< 0.0194	u	< 0.0193	u	< 0.0193	u	< 0.0169	u
2,2-Dichloropropane	-	-	-	-	-	-	< 0.0071	u	< 0.011	u	< 0.0084	u	< 0.0084	u	< 0.0105	u	< 0.0089	u	< 0.0086	u	< 0.0099	u	< 0.0087	u	< 0.0089	u	< 0.0132	u	< 0.0104	u	< 0.0097	u	< 0.011	u	< 0.0109	u	< 0.0109	u	< 0.0096	u
2-Butanone (Methyl ethyl ketone, MEK)	3.74E+04	(1)	9.17E+04	(5)	2.01E+01	(8)	< 0.0253	u	< 0.0391	u	< 0.0299	u	< 0.0298	u	< 0.0373	u	< 0.0317	u	< 0.0306	u	< 0.0351	u	< 0.0311	u	< 0.0318	u	< 0.047	u	< 0.0369	u	< 0.0347	u	< 0.0391	u	< 0.0388	u	< 0.0389	u	< 0.034	u
o-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	3.56E+00	(8)	< 0.0019	u	< 0.0029	u	< 0.0023	u	< 0.0022	u	< 0.0028	u	< 0.0024	u	< 0.0023	u	< 0.0026	u	< 0.0023	u	< 0.0024	u	< 0.0035	u	< 0.0028	u	< 0.0026	u	< 0.0029	u	< 0.0029	u	< 0.0029	u	< 0.0026	u
Hexanone, 2-	2.00E+02	(2)	1.30E+03	(6)	1.76E-01	(9)	< 0.0036	u	< 0.0056	u	< 0.0043	u	< 0.0043	u	< 0.0054	u	< 0.0045	u	< 0.0044	u	< 0.005	u	< 0.0045	u	< 0.0046	u	< 0.0067	u	< 0.0053	u	< 0.005	u	< 0.0056	u	< 0.0056	u	< 0.0056	u	< 0.0049	u
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	< 0.0096	u	< 0.0148	u	< 0.0113	u	< 0.0113	u	< 0.0141	u	< 0.012	u	< 0.0116	u	< 0.0133	u	< 0.0118	u	< 0.012	u	< 0.0178	u	< 0.0139	u	< 0.0131	u	< 0.0148	u	< 0.0147	u	< 0.0147	u	< 0.0129	u
Chlorotoluene, p-	1.60E+03	(2)	2.30E+04	(6)	4.80E+00	(9)	< 0.0018	u	< 0.0028	u	< 0.0021	u	< 0.0021	u	< 0.0026	u	< 0.0022	u	< 0.0022	u	< 0.0025	u	< 0.0022	u	< 0.0023	u	< 0.0033	u	< 0.0026	u	< 0.0025	u	< 0.0028	u	< 0.0027	u	< 0.0028	u	< 0.0024	u
4-Isopropyltoluene	-	-	-	-	-	-	< 0.0018	u	< 0.0028	u	< 0.0021	u	< 0.0021	u	< 0.0027	u	< 0.0023	u	< 0.0022	u	< 0.0025	u	< 0.0022	u	< 0.0023	u	< 0.0034	u	< 0.0026	u	< 0.0025	u	< 0.0028	u	< 0.0028	u	< 0.0028	u	< 0.0024	u
Methyl isobutyl ketone	5.81E+03	(1)	2.02E+04	(5)	4.80E+00	(8)	< 0.0041	u	< 0.0064	u	< 0.0049	u	< 0.0049	u	< 0.0061	u	< 0.0052	u	< 0.005	u	< 0.0057	u	< 0.0051	u	< 0.0052	u	< 0.0077	u	< 0.006	u	< 0.0057	u	< 0.0064	u	< 0.0063	u	< 0.0063	u	< 0.0056	u
Acetone	6.63E+04	(1)	2.42E+05	(5)	4.98E+01	(8)	< 0.0181	u	< 0.028	u	< 0.0214	u	< 0.0213	u	< 0.0267	u	< 0.0227	u	< 0.022	u	< 0.0252	u	< 0.0223	u	< 0.0228	u	< 0.0337	u	< 0.0264	u	< 0.0248	u	< 0.028	u	< 0.0278	u	< 0.0279	u	< 0.0244	u
Benzene	1.78E+01	(1)	8.72E+01	(4)	4.18E-02	(8)	< 0.0018	u	< 0.0028	u	< 0.0021	u	< 0.0021	u	< 0.0026	u	< 0.0022	u	< 0.0022	u	< 0.0025	u	< 0.0022	u	< 0.0022	u	< 0.0033	u	< 0.0026	u	< 0.0025	u	< 0.0028	u	< 0.0027	u	< 0.0028	u	< 0.0024	u
Bromobenzene	2.90E+02	(2)	1.80E+03	(6)	8.40E-01	(9)	< 0.0021	u	< 0.0032	u	< 0.0025	u	< 0.0025	u	< 0.0031	u	< 0.0026	u	< 0.0025	u	< 0.0029	u	< 0.0026	u	< 0.0026	u	< 0.0039	u	< 0.0031	u	< 0.0029	u	< 0.0032	u	< 0.0032	u	< 0.0032	u	< 0.0028	u
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	6.21E-03	(8)	< 0.002	u	< 0.0031	u	< 0.0024	u	< 0.0023	u	< 0.0029	u	< 0.0025	u	< 0.0024	u	< 0.0028	u	< 0.0025	u	< 0.0025	u	< 0.0037	u	< 0.0029	u	< 0.0027	u	< 0.0031	u	< 0.0031	u	< 0.0031	u	< 0.0027	u
Tribromomethane (Bromoform)	6.74E+02	(1)	1.76E+03	(4)	1.47E-01	(8)	< 0.002	u	< 0.0031	u	< 0.0023	u	< 0.0023	u	< 0.0029	u	< 0.0025	u	< 0.0024	u	< 0.0027	u	< 0.0024	u	< 0.0025	u	< 0.0037	u	< 0.0029	u	< 0.0027	u	< 0.0031	u	< 0.003	u	< 0.003	u	< 0.0027	u
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	3.43E-02	(8)	< 0.0053	u	< 0.0082	u	< 0.0062	u	< 0.0062	u	< 0.0078	u	< 0.0066	u	< 0.0064	u	< 0.0073	u	< 0.0065	u	< 0.0066	u	< 0.0098	u	< 0.0077	u	< 0.0072	u	< 0.0082	u	< 0.0081	u	< 0.0081	u	< 0.0071	u
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	4.42E+00	(8)	< 0.0072	u	< 0.0112	u	< 0.0085	u	< 0.0085	u	< 0.0107	u	< 0.009	u	< 0.0087	u	< 0.01	u	< 0.0089	u	< 0.0091	u	< 0.0134	u	< 0.0105	u	< 0.0099	u	< 0.0112	u	< 0.0111	u	< 0.0111	u	< 0.0097	u
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	3.67E-02	(8)	< 0.0021	u	< 0.0032	u	< 0.0025	u	< 0.0024	u	< 0.0031	u	< 0.0026	u	< 0.0025	u	< 0.0029	u	< 0.0025	u	< 0.0026	u	< 0.0039	u	< 0.003	u	< 0.0028	u	< 0.0032	u	< 0.0032	u	< 0.0032	u	< 0.0028	u
Chlorobenzene (Monochlorobenzene	3.78E+02	(1)	4.12E+02	(5)	1.08E+00	(8)	< 0.0028	u	< 0.0043	u	< 0.0033	u	< 0.0033	u	< 0.0041	u	< 0.0035	u	< 0.0034	u	< 0.0039	u	< 0.0034	u	< 0.0035	u	< 0.0052	u	< 0.0041	u	< 0.0038	u	< 0.0043	u	< 0.0043	u	< 0.0043	u	< 0.0038	u
Ethyl chloride	1.90E+04	(1)	1.66E+04	(5)	1.07E+02	(8)	< 0.0032	u	< 0.005	u	< 0.0038	u	< 0.0038	u	< 0.0048	u	< 0.004	u	< 0.0039	u	< 0.0045	u	< 0.004	u	< 0.004	u	< 0.006	u	< 0.0047	u	< 0.0044	u	< 0.005	u	< 0.0049	u	< 0.005	u	< 0.0043	u
Chloroform	5.90E+00	(1)	2.87E+01	(4)	1.09E-02	(8)	< 0.0018	u	< 0.0027	u	< 0.0021	u	< 0.0021	u	< 0.0026	u	< 0.0022	u	< 0.0021	u	< 0.0024	u	< 0.0022	u	< 0.0022	u	< 0.0033	u	< 0.0026	u	< 0.0024	u	< 0.0027	u	< 0.0027	u	< 0.0027	u	< 0.0024	u
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	9.52E-02	(8)	< 0.0021	u	< 0.0032	u	< 0.0025	u	< 0.0025	u	< 0.0031	u	< 0.0026	u	< 0.0025	u	< 0.0029	u	< 0.0026	u	< 0.0026	u	< 0.0039	u	< 0.003	u	< 0.0029	u	< 0.0032	u	< 0.0032	u	< 0.0032	u	< 0.0028	u
cis-1,2-Dichloroethene	1.56E+02	(1)	7.08E+02	(5)	3.52E-01	(8)	< 0.003	u	< 0.0046	u	< 0.0035	u	< 0.0035	u	< 0.0044	u	< 0.0037	u	< 0.0036	u	< 0.0042	u	< 0.0037	u	< 0.0038	u	< 0.0056	u	< 0.0044	u	< 0.0041	u	< 0.0046	u	< 0.0046	u	< 0.0046	u	< 0.004	u
cis-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0018	u	< 0.0029	u	< 0.0022	u	< 0.0022	u	< 0.0027	u	< 0.0023	u	< 0.0022	u	< 0.0026	u	< 0.0023	u	< 0.0023	u	< 0.0034	u	< 0.0027	u	< 0.0025	u	< 0.0029	u	< 0.0028	u	< 0.0028	u	< 0.0025	u
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	7.55E-03	(8)	< 0.0016	u	< 0.0024	u	< 0.0018	u	< 0.0018	u	< 0.0023	u	< 0.0019	u	< 0.0019	u	< 0.0022	u	< 0.0019	u	< 0.002	u	< 0.0029	u	< 0.0023	u	< 0.0021	u	< 0.0024	u	< 0.0024	u	< 0.0024	u	< 0.0021	u
Dibromomethane (Methylene Bromide)	2.40E+01	(2)	9.90E+01	(6)	4.20E-02	(9)	< 0.0024	u	< 0.0036	u	< 0.0028	u	< 0.0028	u	< 0.0035	u	< 0.0029	u	< 0.0029	u	< 0.0033	u	< 0.0029	u	< 0.003	u	< 0.0044	u	< 0.0034	u	< 0.0032	u	< 0.0036	u	< 0.0036	u	< 0.0036	u	< 0.0032	u
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	7.23E+00	(8)	< 0.0051	u	< 0.0078	u	< 0.006	u	< 0.006	u	< 0.0075	u	< 0.0064	u	< 0.0061	u	< 0.007	u	< 0.0062	u	< 0.0064	u	< 0.0094	u	< 0.0074	u	< 0.007	u	< 0.0078	u	< 0.0078	u	< 0.0078	u	< 0.0068	u

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-7 (17.5-18')		SWMU 13-8 (0-0.5')		SWMU 13-8 (1.5-2')		SWMU 13-8 (2-3')		SWMU 13-9 (0-0.5')		SWMU 13-9 (1.5-2')		SWMU 13-9 (2-3')		SWMU 13-10 (0-0.5')		SWMU 13-10 (1.5-2')		SWMU 13-10 (2-3')		SWMU 13-11 (0-0.5')		SWMU 13-11 (1.5-2')		SWMU 13-11 (2-3')		SWMU 13-12 (0-0.5')		SWMU 13-12 (0.5-1.5')		SWMU 13-12 (1.5-2')		SWMU 13-12 (2-3')	
					Lab ID		1910e04-008		1910e04-009		1910E04-010		1910e04-011		1910e04-012		1910e04-013		1910e04-014		1910e04-019		1910e04-020		1910e04-021		1910e04-022		1910e04-023		1910e04-024		1910e04-025		1910e04-026		1910E04-027		1910e04-028	
					Sample Date		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019	
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.23E+01	(8)	< 0.0013	u	< 0.002	u	< 0.0015	u	< 0.0015	u	< 0.0019	u	< 0.0016	u	< 0.0015	u	< 0.0018	u	< 0.0016	u	< 0.0016	u	< 0.0024	u	< 0.0019	u	< 0.0017	u	< 0.002	u	< 0.0019	u	< 0.002	u	< 0.0017	u
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	< 0.0022	u	< 0.0034	u	< 0.0026	u	< 0.0026	u	< 0.0033	u	< 0.0028	u	< 0.0027	u	< 0.0031	u	< 0.0027	u	< 0.0028	u	< 0.0041	u	< 0.0032	u	< 0.003	u	< 0.0034	u	< 0.0034	u	< 0.0034	u	< 0.003	u
Cumene (isopropylbenzene)	2.36E+03	(1)	2.74E+03	(5)	1.14E+01	(8)	< 0.0016	u	< 0.0024	u	< 0.0019	u	< 0.0019	u	< 0.0023	u	< 0.002	u	< 0.0019	u	< 0.0022	u	< 0.0019	u	< 0.002	u	< 0.0029	u	< 0.0023	u	< 0.0022	u	< 0.0024	u	< 0.0024	u	< 0.0024	u	< 0.0021	u
tert-Butyl methyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	5.53E-01	(8)	< 0.0052	u	< 0.008	u	< 0.0061	u	< 0.0061	u	< 0.0077	u	< 0.0065	u	< 0.0063	u	< 0.0072	u	< 0.0064	u	< 0.0065	u	< 0.0096	u	< 0.0076	u	< 0.0071	u	< 0.008	u	< 0.008	u	< 0.008	u	< 0.007	u
Methylene chloride (Dichloromethan	4.09E+02	(1)	1.21E+03	(5)	2.21E-02	(10)	0.0063	J	< 0.006	u	< 0.0046	u	0.0073	J	< 0.0057	u	< 0.0048	u	< 0.0047	u	0.0083	J	< 0.0048	u	< 0.0049	u	0.011	J	< 0.0056	u	< 0.0053	u	< 0.006	u	0.0095	J	< 0.0059	u	< 0.0052	u
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	< 0.0044	u	< 0.0068	u	< 0.0052	u	< 0.0052	u	< 0.0065	u	< 0.0055	u	< 0.0053	u	< 0.0061	u	< 0.0054	u	< 0.0055	u	< 0.0081	u	< 0.0064	u	< 0.006	u	< 0.0068	u	< 0.0067	u	< 0.0067	u	< 0.0059	u
Butylbenzene, n-	3.90E+03	(2)	5.80E+04	(6)	6.40E+01	(9)	< 0.002	u	< 0.0032	u	< 0.0024	u	< 0.0024	u	< 0.003	u	< 0.0026	u	< 0.0025	u	< 0.0028	u	< 0.0025	u	< 0.0026	u	< 0.0038	u	< 0.003	u	< 0.0028	u	< 0.0032	u	< 0.0031	u	< 0.0031	u	< 0.0027	u
Propyl benzene	3.80E+03	(2)	2.40E+04	(6)	2.40E+01	(9)	< 0.0017	u	< 0.0027	u	< 0.0021	u	< 0.0021	u	< 0.0026	u	< 0.0022	u	< 0.0021	u	< 0.0024	u	< 0.0021	u	< 0.0022	u	< 0.0032	u	< 0.0025	u	< 0.0024	u	< 0.0027	u	< 0.0027	u	< 0.0027	u	< 0.0023	u
Butylbenzene, sec-	7.80E+03	(2)	1.20E+05	(6)	1.18E+02	(9)	< 0.0025	u	< 0.0038	u	< 0.0029	u	< 0.0029	u	< 0.0036	u	< 0.0031	u	< 0.003	u	< 0.0034	u	< 0.003	u	< 0.0031	u	< 0.0046	u	< 0.0036	u	< 0.0034	u	< 0.0038	u	< 0.0038	u	< 0.0038	u	< 0.0033	u
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.71E+00	(10)	< 0.0017	u	< 0.0027	u	< 0.002	u	< 0.002	u	< 0.0025	u	< 0.0021	u	< 0.0021	u	< 0.0024	u	< 0.0021	u	< 0.0022	u	< 0.0032	u	< 0.0025	u	< 0.0024	u	< 0.0027	u	< 0.0026	u	< 0.0026	u	< 0.0023	u
Butylbenzene, tert-	7.80E+03	(2)	1.20E+05	(6)	3.20E+01	(9)	< 0.0021	u	< 0.0032	u	< 0.0024	u	< 0.0024	u	< 0.003	u	< 0.0026	u	< 0.0025	u	< 0.0029	u	< 0.0025	u	< 0.0026	u	< 0.0038	u	< 0.003	u	< 0.0028	u	< 0.0032	u	< 0.0032	u	< 0.0032	u	< 0.0028	u
Tetrachloroethene	1.11E+02	(1)	1.20E+02	(5)	3.98E-02	(10)	< 0.0017	u	< 0.0027	u	< 0.0021	u	< 0.0021	u	< 0.0026	u	< 0.0022	u	< 0.0021	u	< 0.0024	u	< 0.0021	u	< 0.0022	u	< 0.0032	u	< 0.0025	u	< 0.0024	u	< 0.0027	u	< 0.0027	u	< 0.0027	u	< 0.0024	u
Toluene	5.23E+03	(1)	1.40E+04	(5)	1.11E+01	(10)	< 0.0021	u	< 0.0032	u	< 0.0025	u	< 0.0025	u	< 0.0031	u	< 0.0026	u	< 0.0025	u	< 0.0029	u	< 0.0026	u	< 0.0026	u	< 0.0039	u	< 0.003	u	< 0.0029	u	< 0.0032	u	< 0.0032	u	< 0.0032	u	< 0.0028	u
trans-1,2-Dichloroethene	2.95E+02	(1)	3.05E+02	(5)	5.03E-01	(8)	< 0.002	u	< 0.0031	u	< 0.0024	u	< 0.0024	u	< 0.003	u	< 0.0025	u	< 0.0024	u	< 0.0028	u	< 0.0025	u	< 0.0025	u	< 0.0037	u	< 0.0029	u	< 0.0027	u	< 0.0031	u	< 0.0031	u	< 0.0031	u	< 0.0027	u
trans-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0023	u	< 0.0036	u	< 0.0027	u	< 0.0027	u	< 0.0034	u	< 0.0029	u	< 0.0028	u	< 0.0032	u	< 0.0028	u	< 0.0029	u	< 0.0043	u	< 0.0034	u	< 0.0032	u	< 0.0036	u	< 0.0035	u	< 0.0036	u	< 0.0031	u
Trichloroethylene	6.77E+00	(1)	6.90E+00	(5)	3.10E-02	(8)	< 0.0025	u	< 0.0039	u	< 0.003	u	< 0.003	u	< 0.0037	u	< 0.0032	u	< 0.0031	u	< 0.0035	u	< 0.0031	u	< 0.0032	u	< 0.0047	u	< 0.0037	u	< 0.0035	u	< 0.0039	u	< 0.0039	u	< 0.0039	u	< 0.0034	u
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	1.57E+01	(8)	< 0.0074	u	< 0.0115	u	< 0.0088	u	< 0.0087	u	< 0.0109	u	< 0.0093	u	< 0.009	u	< 0.0103	u	< 0.0091	u	< 0.0093	u	< 0.0138	u	< 0.0108	u	< 0.0102	u	< 0.0115	u	< 0.0114	u	< 0.0114	u	< 0.01	u
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	1.34E-02	(8)	< 0.0014	u	< 0.0022	u	< 0.0017	u	< 0.0017	u	< 0.0021	u	< 0.0018	u	< 0.0017	u	< 0.002	u	< 0.0018	u	< 0.0018	u	< 0.0027	u	< 0.0021	u	< 0.002	u	< 0.0022	u	< 0.0022	u	< 0.0022	u	< 0.0019	u
Xylenes	8.71E+02	(1)	7.98E+02	(5)	1.54E+02	(8)	< 0.0055	u	< 0.0085	u	< 0.0065	u	< 0.0065	u	< 0.0081	u	< 0.0069	u	< 0.0067	u	< 0.0077	u	< 0.0068	u	< 0.0069	u	< 0.0102	u	< 0.008	u	< 0.0076	u	< 0.0085	u	< 0.0085	u	< 0.0085	u	< 0.0074	u
Semi-volatiles (mg/kg)																																								
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 0.1522	u	< 0.7871	u	< 0.1499	u	< 0.1496	u	< 7.4869	u	< 0.3209	u	< 0.1508	u	< 7.5868	u	< 0.3079	u	< 0.151	u	< 7.4917	u	< 0.3139	u	< 0.1521	u	< 0.3061	u	< 1.5273	u	< 0.2997	u	< 0.3038	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 0.1176	u	< 0.6084	u	< 0.1159	u	< 0.1157	u	< 5.787	u	< 0.2481	u	< 0.1166	u	< 5.8643	u	< 0.238	u	< 0.1167	u	< 5.7907	u	< 0.2426	u	< 0.1176	u	< 0.2366	u	< 1.1805	u	< 0.2316	u	< 0.2348	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.1031	u	< 0.5333	u	< 0.1016	u	< 0.1014	u	< 5.0723	u	< 0.2174	u	< 0.1022	u	< 5.14	u	< 0.2086	u	< 0.1023	u	< 5.0755	u	< 0.2127	u	< 0.1031	u	< 0.2074	u	< 1.0347	u	< 0.203	u	< 0.2058	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 0.1043	u	< 0.5395	u	< 0.1028	u	< 0.1026	u	< 5.1314	u	< 0.22	u	< 0.1034	u	< 5.2	u	< 0.211	u	< 0.1035	u	< 5.1347	u	< 0.2151	u	< 0.1043	u	< 0.2098	u	< 1.0468	u	< 0.2054	u	< 0.2082	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(7)	8.93E-01	(8)	< 0.1466	u	< 0.7581	u	< 0.1444	u	< 0.1441	u	< 7.2107	u	< 0.3091	u	< 0.1452	u	< 7.307	u	< 0.2965	u	< 0.1454	u	< 7.2154	u	< 0.3023	u	< 0.1465	u	< 0.2948	u	< 1.471	u	< 0.2886	u	< 0.2926	u
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	6.62E+01	(8)	< 0.1269	u	< 0.6566	u	< 0.1251	u	< 0.1248	u	< 6.2452	u	< 0.2677	u	< 0.1258	u	< 6.3286	u	< 0.2568	u	< 0.126	u	< 6.2492	u	< 0.2618	u	< 0.1269	u	< 0.2553	u	< 1.274	u	< 0.25	u	< 0.2534	u
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	6.74E-01	(8)	< 0.1029	u	< 0.5324	u	< 0.1014	u	< 0.1012	u	< 5.064	u	< 0.2171	u	< 0.102	u	< 5.1316	u	< 0.2082	u	< 0.1021	u	< 5.0672	u	< 0.2123	u	< 0.1029	u	< 0.207	u	< 1.033	u	< 0.2027	u	< 0.2055	u
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	8.25E-01	(8)	< 0.1139	u	< 0.5891	u	< 0.1122	u	< 0.112	u	< 5.6031	u	< 0.2402	u	< 0.1129	u	< 5.6779	u	< 0.2304	u	< 0.113	u	< 5.6067	u	< 0.2291	u	< 0.1139	u	< 0.2291	u	< 1.143	u	< 0.2243	u	< 0.2273	u
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	6.45E+00	(8)	< 0.1079	u	< 0.5582	u	< 0.1063	u	< 0.1061	u	< 5.3094	u	< 0.2276	u	< 0.1069	u	< 5.3803	u	< 0.2183	u	< 0.1071	u	< 5.3128	u	< 0.2226	u	< 0.1079	u	< 0.217	u	< 1.0831	u	< 0.2125	u	< 0.2154	u
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	6.69E-01	(8)	< 0.0711	u	< 0.368	u	< 0.0701	u	< 0.07	u	< 3.5001	u	< 0.15	u	< 0.0705	u	< 3.5469	u	< 0.1439	u	< 0.0706	u	< 3.5024	u	< 0.1467	u	< 0.0711	u	< 0.1431	u	< 0.714	u	< 0.1401	u	< 0.142	u
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	4.92E-02	(8)	< 0.1154	u	< 0.597	u	< 0.1137	u	< 0.1135	u	< 5.6782	u	< 0.2434	u	< 0.1144	u	< 5.754	u	< 0.2335	u	< 0.1145	u	< 5.6819	u	< 0.2381	u	< 0.1154	u	< 0.2321	u	< 1.1583	u	< 0.2273	u	< 0.2304	u
2,6-Dintitrotoluene	3.56E+00	(1)	1.72E+01	(4)	1.02E-02	(8)	< 0.1289	u	< 0.6666	u	< 0.127	u	< 0.1267	u	< 6.3404	u	< 0.2718	u	< 0.1277	u	< 6.4251	u	< 0.2607	u	< 0.1279	u	< 6.3445	u	< 0.2658	u	< 0.1288	u	< 0.2592	u	< 1.2934	u	< 0.2538	u	< 0.2573	u
b-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	5.70E+01	(8)	< 0.1222	u	< 0.632	u	< 0.1204	u	< 0.1202	u	< 6.0115	u	< 0.2577	u	< 0.1211	u	< 6.0917	u	< 0.2472	u	< 0.1212	u	< 6.0153	u	< 0.252	u	< 0.1222	u	< 0.2457	u	< 1.2263	u	< 0.2406	u	< 0.2439	u
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	1.15E+00	(8)	< 0.1218	u	< 0.6301	u	< 0.12	u	< 0.1198	u	< 5.9932	u	< 0.2569	u	< 0.1207	u	< 6.0732	u	< 0.2465	u	< 0.1209	u	< 5.997	u	< 0.2513	u	< 0.1218	u	< 0.245	u	< 1.2226	u	< 0.2399	u	< 0.2432	u
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	< 0.1427	u	< 0.7379	u	< 0.1406	u	< 0.1403	u	< 7.0187	u	< 0.3009	u	< 0.1414	u	< 7.1124	u	< 0.2886	u	< 0.1416	u	< 7.0232	u	< 0.2943	u	< 0.1426	u	< 0.2869	u	< 1.4318	u	< 0.2809	u	< 0.2848	u
Cresol, o-	3.20E+03	(2)	4.10E+04	(6)	1.50E+01	(9)	< 0.1161	u	< 0.6007	u	< 0.1144	u	< 0.1142	u	< 5.7136	u	< 0.2449	u	< 0.1151	u	< 5.7898	u	< 0.235	u	< 0.1152	u	< 5.7172	u	< 0.2395	u	< 0.1161	u	< 0.2336	u	< 1.1656	u	< 0.2287	u	< 0.2318	u
Nitroaniline, 2-	6.30E+02	(2)	8.00E+03	(6)	1.60E+00	(9)	< 0.1399	u	< 0.7234	u	< 0.1378	u	< 0.1375	u	< 6.8803	u	< 0.2949	u	< 0.1386	u	< 6.9722	u	< 0.2829	u	< 0.1388	u	< 6.8848	u	< 0.2885	u	< 0.1398	u	< 0.2813	u	< 1.4036	u	< 0.2754	u	< 0.2792	u
2-Nitrophenol	-	-	-	-	-	-	< 0.1337	u	< 0.6916	u	< 0.1317	u	< 0.1315	u	< 6.5783	u	< 0.282	u	< 0.1325	u	< 6.6661	u	< 0.2705	u	< 0.1327	u	< 6.5825	u	< 0.2758	u	< 0.1337	u	< 0.2689	u	< 1.342	u	< 0.2633	u	< 0.2669	u
3,3-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	1.24E-01	(8)	< 0.087	u	< 0.4502	u	< 0.0858	u	< 0.0856	u	< 4.2823	u	< 0.1836	u	< 0.0863	u	< 4.3395	u	< 0.1761	u	< 0.0864	u	< 4.2851	u	< 0.1795	u	< 0.087	u	< 0.1751	u	< 0.8736	u	< 0.1714	u	< 0.1737	u
3+4-Methylphenol	-	-	-	-	-	-	< 0.1202	u	< 0.6217	u	< 0.1184	u	< 0.1182	u	< 5.9129	u	< 0.2535	u	< 0.1191	u	< 5.9918	u	< 0.2432	u	< 0.1193	u	< 5.9167	u	< 0.2479	u	< 0.1201	u	< 0.2417	u	< 1.2062	u	< 0.2367	u	< 0.2399	u
3-Nitroaniline	-	-	-	-	-	-	< 0.1351	u	< 0.6989	u	< 0.1331	u	< 0.1329	u	< 6.6472	u	< 0.2849	u	< 0.1339	u	< 6.736	u	< 0.2734	u	< 0.1341	u	< 6.6515	u	< 0.2787	u	< 0.1351	u	< 0.2717	u	< 1.356	u	< 0.2661	u	< 0.2697	u
4,6-Dinitro-o-cresol	4.93E+00	(1)	2.15E+01	(5)	3.98E-02	(8)	< 0.0905	u	< 0.4678	u	< 0.0891	u	< 0.0889	u	< 4.4499	u	< 0.1907	u	< 0.0896	u	< 4.5094	u	< 0.183	u	< 0.0897	u	< 4.4528	u	< 0.1866	u	< 0.0904	u	< 0.1819	u	< 0.9078	u	< 0.1781	u	< 0.1806	u
4-Bromophenyl phenyl ether	-	-	-	-	-	-	< 0.1151	u	< 0.5954	u	< 0.1134	u	< 0.1132	u	< 5.6632	u	< 0.2428	u	< 0.1141	u	< 5.7388	u	< 0.2329	u	< 0.1142	u	< 5.6668	u	< 0.2374	u	< 0.1151	u	< 0.2315	u	< 1.1553	u	< 0.2267	u	< 0.2298	u
4-Chloro-3-methylphenol	-	-	-	-	-	-	< 0.1502	u	< 0.7771	u	< 0.148	u	< 0.1477	u	< 7.3914	u	< 0.3168	u	< 0.1489	u	< 7.4901	u	< 0.304	u	< 0.1491	u	< 7.3961	u	< 0.3099	u	< 0.1502	u	< 0.3022	u	< 1.5078	u	< 0.2958	u	< 0.2999	u
Chloroaniline, p-	2.70E+01	(3)	1.10E+02	(7)	3.20E-03	(9)	< 0.1387	u	< 0.7175	u	< 0.1367	u	< 0.1364	u	< 6.8246	u	< 0.2925	u	< 0.1375	u	< 6.9157	u	< 0.2806	u	< 0.1376	u	< 6.829	u	< 0.2861	u	< 0.1387	u	< 0.279	u	< 1.3922	u	< 0.2732	u	< 0.2769	u
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	< 0.1067	u	< 0.552	u	< 0.1051	u	< 0.1049	u	< 5.2507	u	< 0.2251	u	< 0.1058	u	< 5.3208	u	< 0.2159	u	< 0.1059	u	< 5.254	u	< 0.2201	u	< 0.1067	u	< 0.2146	u	< 1.0711	u	< 0.2102	u	< 0.213	u
Nitroaniline, 4-	2.70E+02	(3)	1.10E+03	(7)	3.20E-02	(9)	< 0.125	u	< 0.6467	u	< 0.1232	u	< 0.1229	u	< 6.1514	u	< 0.2637	u	< 0.1239	u	< 6.2335	u	< 0.253	u	< 0.1241	u	< 6.1554	u	< 0.2579	u	< 0.125	u	< 0.2515	u	< 1.2549	u	< 0.2462	u	< 0.2496	u
4-Nitrophenol	-	-	-	-	-	-	< 0.1328	u	< 0.6869	u	< 0.1308	u	< 0.1306	u	< 6.5332	u	< 0.28	u	< 0.1316	u	< 6.6205	u	< 0.2687	u	< 0.1318	u	< 6.5374	u	< 0.2739	u	< 0.1328	u	< 0.2671	u	< 1.3328	u	< 0.2615	u	< 0.2651	u
Acenaphthene	3.48E+03	(1)	1.51E+04	(5)	8.25E+01	(8)	< 0.1175	u	< 0.6076	u	< 0.1157	u	< 0.1155	u	< 5.7791	u	< 0.2477	u	< 0.1164	u	< 5.8563	u	< 0.2377	u	< 0.1166	u	< 5.7829	u	< 0.2423	u	< 0.1174	u	< 0.2363	u	< 1.1789	u	< 0.2313	u	< 0.2345	u
Acenaphthylene	-	-	-	-	-	-	< 0.1073	u	< 0.5551	u	< 0.1057	u	< 0.1055	u	< 5.2802	u	< 0.2263	u	< 0.1064	u	< 5.3507	u	< 0.2171	u	< 0.1065	u	< 5.2836	u	< 0.2214	u	< 0.1073	u	< 0.2159	u	< 1.0772	u	< 0.2113	u	< 0.2142	u
Aniline	9.50E+02	(3)	4.00E+03	(7)	9.20E-02	(9)	< 0.1259	u	< 0.6513	u	< 0.1241	u	< 0.1238	u	< 6.1946	u	< 0.2655	u	< 0.1248	u	< 6.2773	u	< 0.2547	u	< 0.1249	u	< 6.1986	u	< 0.2597	u	< 0.1259	u	< 0.2532	u	< 1.2637	u	< 0.2479	u	< 0.2513	u
Anthracene	1.74E+04	(1)	7.53E+04	(5)	8.51E+02	(8)	< 0.1047	u	< 0.5416	u	< 0.1032	u	< 0.103	u	< 5.1511	u	< 0.2208	u	< 0.1038	u	< 5.2199	u	< 0.2118	u	< 0.1039	u	< 5.1544	u	< 0.216	u	< 0.1047	u	< 0.2106	u	< 1.0508	u	< 0.2062	u	< 0.209	u
Azobenzene	5.60E+01	(3)	2.60E+02	(7)	1.86E+06	(9)	< 0.1371	u	< 0.709	u	< 0.1351	u	< 0.1348	u	< 6.7441	u	< 0.2891	u	< 0.1358	u	< 6.8341	u	< 0.2773	u	< 0.136	u	< 6.7484	u	< 0.2828	u	< 0.137	u	< 0.2757	u	< 1.3758	u	< 0.2699	u	< 0.2736	u
Benzo(a)anthracene	1.53E+00	(1)	3.23E+01	(4)	6.37E-01	(8)	< 0.0943	u	< 0.488	u	< 0.093	u	< 0.0928	u	< 4.6417	u	< 0.199	u	< 0.0935	u	< 4.7036	u	< 0.1909	u	< 0.0936	u	< 4.6446	u	< 0.1946	u	< 0.0943	u	< 0.1898	u	< 0.9469	u	< 0.1858	u	< 0.1883	u
Benzo(a)pyrene	1.12E+00	(1)	2.36E+01	(4)	3.53E+00	(10)	< 0.087	u	< 0.4501	u	< 0.0857	u	< 0.0856	u	< 4.2816	u	< 0.1835	u	< 0.0862	u	< 4.3387	u	< 0.1761	u	< 0.0864	u	< 4.2843	u	< 0.1795	u	< 0.087	u	< 0.175	u	< 0.8734	u	< 0.1714	u	< 0.1737	u
Benzo(b)fluoranthene	1.53E+00	(1)	3.23E+01	(4)	6.17E+00	(8)	< 0.0866	u	< 0.448	u	< 0.0853	u	< 0.0852	u	< 4.2607	u	< 0.1826	u	< 0.0858	u	< 4.3176	u	< 0.1752	u	< 0.0859	u	< 4.2635	u	< 0.1786	u	< 0.0866	u	< 0.1742	u	< 0.8692	u	< 0.1705	u	< 0.1729	u
Benzo(g,h,i)perylene	-	-	-	-	-	-	< 0.084	u	< 0.4344	u	< 0.0828	u	< 0.0826	u	< 4.1323	u	< 0.1771	u	< 0.0832	u	< 4.1874	u	< 0.1699	u	< 0.0833	u	< 4.1349	u	< 0.1733	u	< 0.084	u	< 0.1689	u	< 0.843	u	< 0.1654	u	< 0.1677	u
Benzo(k)fluoranthene	1.53E+01	(1)	3.23E+02	(4)	6.05E+01	(8)	< 0.089	u	< 0.4603	u	< 0.0877	u	< 0.0875	u	< 4.3785	u	< 0.1877	u	< 0.0882	u	< 4.437	u	< 0.1801	u	< 0.0883	u	< 4.3813	u	< 0.1836	u	< 0.089	u	< 0.179	u	< 0.8932	u	< 0.1753	u	< 0.1777	u
Benzoic acid	2.50E+05	(2)	3.30E+06	(6)	3.00E+02	(9)	< 0.1011	u	< 0.5231	u	< 0.0996	u	< 0.0995	u	< 4.9757	u	< 0.2133	u	< 0.1002	u	< 5.0422	u	< 0.2046	u	< 0.1004	u	< 4.9789	u	< 0.2086	u	< 0.1011	u	< 0.2034	u	< 1.015	u	< 0.1992	u	< 0.2019	u
Benzyl alcohol	6.30E+03	(2)	8.20E+04	(6)	9.60E+00	(9)	< 0.1215	u	< 0.6284	u	< 0.1197	u	< 0.1195	u	< 5.9769	u	< 0.2562	u	< 0.1204	u	< 6.0567	u	< 0.2458	u	< 0.1205	u	< 5.9807	u	< 0.2506	u	< 0.1215	u	< 0.2443	u	< 1.2193	u	< 0.2392	u	< 0.2425	u
Bis(2-chloroethoxy)methane	1.90E+02	(2)	2.50E+03	(6)	2.60E-01	(9)	< 0.1448	u	< 0.7487	u	< 0.1426	u	< 0.1423	u	< 7.1213	u	< 0.3053	u	< 0.1434	u	< 7.2163	u	< 0.2928	u	< 0.1436	u	< 7.1258	u	< 0.2986	u	< 0.1447	u	< 0.2911	u	< 1.4527	u	< 0.285	u	< 0.2889	u
Bis(2-chloroethyl) ether	3.11E+00	(1)	1.95E+00	(5)	6.05E-04	(8)	< 0.1193	u	< 0.6173	u	< 0.1176	u	< 0.1173	u	< 5.8711	u	< 0.2517	u	< 0.1183	u	< 5.9495	u	< 0.2414	u	< 0.1184	u	< 5.8749	u	< 0.2462	u	< 0.1193	u	< 0.24	u	< 1.1977	u	< 0.235	u	< 0.2382	u
Bis(2-chloroisopropyl) ether	9.93E+01	(1)	5.19E+02	(4)	4.75E-02	(8)	< 0.1115	u	< 0.5766	u	< 0.1098	u	< 0.1096	u	< 5.4843	u	< 0.2351	u	< 0.1105	u	< 5.5575	u	< 0.2255	u	< 0.1106	u	< 5.4878	u	< 0.2299	u	< 0.1114	u	< 0.2242	u	< 1.1188	u	< 0.2195	u	< 0.2225	u
Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate, DEHP]	3.80E+02	(1)	1.83E+03	(4)	2.15E+01	(10)	< 0.1407	u	< 0.7276	u	< 0.1386	u	0.14	J	< 6.921	u	< 0.2967	u	< 0.1394	u	< 7.0134	u	< 0.2846	u	< 0.1396	u	< 6.9255	u	< 0.2902	u	< 0.1406	u	< 0.2829	u	< 1.4119	u	< 0.277	u	< 0.2808	u
Butyl Benzyl Phthalate	2.90E+03	(3)	1.20E+04	(7)	4.60E+00	(9)	< 0.1001	u	< 0.5177	u	< 0.0986	u	< 0.0984	u	< 4.9244	u	< 0.2111	u	< 0.0992	u	< 4.9902	u	< 0.2025	u	< 0.0993	u	< 4.9276	u	< 0.2065	u	< 0.1001	u	< 0.2013	u	< 1.0046	u	< 0.1971	u	< 0.1998	u
Carbazole	-	-	-	-	-	-	< 0.1148	u	< 0.594	u	< 0.1131	u	< 0.1129	u	< 5.6494	u	< 0.2422	u	< 0.1138	u	< 5.7249	u	< 0.2323	u	< 0.1139	u	< 5.6531	u	< 0.2369	u	< 0.1148	u	< 0.2309	u	< 1.1525	u	< 0.2261	u	< 0.2292	u
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.86E+02	(8)	< 0.0864	u	< 0.4467	u	< 0.0851	u	< 0.0849	u	< 4.2484	u	< 0.1821	u	< 0.0856	u	< 4.3052	u	< 0.1747	u	< 0.0857	u	< 4.2512	u	< 0.1781	u	< 0.0863	u	< 0.1737	u	< 0.8667	u	< 0.17	u	< 0.1724	u

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-7 (17.5-18')		SWMU 13-8 (0-0.5')		SWMU 13-8 (1.5-2')		SWMU 13-8 (2-3')		SWMU 13-9 (0-0.5')		SWMU 13-9 (1.5-2')		SWMU 13-9 (2-3')		SWMU 13-10 (0-0.5')		SWMU 13-10 (1.5-2')		SWMU 13-10 (2-3')		SWMU 13-11 (0-0.5')		SWMU 13-11 (1.5-2')		SWMU 13-11 (2-3')		SWMU 13-12 (0-0.5')		SWMU 13-12 (0.5-1.5')		SWMU 13-12 (1.5-2')		SWMU 13-12 (2-3')	
					Lab ID		1910e04-008		1910e04-009		1910E04-010		1910e04-011		1910e04-012		1910e04-013		1910e04-014		1910e04-019		1910e04-020		1910e04-021		1910e04-022		1910e04-023		1910e04-024		1910e04-025		1910e04-026		1910E04-027		1910e04-028	
					Sample Date		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/24/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019	
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	1.97E+00	(8)	< 0.089	u	< 0.4605	u	< 0.0877	u	< 0.0875	u	< 4.3799	u	< 0.1877	u	< 0.0882	u	< 4.4383	u	< 0.1801	u	< 0.0883	u	< 4.3827	u	< 0.1836	u	< 0.089	u	< 0.179	u	< 0.8935	u	< 0.1753	u	< 0.1777	u
Dibenzofuran	7.30E+01	(2)	1.00E+03	(6)	3.00E+00	(9)	< 0.1283	u	< 0.6637	u	< 0.1264	u	< 0.1262	u	< 6.3129	u	< 0.2706	u	< 0.1272	u	< 6.3972	u	< 0.2596	u	< 0.1273	u	< 6.317	u	< 0.2647	u	< 0.1283	u	< 0.2581	u	< 1.2878	u	< 0.2527	u	< 0.2561	u
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	9.79E+01	(8)	< 0.1397	u	< 0.7228	u	< 0.1377	u	< 0.1374	u	< 6.8746	u	< 0.2947	u	< 0.1385	u	< 6.9664	u	< 0.2827	u	< 0.1387	u	< 6.879	u	< 0.2882	u	< 0.1397	u	< 0.281	u	< 1.4024	u	< 0.2752	u	< 0.2789	u
Dimethyl phthalate (DMP, Phthalic Acid)	6.16E+04	(1)	2.69E+05	(5)	3.57E+00	(8)	< 0.1306	u	< 0.6754	u	< 0.1287	u	< 0.1284	u	< 6.4243	u	< 0.2754	u	< 0.1294	u	< 6.51	u	< 0.2642	u	< 0.1296	u	< 6.4284	u	< 0.2693	u	< 0.1305	u	< 0.2626	u	< 1.3105	u	< 0.2571	u	< 0.2607	u
Di-n-butyl phthalate (Dibutyl phthalate)	6.16E+03	(1)	2.69E+04	(5)	3.38E+01	(8)	< 0.1462	u	< 0.756	u	0.2	J	0.26	J	< 7.1904	u	< 0.3082	u	0.23	J	< 7.2864	u	< 0.2957	u	< 0.145	u	< 7.1951	u	< 0.3015	u	0.2	J	< 0.2939	u	< 1.4668	u	< 0.2878	u	< 0.2917	u
Di-n-octyl phthalate	6.30E+02	(2)	8.20E+03	(6)	1.14E+03	(9)	< 0.0999	u	< 0.5168	u	< 0.0984	u	< 0.0982	u	< 4.9156	u	< 0.2107	u	< 0.099	u	< 4.9812	u	< 0.2021	u	< 0.0991	u	< 4.9187	u	< 0.2061	u	< 0.0999	u	< 0.2009	u	< 1.0028	u	< 0.1967	u	< 0.1994	u
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	1.34E+03	(8)	< 0.1097	u	< 0.5673	u	< 0.108	u	< 0.1078	u	< 5.3954	u	< 0.2313	u	< 0.1087	u	< 5.4675	u	< 0.2219	u	< 0.1088	u	< 5.3989	u	< 0.2262	u	< 0.1096	u	< 0.2206	u	< 1.1007	u	< 0.216	u	< 0.2189	u
Fluorene	2.32E+03	(1)	1.00E+04	(5)	8.00E+01	(8)	< 0.1116	u	< 0.5772	u	< 0.1099	u	< 0.1097	u	< 5.4902	u	< 0.2353	u	< 0.1106	u	< 5.5635	u	< 0.2258	u	< 0.1107	u	< 5.4938	u	< 0.2302	u	< 0.1116	u	< 0.2244	u	< 1.12	u	< 0.2198	u	< 0.2228	u
Hexachlorobenzene	3.33E+00	(1)	1.17E+02	(5)	1.89E-01	(8)	< 0.1212	u	< 0.627	u	< 0.1194	u	< 0.1192	u	< 5.9636	u	< 0.2556	u	< 0.1201	u	< 6.0432	u	< 0.2452	u	< 0.1203	u	< 5.9674	u	< 0.25	u	< 0.1212	u	< 0.2438	u	< 1.2166	u	< 0.2387	u	< 0.242	u
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	< 0.1365	u	< 0.7062	u	< 0.1345	u	< 0.1342	u	< 6.7166	u	< 0.2879	u	< 0.1353	u	< 6.8063	u	< 0.2762	u	< 0.1355	u	< 6.7209	u	< 0.2816	u	< 0.1365	u	< 0.2746	u	< 1.3702	u	< 0.2688	u	< 0.2725	u
Hexachlorocyclopentadiene	2.30E+00	(1)	8.67E+02	(5)	2.40E+00	(8)	< 0.1119	u	< 0.579	u	< 0.1103	u	< 0.1101	u	< 5.5073	u	< 0.2361	u	< 0.1109	u	< 5.5809	u	< 0.2265	u	< 0.1111	u	< 5.5109	u	< 0.2309	u	< 0.1119	u	< 0.2251	u	< 1.1235	u	< 0.2204	u	< 0.2235	u
Hexachloroethane	1.33E+02	(1)	1.88E+02	(5)	3.20E-02	(8)	< 0.1091	u	< 0.5643	u	< 0.1075	u	< 0.1073	u	< 5.3669	u	< 0.2301	u	< 0.1081	u	< 5.4386	u	< 0.2207	u	< 0.1082	u	< 5.3704	u	< 0.225	u	< 0.1091	u	< 0.2194	u	< 1.0948	u	< 0.2148	u	< 0.2178	u
Indeno(1,2,3-c,d)pyrene	1.53E+00	(1)	3.23E+01	(4)	2.01E+01	(8)	< 0.0975	u	< 0.5042	u	< 0.096	u	< 0.0959	u	< 4.7958	u	< 0.2056	u	< 0.0966	u	< 4.8598	u	< 0.1972	u	< 0.0967	u	< 4.7989	u	< 0.2011	u	< 0.0975	u	< 0.1961	u	< 0.9783	u	< 0.192	u	< 0.1946	u
Isophorone	5.61E+03	(1)	2.70E+04	(4)	0.00E+00	(9)	< 0.1442	u	< 0.7458	u	< 0.1421	u	< 0.1418	u	< 7.094	u	< 0.3041	u	< 0.1429	u	< 7.1887	u	< 0.2917	u	< 0.1431	u	< 7.0986	u	< 0.2974	u	< 0.1441	u	< 0.29	u	< 1.4472	u	< 0.2839	u	< 0.2878	u
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	< 0.1481	u	< 0.7659	u	< 0.1459	u	< 0.1456	u	< 7.2853	u	< 0.3123	u	< 0.1467	u	< 7.3825	u	< 0.2996	u	< 0.1469	u	< 7.2899	u	< 0.3054	u	< 0.148	u	< 0.2978	u	< 1.4862	u	< 0.2916	u	< 0.2956	u
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	1.44E-02	(8)	< 0.1354	u	< 0.7004	u	< 0.1334	u	< 0.1332	u	< 6.6622	u	< 0.2856	u	< 0.1342	u	< 6.7512	u	< 0.274	u	< 0.1344	u	< 6.6665	u	< 0.2793	u	< 0.1354	u	< 0.2724	u	< 1.3591	u	< 0.2667	u	< 0.2703	u
Nitroso-di-N-propylamine, N-	7.80E-01	(3)	3.30E+00	(7)	1.62E-04	(9)	< 0.1398	u	< 0.7231	u	< 0.1377	u	< 0.1375	u	< 6.878	u	< 0.2948	u	< 0.1385	u	< 6.9698	u	< 0.2828	u	< 0.1387	u	< 6.8824	u	< 0.2884	u	< 0.1398	u	< 0.2812	u	< 1.4031	u	< 0.2753	u	< 0.2791	u
N-Nitrosodiphenylamine	1.09E+03	(1)	5.24E+03	(4)	1.00E+01	(8)	< 0.1029	u	< 0.5324	u	< 0.1014	u	< 0.1012	u	< 5.0643	u	< 0.2171	u	< 0.102	u	< 5.1319	u	< 0.2083	u	< 0.1021	u	< 5.0675	u	< 0.2123	u	< 0.1029	u	< 0.207	u	< 1.0331	u	< 0.2027	u	< 0.2055	u
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	1.52E-01	(8)	< 0.1009	u	< 0.522	u	< 0.0994	u	< 0.0992	u	< 4.9651	u	< 0.2128	u	< 0.1	u	< 5.0314	u	< 0.2042	u	< 0.1001	u	< 4.9683	u	< 0.2082	u	< 0.1009	u	< 0.203	u	< 1.0129	u	< 0.1987	u	< 0.2015	u
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	8.59E+01	(8)	< 0.106	u	< 0.5482	u	< 0.1044	u	< 0.1042	u	< 5.2141	u	< 0.2235	u	< 0.105	u	< 5.2837	u	< 0.2144	u	< 0.1052	u	< 5.2174	u	< 0.2186	u	< 0.106	u	< 0.2132	u	< 1.0637	u	< 0.2087	u	< 0.2116	u
Phenol	1.85E+04	(1)	7.74E+04	(5)	5.23E+01	(8)	< 0.1218	u	< 0.6301	u	< 0.12	u	< 0.1198	u	< 5.9933	u	< 0.2569	u	0.14	J	< 6.0733	u	< 0.2465	u	< 0.1209	u	< 5.9971	u	< 0.2513	u	< 0.1218	u	< 0.245	u	< 1.2226	u	< 0.2399	u	< 0.2432	u
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.92E+02	(8)	< 0.092	u	< 0.4758	u	< 0.0906	u	< 0.0905	u	< 4.5259	u	< 0.194	u	< 0.0912	u	< 4.5863	u	< 0.1861	u	< 0.0913	u	< 4.5288	u	< 0.1898	u	< 0.092	u	< 0.185	u	< 0.9233	u	< 0.1812	u	< 0.1836	u
Pyridine	7.80E+01	(2)	1.20E+03	(6)	1.36E-01	(9)	< 0.1179	u	< 0.61	u	< 0.1162	u	< 0.116	u	< 5.8016	u	< 0.2487	u	< 0.1169	u	< 5.8791	u	< 0.2386	u	< 0.117	u	< 5.8053	u	< 0.2432	u	< 0.1179	u	< 0.2372	u	< 1.1835	u	< 0.2322	u	< 0.2354	u
Total Petroleum Hydrocarbons (mg/kg)																																								
Gasoline Range Organics (GRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 0.6617	u	< 1.0231	u	< 0.7824	u	< 0.7792	u	< 0.9763	u	< 0.8282	u	< 0.8015	u	< 0.9193	u	< 0.814	u	< 0.8319	u	< 1.2302	u	< 0.9644	u	< 0.9067	u	< 1.0231	u	< 1.0149	u	< 1.0176	u	< 0.8906	u
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 1.8657	u	45	v	< 1.885	u	< 1.8744	u	**2400**	v	20	v	20	v	**2300**	v	21	v	2.7	J	**4300**	v	< 1.8553	u	< 1.9048	u	39	v	320	v	16	v	< 1.626	u
Motor Oil Range Organics (MRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 46.6418	u	79	v	< 47.1254	u	< 46.8604	u	**1900**	v	< 43.3276	u	< 45.2899	u	**2600**	v	< 43.1779	u	< 33.7154	u	**4400**	v	< 46.3822	u	< 47.619	u	65	v	250	v	< 45.9982	u	< 40.6504	u

- No screening level or analytical result available
NMED - Risk Assessment Guidance for Site Investigations and Remediation (March 2019)
EPA - Regional Screening Levels (Nov. 2019)
(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels
(7) EPA Industrial - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
(8) SoilGW NMED Cw Dilution Attenuation Factor (DAF) = 20
(9) SoilGW Risk-based EPA DAF = 20
(10) SoilGW MCL-based NMED DAF = 20
(11) NMED Tables 6-2 and 6-4 TPH Soil Screening Levels "unknown oil" - see report Section 5 for use of screening levels

Bold represents value above Residential Screening Level
yellow highlight represents value above Non-Residential Screening Level
Bold with yellow highlight value exceeds Residential and Non-Residential Screening Levels

v = reportable detection above the Practical quantitation limit (PQL)
u - result is not detected at method detection limit (MDL)
j - estimated result at concentration above MDL but less than PQL

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-13 (0-0.5')		SWMU 13-13 (1.5-2')		SWMU 13-13 (2-3')		SWMU 13-14 (0-0.5')		SWMU 13-14 (1.5-2')		SWMU 13-14 (2-3')	
					Lab ID		1910e49-001		1910E49-002		1910e49-003		1910e49-004		1910e49-005		1910e49-006	
					Sample Date		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019	
Metals (mg/kg)																		
Antimony	3.13E+01	(1)	1.42E+02	(5)	5.42E+00	(10)	< 0.7428	u	< 0.7519	u	< 0.7321	u	< 0.7082	u	< 0.711	u	< 0.7546	u
Arsenic	7.07E+00	(1)	3.59E+01	(4)	5.83E+00	(8)	< 2.8814	u	< 2.9164	u	< 2.8396	u	< 2.747	u	< 2.7579	u	< 2.9272	u
Barium	1.56E+04	(1)	4.39E+03	(5)	1.65E+03	(10)	290	v	170	v	190	v	260	v	240	v	260	v
Beryllium	1.56E+02	(1)	1.48E+02	(5)	6.32E+01	(10)	1.3	v	1.4	v	1.4	v	1.1	v	1.1	v	1.1	v
Cadmium	7.05E+01	(1)	7.21E+01	(5)	7.52E+00	(10)	< 0.049	u	< 0.0496	u	< 0.0483	u	< 0.0467	u	< 0.0469	u	< 0.0498	u
Chromium (Total)	9.66E+01	(1)	1.34E+02	(5)	3.60E+06	(10)	28	v	22	v	20	v	20	v	12	v	12	v
Cobalt	2.34E+01	(1)	3.67E+01	(5)	5.40E+00	(8)	6.8	v	6.8	v	6.3	v	5.9	v	5.1	v	5.4	v
Cyanide	1.12E+01	(1)	1.21E+01	(5)	7.13E-01	(8)	< 0.25	u	0.46	v	< 0.25	u	0.28	v	< 0.25	u	< 0.25	u
Iron	5.48E+04	(1)	2.48E+05	(5)	6.96E+03	(8)	20000	v	21000	v	20000	v	17000	v	15000	v	17000	v
Lead	4.00E+02	(2)	8.00E+02	(6)	5.20E-02	(10)	< 0.4902	u	2.1	v	0.99	v	< 0.4674	u	2.4	v	2.3	v
Manganese	1.05E+04	(1)	4.64E+02	(5)	2.63E+03	(8)	330	v	380	v	280	v	290	v	220	v	240	v
Mercury (elemental)	2.38E+01	(1)	2.07E+01	(5)	2.09E+00	(8)	0.25	v	0.0056	J	0.047	v	0.07	v	0.017	J	0.0086	J
Nickel	1.56E+03	(1)	7.53E+02	(5)	4.85E+02	(8)	12	v	15	v	13	v	11	v	11	v	12	v
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.17E+00	(10)	< 2.5345	u	< 2.5653	u	< 2.4977	u	< 2.4163	u	< 2.4258	u	< 2.5748	u
Silver	3.91E+02	(1)	1.77E+03	(5)	1.38E+01	(8)	< 0.0647	u	< 0.0655	u	< 0.0638	u	< 0.0617	u	< 0.0619	u	< 0.0657	u
Vanadium	3.94E+02	(1)	6.14E+02	(5)	1.26E+03	(8)	33	v	30	v	28	v	27	v	21	v	22	v
Zinc	2.35E+04	(1)	1.06E+05	(5)	7.41E+03	(8)	60	v	31	v	29	v	62	v	17	v	17	v
Volatiles (mg/kg)																		
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	3.60E-02	(8)	< 0.0022	u	< 0.0032	u	< 0.002	u	< 0.0019	u	< 0.0018	u	< 0.0018	u
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	1.28E+00	(10)	< 0.003	u	< 0.0043	u	< 0.0027	u	< 0.0025	u	< 0.0024	u	< 0.0024	u
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	4.81E-03	(8)	< 0.0033	u	< 0.0048	u	< 0.0031	u	< 0.0028	u	< 0.0027	u	< 0.0027	u
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	2.68E-02	(8)	< 0.0023	u	< 0.0033	u	< 0.0021	u	< 0.002	u	< 0.0019	u	< 0.0019	u
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	1.36E-01	(8)	< 0.0021	u	< 0.003	u	< 0.0019	u	< 0.0018	u	< 0.0017	u	< 0.0017	u
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	4.79E-02	(10)	< 0.0132	u	< 0.0189	u	< 0.0121	u	< 0.0111	u	< 0.0106	u	< 0.0107	u
1,1-Dichloropropene	-	-	-	-	-	-	< 0.003	u	< 0.0043	u	< 0.0028	u	< 0.0025	u	< 0.0024	u	< 0.0024	u
Trichlorobenzene, 1,2,3-	6.30E+01	(2)	9.30E+02	(6)	4.20E-01	(9)	< 0.0029	u	< 0.0041	u	< 0.0027	u	< 0.0024	u	< 0.0023	u	< 0.0024	u
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	5.82E-05	(8)	< 0.0053	u	< 0.0076	u	< 0.0049	u	< 0.0045	u	< 0.0043	u	< 0.0043	u
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 0.0033	u	< 0.0048	u	< 0.0031	u	< 0.0028	u	< 0.0027	u	< 0.0027	u
Trimethylbenzene, 1,2,4-	3.00E+02	(2)	1.80E+03	(6)	1.62E+00	(9)	< 0.003	u	0.088	v	0.051	v	< 0.0025	u	< 0.0024	u	< 0.0024	u
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.39E-03	(8)	< 0.0034	u	< 0.0048	u	< 0.0031	u	< 0.0029	u	< 0.0027	u	< 0.0027	u
1,2-Dibromoethane (Ethylene dibromide)	6.72E-01	(1)	3.31E+00	(4)	2.36E-04	(10)	< 0.003	u	< 0.0043	u	< 0.0028	u	< 0.0025	u	< 0.0024	u	< 0.0024	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 0.0027	u	< 0.0039	u	< 0.0025	u	< 0.0023	u	< 0.0022	u	< 0.0022	u
1,2-Dichloroethane	8.32E+00	(1)	4.07E+01	(4)	2.38E-02	(8)	< 0.0034	u	< 0.0048	u	< 0.0031	u	< 0.0028	u	< 0.0027	u	< 0.0027	u
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	2.77E-02	(8)	< 0.0024	u	< 0.0034	u	< 0.0022	u	< 0.002	u	< 0.0019	u	< 0.0019	u
Trimethylbenzene, 1,3,5-	2.70E+02	(2)	1.50E+03	(6)	1.74E+00	(9)	< 0.0032	u	0.026	J	0.017	J	< 0.0027	u	< 0.0026	u	< 0.0026	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.0029	u	< 0.0041	u	< 0.0026	u	< 0.0024	u	< 0.0023	u	< 0.0023	u
Dichloropropane, 1,3-	1.60E+03	(2)	2.30E+04	(6)	2.60E+00	(9)	< 0.0036	u	< 0.0051	u	< 0.0033	u	< 0.003	u	< 0.0029	u	< 0.0029	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 0.0028	u	< 0.0039	u	< 0.0025	u	< 0.0023	u	< 0.0022	u	< 0.0022	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(4)	8.93E-01	(8)	0.03	J	0.58	v	0.26	v	0.019	J	< 0.0153	u	< 0.0154	u
2,2-Dichloropropane	-	-	-	-	-	-	< 0.0107	u	< 0.0154	u	< 0.0098	u	< 0.0091	u	< 0.0086	u	< 0.0087	u
2-Butanone (Methyl ethyl ketone, MEK)	3.74E+04	(1)	9.17E+04	(5)	2.01E+01	(8)	0.067	J	< 0.0546	u	< 0.035	u	< 0.0322	u	0.039	J	< 0.031	u
o-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	3.56E+00	(8)	< 0.0029	u	< 0.0041	u	< 0.0026	u	< 0.0024	u	< 0.0023	u	< 0.0023	u
Hexanone, 2-	2.00E+02	(2)	1.30E+03	(6)	1.76E-01	(9)	< 0.0055	u	< 0.0078	u	< 0.005	u	< 0.0046	u	< 0.0044	u	< 0.0044	u
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	0.023	J	0.24	v	0.16	v	< 0.0122	u	< 0.0116	u	< 0.0117	u
Chlorotoluene, p-	1.60E+03	(2)	2.30E+04	(6)	4.80E+00	(9)	< 0.0027	u	< 0.0039	u	< 0.0025	u	< 0.0023	u	< 0.0022	u	< 0.0022	u
4-Isopropyltoluene	-	-	-	-	-	-	< 0.0027	u	0.004	J	0.0027	J	0.016	J	< 0.0022	u	< 0.0022	u
Methyl isobutyl ketone	5.81E+03	(1)	2.02E+04	(5)	4.80E+00	(8)	< 0.0062	u	< 0.0089	u	< 0.0057	u	< 0.0053	u	< 0.005	u	< 0.0051	u
Acetone	6.63E+04	(1)	2.42E+05	(5)	4.98E+01	(8)	< 0.0273	u	0.15	J	< 0.0251	u	< 0.0231	u	< 0.022	u	< 0.0222	u
Benzene	1.78E+01	(1)	8.72E+01	(4)	4.18E-02	(8)	< 0.0027	u	< 0.0039	u	< 0.0025	u	< 0.0023	u	< 0.0022	u	< 0.0022	u
Bromobenzene	2.90E+02	(2)	1.80E+03	(6)	8.40E-01	(9)	< 0.0032	u	< 0.0045	u	< 0.0029	u	< 0.0027	u	< 0.0025	u	< 0.0026	u
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	6.21E-03	(8)	< 0.003	u	< 0.0043	u	< 0.0028	u	< 0.0025	u	< 0.0024	u	< 0.0024	u
Tribromomethane (Bromoform)	6.74E+02	(1)	1.76E+03	(4)	1.47E-01	(8)	< 0.003	u	< 0.0043	u	< 0.0027	u	< 0.0025	u	< 0.0024	u	< 0.0024	u
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	3.43E-02	(8)	< 0.0079	u	< 0.0114	u	< 0.0073	u	< 0.0067	u	< 0.0064	u	< 0.0065	u
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	4.42E+00	(8)	< 0.0109	u	0.061	J	< 0.01	u	< 0.0092	u	< 0.0088	u	< 0.0088	u
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	3.67E-02	(8)	< 0.0031	u	< 0.0045	u	< 0.0029	u	< 0.0026	u	< 0.0025	u	< 0.0025	u
Chlorobenzene (Monochlorobenzene	3.78E+02	(1)	4.12E+02	(5)	1.08E+00	(8)	< 0.0042	u	< 0.006	u	< 0.0039	u	< 0.0036	u	< 0.0034	u	< 0.0034	u
Ethyl chloride	1.90E+04	(1)	1.66E+04	(5)	1.07E+02	(8)	< 0.0049	u	< 0.007	u	< 0.0045	u	< 0.0041	u	< 0.0039	u	< 0.0039	u
Chloroform	5.90E+00	(1)	2.87E+01	(4)	1.09E-02	(8)	< 0.0026	u	< 0.0038	u	< 0.0024	u	< 0.0022	u	< 0.0021	u	< 0.0022	u
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	9.52E-02	(8)	< 0.0032	u	< 0.0045	u	< 0.0029	u	< 0.0027	u	< 0.0025	u	< 0.0026	u
cis-1,2-Dichloroethene	1.56E+02	(1)	7.08E+02	(5)	3.52E-01	(8)	< 0.0045	u	< 0.0065	u	< 0.0041	u	< 0.0038	u	< 0.0036	u	< 0.0037	u
cis-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0028	u	< 0.004	u	< 0.0026	u	< 0.0023	u	< 0.0022	u	< 0.0023	u
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	7.55E-03	(8)	< 0.0023	u	< 0.0033	u	< 0.0021	u	< 0.002	u	< 0.0019	u	< 0.0019	u
Dibromomethane (Methylene Bromide)	2.40E+01	(2)	9.90E+01	(6)	4.20E-02	(9)	< 0.0035	u	< 0.0051	u	< 0.0033	u	< 0.003	u	< 0.0029	u	< 0.0029	u
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	7.23E+00	(8)	< 0.0076	u	< 0.011	u	< 0.007	u	< 0.0065	u	< 0.0062	u	< 0.0062	u

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-13 (0-0.5')		SWMU 13-13 (1.5-2')		SWMU 13-13 (2-3')		SWMU 13-14 (0-0.5')		SWMU 13-14 (1.5-2')		SWMU 13-14 (2-3')	
					Lab ID		1910e49-001		1910E49-002		1910e49-003		1910e49-004		1910e49-005		1910e49-006	
					Sample Date		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019	
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.23E+01	(8)	< 0.0019	u	< 0.0027	u	< 0.0018	u	< 0.0016	u	< 0.0015	u	< 0.0016	u
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	0.0085	J	< 0.0048	u	< 0.0031	u	< 0.0028	u	< 0.0027	u	< 0.0027	u
Cumene (isopropylbenzene)	2.36E+03	(1)	2.74E+03	(5)	1.14E+01	(8)	< 0.0024	u	< 0.0034	u	< 0.0022	u	< 0.002	u	< 0.0019	u	< 0.0019	u
tert-Butyl methyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	5.53E-01	(8)	< 0.0078	u	< 0.0112	u	< 0.0072	u	< 0.0066	u	< 0.0063	u	< 0.0063	u
Methylene chloride (Dichloromethan	4.09E+02	(1)	1.21E+03	(5)	2.21E-02	(10)	0.0093	J	< 0.0083	u	< 0.0053	u	< 0.0049	u	< 0.0047	u	< 0.0047	u
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	< 0.0066	u	0.066	J	0.018	J	< 0.0056	u	< 0.0053	u	< 0.0054	u
Butylbenzene, n-	3.90E+03	(2)	5.80E+04	(6)	6.40E+01	(9)	< 0.0031	u	0.012	J	0.0084	J	< 0.0026	u	< 0.0025	u	< 0.0025	u
Propyl benzene	3.80E+03	(2)	2.40E+04	(6)	2.40E+01	(9)	< 0.0026	u	0.0093	J	0.0064	J	< 0.0022	u	< 0.0021	u	< 0.0021	u
Butylbenzene, sec-	7.80E+03	(2)	1.20E+05	(6)	1.18E+02	(9)	< 0.0037	u	0.0083	J	0.0064	J	< 0.0031	u	< 0.003	u	< 0.003	u
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.71E+00	(10)	< 0.0026	u	< 0.0037	u	< 0.0024	u	< 0.0022	u	< 0.0021	u	< 0.0021	u
Butylbenzene, tert-	7.80E+03	(2)	1.20E+05	(6)	3.20E+01	(9)	< 0.0031	u	< 0.0045	u	< 0.0029	u	< 0.0026	u	< 0.0025	u	< 0.0025	u
Tetrachloroethene	1.11E+02	(1)	1.20E+02	(5)	3.98E-02	(10)	< 0.0026	u	< 0.0038	u	< 0.0024	u	< 0.0022	u	< 0.0021	u	< 0.0021	u
Toluene	5.23E+03	(1)	1.40E+04	(5)	1.11E+01	(10)	< 0.0031	u	< 0.0045	u	< 0.0029	u	< 0.0027	u	< 0.0025	u	< 0.0026	u
trans-1,2-Dichloroethene	2.95E+02	(1)	3.05E+02	(5)	5.03E-01	(8)	< 0.003	u	< 0.0043	u	< 0.0028	u	< 0.0025	u	< 0.0024	u	< 0.0024	u
trans-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0035	u	< 0.005	u	< 0.0032	u	< 0.0029	u	< 0.0028	u	< 0.0028	u
Trichloroethylene	6.77E+00	(1)	6.90E+00	(5)	3.10E-02	(8)	< 0.0038	u	< 0.0055	u	< 0.0035	u	< 0.0032	u	< 0.0031	u	< 0.0031	u
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	1.57E+01	(8)	< 0.0112	u	< 0.016	u	< 0.0103	u	< 0.0094	u	< 0.009	u	< 0.0091	u
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	1.34E-02	(8)	< 0.0022	u	< 0.0031	u	< 0.002	u	< 0.0018	u	< 0.0017	u	< 0.0017	u
Xylenes	8.71E+02	(1)	7.98E+02	(5)	1.54E+02	(8)	< 0.0083	u	0.016	J	0.012	J	< 0.007	u	< 0.0067	u	< 0.0067	u
Semi-volatiles (mg/kg)																		
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 1.4803	u	< 1.5233	u	< 0.1494	u	< 0.2956	u	< 0.1461	u	< 0.1456	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 1.1442	u	< 1.1775	u	< 0.1155	u	< 0.2285	u	< 0.1129	u	< 0.1126	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 1.0029	u	< 1.032	u	< 0.1013	u	< 0.2003	u	< 0.099	u	< 0.0987	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 1.0146	u	< 1.0441	u	< 0.1024	u	< 0.2026	u	< 0.1002	u	< 0.0998	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(7)	8.93E-01	(8)	< 1.4257	u	< 1.4671	u	0.54	v	< 0.2847	u	< 0.1407	u	< 0.1402	u
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	6.62E+01	(8)	< 1.2348	u	< 1.2707	u	< 0.1247	u	< 0.2466	u	< 0.1219	u	< 0.1215	u
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	6.74E-01	(8)	< 1.0012	u	< 1.0303	u	< 0.1011	u	< 0.1999	u	< 0.0988	u	< 0.0985	u
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	8.25E-01	(8)	< 1.1078	u	< 1.14	u	< 0.1118	u	< 0.2212	u	< 0.1094	u	< 0.109	u
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	6.45E+00	(8)	< 1.0497	u	< 1.0803	u	< 0.106	u	< 0.2096	u	< 0.1036	u	< 0.1033	u
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	6.69E-01	(8)	< 0.692	u	< 0.7122	u	< 0.0699	u	< 0.1382	u	< 0.0683	u	< 0.0681	u
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	4.92E-02	(8)	< 1.1227	u	< 1.1553	u	< 0.1133	u	< 0.2242	u	< 0.1108	u	< 0.1104	u
2,6-Dintitrotoluene	3.56E+00	(1)	1.72E+01	(4)	1.02E-02	(8)	< 1.2536	u	< 1.2901	u	< 0.1266	u	< 0.2503	u	< 0.1237	u	< 0.1233	u
b-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	5.70E+01	(8)	< 1.1885	u	< 1.2231	u	< 0.12	u	< 0.2373	u	< 0.1173	u	< 0.1169	u
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	1.15E+00	(8)	< 1.1849	u	< 1.2194	u	< 0.1196	u	< 0.2366	u	< 0.117	u	< 0.1166	u
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	< 1.3877	u	< 1.4281	u	0.37	v	< 0.2771	u	< 0.137	u	< 0.1365	u
Cresol, o-	3.20E+03	(2)	4.10E+04	(6)	1.50E+01	(9)	< 1.1296	u	< 1.1625	u	< 0.1141	u	< 0.2256	u	< 0.1115	u	< 0.1111	u
Nitroaniline, 2-	6.30E+02	(2)	8.00E+03	(6)	1.60E+00	(9)	< 1.3603	u	< 1.3999	u	< 0.1373	u	< 0.2716	u	< 0.1343	u	< 0.1338	u
2-Nitrophenol	-	-	-	-	-	-	< 1.3006	u	< 1.3385	u	< 0.1313	u	< 0.2597	u	< 0.1284	u	< 0.1279	u
3,3-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	1.24E-01	(8)	< 0.8467	u	< 0.8713	u	< 0.0855	u	< 0.1691	u	< 0.0836	u	< 0.0833	u
3+4-Methylphenol	-	-	-	-	-	-	< 1.1691	u	< 1.2031	u	< 0.118	u	< 0.2334	u	< 0.1154	u	< 0.115	u
3-Nitroaniline	-	-	-	-	-	-	< 1.3142	u	< 1.3525	u	< 0.1327	u	< 0.2624	u	< 0.1297	u	< 0.1293	u
4,6-Dinitro-o-cresol	4.93E+00	(1)	2.15E+01	(5)	3.98E-02	(8)	< 0.8798	u	< 0.9054	u	< 0.0888	u	< 0.1757	u	< 0.0868	u	< 0.0866	u
4-Bromophenyl phenyl ether	-	-	-	-	-	-	< 1.1197	u	< 1.1523	u	< 0.113	u	< 0.2236	u	< 0.1105	u	< 0.1101	u
4-Chloro-3-methylphenol	-	-	-	-	-	-	< 1.4614	u	< 1.5039	u	< 0.1475	u	< 0.2918	u	< 0.1443	u	< 0.1438	u
Chloroaniline, p-	2.70E+01	(3)	1.10E+02	(7)	3.20E-03	(9)	< 1.3493	u	< 1.3886	u	< 0.1362	u	< 0.2694	u	< 0.1332	u	< 0.1327	u
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	< 1.0381	u	< 1.0683	u	< 0.1048	u	< 0.2073	u	< 0.1025	u	< 0.1021	u
Nitroaniline, 4-	2.70E+02	(3)	1.10E+03	(7)	3.20E-02	(9)	< 1.2162	u	< 1.2516	u	< 0.1228	u	< 0.2429	u	< 0.1201	u	< 0.1196	u
4-Nitrophenol	-	-	-	-	-	-	< 1.2917	u	< 1.3293	u	< 0.1304	u	< 0.2579	u	< 0.1275	u	< 0.1271	u
Acenaphthene	3.48E+03	(1)	1.51E+04	(5)	8.25E+01	(8)	< 1.1426	u	< 1.1759	u	< 0.1154	u	< 0.2282	u	< 0.1128	u	< 0.1124	u
Acenaphthylene	-	-	-	-	-	-	< 1.044	u	< 1.0743	u	< 0.1054	u	< 0.2085	u	< 0.1031	u	< 0.1027	u
Aniline	9.50E+02	(3)	4.00E+03	(7)	9.20E-02	(9)	< 1.2248	u	< 1.2604	u	< 0.1237	u	< 0.2446	u	< 0.1209	u	< 0.1205	u
Anthracene	1.74E+04	(1)	7.53E+04	(5)	8.51E+02	(8)	< 1.0184	u	< 1.0481	u	< 0.1028	u	< 0.2034	u	< 0.1005	u	< 0.1002	u
Azobenzene	5.60E+01	(3)	2.60E+02	(7)	1.86E+06	(9)	< 1.3334	u	< 1.3722	u	< 0.1346	u	< 0.2663	u	< 0.1316	u	< 0.1312	u
Benzo(a)anthracene	1.53E+00	(1)	3.23E+01	(4)	6.37E-01	(8)	< 0.9177	u	< 0.9444	u	< 0.0927	u	< 0.1833	u	< 0.0906	u	< 0.0903	u
Benzo(a)pyrene	1.12E+00	(1)	2.36E+01	(4)	3.53E+00	(10)	< 0.8465	u	< 0.8711	u	< 0.0855	u	< 0.169	u	< 0.0836	u	< 0.0833	u
Benzo(b)fluoranthene	1.53E+00	(1)	3.23E+01	(4)	6.17E+00	(8)	< 0.8424	u	< 0.8669	u	< 0.0851	u	< 0.1682	u	< 0.0832	u	< 0.0829	u
Benzo(g,h,i)perylene	-	-	-	-	-	-	< 0.817	u	< 0.8408	u	< 0.0825	u	< 0.1631	u	< 0.0806	u	< 0.0804	u
Benzo(k)fluoranthene	1.53E+01	(1)	3.23E+02	(4)	6.05E+01	(8)	< 0.8657	u	< 0.8909	u	< 0.0874	u	< 0.1729	u	< 0.0855	u	< 0.0852	u
Benzoic acid	2.50E+05	(2)	3.30E+06	(6)	3.00E+02	(9)	< 0.9838	u	< 1.0124	u	< 0.0993	u	< 0.1964	u	< 0.0971	u	< 0.0968	u
Benzyl alcohol	6.30E+03	(2)	8.20E+04	(6)	9.60E+00	(9)	< 1.1817	u	< 1.2161	u	< 0.1193	u	< 0.236	u	< 0.1167	u	< 0.1163	u
Bis(2-chloroethoxy)methane	1.90E+02	(2)	2.50E+03	(6)	2.60E-01	(9)	< 1.408	u	< 1.4489	u	< 0.1422	u	< 0.2811	u	< 0.139	u	< 0.1385	u
Bis(2-chloroethyl) ether	3.11E+00	(1)	1.95E+00	(5)	6.05E-04	(8)	< 1.1608	u	< 1.1946	u	< 0.1172	u	< 0.2318	u	< 0.1146	u	< 0.1142	u
Bis(2-chloroisopropyl) ether	9.93E+01	(1)	5.19E+02	(4)	4.75E-02	(8)	< 1.0843	u	< 1.1159	u	< 0.1095	u	< 0.2165	u	< 0.107	u	< 0.1067	u
Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate, DEHP]	3.80E+02	(1)	1.83E+03	(4)	2.15E+01	(10)	< 1.3684	u	< 1.4082	u	< 0.1382	u	< 0.2732	u	< 0.1351	u	< 0.1346	u
Butyl Benzyl Phthalate	2.90E+03	(3)	1.20E+04	(7)	4.60E+00	(9)	< 0.9736	u	< 1.002	u	< 0.0983	u	< 0.1944	u	< 0.0961	u	< 0.0958	u
Carbazole	-	-	-	-	-	-	< 1.117	u	< 1.1495	u	< 0.1128	u	< 0.223	u	< 0.1103	u	< 0.1099	u
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.86E+02	(8)	4.1	Z	< 0.8644	u	0.13	J	< 0.1677	u	< 0.0829	u	< 0.0826	u

Table 5 - Soil Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

NMED constitutent name	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	SWMU 13-13 (0-0.5')		SWMU 13-13 (1.5-2')		SWMU 13-13 (2-3')		SWMU 13-14 (0-0.5')		SWMU 13-14 (1.5-2')		SWMU 13-14 (2-3')	
					Lab ID		1910e49-001		1910E49-002		1910e49-003		1910e49-004		1910e49-005		1910e49-006	
					Sample Date		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019		10/25/2019	
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	1.97E+00	(8)	< 0.866	u	< 0.8911	u	< 0.0874	u	< 0.1729	u	< 0.0855	u	< 0.0852	u
Dibenzofuran	7.30E+01	(2)	1.00E+03	(6)	3.00E+00	(9)	< 1.2481	u	< 1.2845	u	< 0.126	u	< 0.2492	u	< 0.1232	u	< 0.1228	u
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	9.79E+01	(8)	< 1.3592	u	< 1.3987	u	< 0.1372	u	< 0.2714	u	< 0.1342	u	< 0.1337	u
Dimethyl phthalate (DMP, Phthalic Acid)	6.16E+04	(1)	2.69E+05	(5)	3.57E+00	(8)	< 1.2702	u	< 1.3071	u	< 0.1282	u	< 0.2536	u	< 0.1254	u	< 0.125	u
Di-n-butyl phthalate (Dibutyl phthalate)	6.16E+03	(1)	2.69E+04	(5)	3.38E+01	(8)	< 1.4216	u	< 1.463	u	0.17	J	< 0.2839	u	< 0.1403	u	< 0.1399	u
Di-n-octyl phthalate	6.30E+02	(2)	8.20E+03	(6)	1.14E+03	(9)	< 0.9719	u	< 1.0002	u	< 0.0981	u	< 0.1941	u	< 0.0959	u	< 0.0956	u
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	1.34E+03	(8)	< 1.0667	u	< 1.0978	u	< 0.1077	u	< 0.213	u	< 0.1053	u	< 0.1049	u
Fluorene	2.32E+03	(1)	1.00E+04	(5)	8.00E+01	(8)	< 1.0855	u	< 1.1171	u	0.25	v	< 0.2168	u	< 0.1072	u	< 0.1068	u
Hexachlorobenzene	3.33E+00	(1)	1.17E+02	(5)	1.89E-01	(8)	< 1.1791	u	< 1.2134	u	< 0.119	u	< 0.2354	u	< 0.1164	u	< 0.116	u
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	< 1.328	u	< 1.3666	u	< 0.1341	u	< 0.2652	u	< 0.1311	u	< 0.1306	u
Hexachlorocyclopentadiene	2.30E+00	(1)	8.67E+02	(5)	2.40E+00	(8)	< 1.0889	u	< 1.1205	u	< 0.1099	u	< 0.2174	u	< 0.1075	u	< 0.1071	u
Hexachloroethane	1.33E+02	(1)	1.88E+02	(5)	3.20E-02	(8)	< 1.0611	u	< 1.092	u	< 0.1071	u	< 0.2119	u	< 0.1047	u	< 0.1044	u
Indeno(1,2,3-c,d)pyrene	1.53E+00	(1)	3.23E+01	(4)	2.01E+01	(8)	< 0.9482	u	< 0.9758	u	< 0.0957	u	< 0.1893	u	< 0.0936	u	< 0.0933	u
Isophorone	5.61E+03	(1)	2.70E+04	(4)	0.00E+00	(9)	< 1.4026	u	< 1.4434	u	< 0.1416	u	< 0.2801	u	< 0.1385	u	< 0.138	u
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	< 1.4404	u	< 1.4823	u	< 0.1454	u	< 0.2876	u	< 0.1422	u	< 0.1417	u
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	1.44E-02	(8)	< 1.3172	u	< 1.3555	u	< 0.133	u	< 0.263	u	< 0.13	u	< 0.1296	u
Nitroso-di-N-propylamine, N-	7.80E-01	(3)	3.30E+00	(7)	1.62E-04	(9)	< 1.3599	u	< 1.3994	u	< 0.1373	u	< 0.2715	u	< 0.1342	u	< 0.1338	u
N-Nitrosodiphenylamine	1.09E+03	(1)	5.24E+03	(4)	1.00E+01	(8)	< 1.0013	u	< 1.0304	u	< 0.1011	u	< 0.1999	u	< 0.0988	u	< 0.0985	u
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	1.52E-01	(8)	< 0.9817	u	< 1.0102	u	< 0.0991	u	< 0.196	u	< 0.0969	u	< 0.0966	u
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	8.59E+01	(8)	4.5	Z	2.2	Z	0.81	v	< 0.2059	u	< 0.1018	u	< 0.1014	u
Phenol	1.85E+04	(1)	7.74E+04	(5)	5.23E+01	(8)	< 1.1849	u	< 1.2194	u	< 0.1196	u	< 0.2366	u	< 0.117	u	< 0.1166	u
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.92E+02	(8)	< 0.8948	u	< 0.9209	u	0.14	J	< 0.1787	u	< 0.0883	u	< 0.088	u
Pyridine	7.80E+01	(2)	1.20E+03	(6)	1.36E-01	(9)	< 1.1471	u	< 1.1804	u	< 0.1158	u	< 0.229	u	< 0.1132	u	< 0.1128	u
Total Petroleum Hydrocarbons (mg/kg)																		
Gasoline Range Organics (GRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 0.9968	u	< 1.4289	u	< 0.9154	u	< 0.8425	u	< 0.8045	u	< 0.81	u
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	5500	v	500	v	550	v	620	v	20	v	13	v
Motor Oil Range Organics (MRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	5400	v	< 530.2227	u	< 489.2368	u	380	v	< 44.0917	u	< 51.0725	u

- No screening level or analytical result available
NMED - Risk Assessment Guidance for Site Investigations and Remediation (March 2019)
EPA - Regional Screening Levels (Nov. 2019)
(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels
(7) EPA Industrial - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic
(8) SoilGW NMED Cw Dilution Attenuation Factor (DAF) = 20
(9) SoilGW Risk-based EPA DAF = 20
(10) SoilGW MCL-based NMED DAF = 20
(11) NMED Tables 6-2 and 6-4 TPH Soil Screening Levels "unknown oil" - see report Section 5 for use of screening levels

Bold represents value above Residential Screening Level
yellow highlight represents value above Non-Residential Screening Level
Bold with yellow highlight value exceeds Residential and Non-Residential Screening Levels

v = reportable detection above the Practical quantitation limit (PQL)
u - result is not detected at method detection limit (MDL)
j - estimated result at concentration above MDL but less than PQL

Table 6 - Groundwater Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	Screening Levels	Source	SWMU 13-2-GW		SWMU 13-3-GW		SWMU 13-4-GW		SWMU 13-5-GW		SWMU 13-6-GW		SWMU 13-7-GW	
Lab ID			1911232-001		1911232-002		1911232-003		1911310-001		1911310-002		1911310-003	
Sample Date			11/6/2019		11/6/2019		11/6/2019		11/7/2019		11/7/2019		11/7/2019	
Metals (ug/l) TOTAL														
Antimony	6	(3)	<0.78	u	<0.78	u	<0.78	u	<0.78	u	<0.78	u	<0.78	u
Arsenic	10	(3)	9.5	v	6.9	v	3.4	J	5.1	v	3	J	**22**	Z
Barium	2000	(3)	730	v	77	v	190	v	88	v	220	v	620	v
Beryllium	4	(3)	**6.7**	Z	0.57	J	1.3	J	0.64	J	2	v	2.5	v
Cadmium	5	(3)	<0.74	u	<0.74	u	<0.74	u	<0.74	u	<0.74	u	<0.74	u
Chromium	50	(3)	17	v	<1.2	u	4.4	J	<1.2	u	5.3	J	43	v
Cobalt	50	(3)	20	v	25	v	2.5	J	13	v	2	J	8.1	v
Cyanide	200	(3)	26.3	v	31.2	v	25.1	v	32.5	v	20.3	v	20.3	v
Iron	1,000	(3)	**18,000**	Z	170	v	**3,300**	Z	150	v	**7,900**	Z	**20,000**	Z
Lead	15	(3)	**44**	Z	1.1	J	4.1	v	0.8	J	9	v	13	v
Manganese	200	(3)	**14,000**	Z	**25,000**	Z	**8,600**	Z	**27,000**	Z	**4,700**	Z	**6,300**	Z
Mercury	2	(3)	0.06	J	<0.04	u	<0.04	u	<0.04	u	<0.04	u	<0.04	u
Nickel	372	(4)	220	Z	340	Z	56	v	240	Z	25	v	62	v
Selenium	50	(3)	7.8	v	<2.39	u	<2.39	u	<2.39	u	<2.39	u	7.6	v
Silver	50	(3)	19	v	17	v	23	v	19	v	17	v	6.4	v
Vanadium	63.1	(4)	50	v	7.1	J	16	J	5.4	J	24	J	44	J
Zinc	10000	(3)	28	v	<5.77	u	<5.77	u	<5.77	u	14	v	28	v
Chloride	250,000	(3)	5,700	Z	**5,900,000**	Z	**5,200,000**	Z	**6,100,000**	Z	**3,200,000**	Z	**5,900,000**	Z
Fluoride	1,600	(3)	<144.91	u	<144.91	u	<144.91	u	<144.91	u	<144.91	u	**12,000**	Z
Sulfate	600,000	(3)	**780,000**	Z	**660,000**	Z	**1,200,000**	Z	550,000	Z	**1,200,000**	Z	240,000	v
Nitrogen, Nitrate (As N) [7]	10,000	(3)	10000 - NA	Z	560 - 0	v	1600 - 2000	v	170 - **14000**	J	<30.39 - 0	u	<30.39 - **12000**	u
Nitrogen, Nitrite (As N) [7]	1,000	(3)	<108 - NA	u	<108 - 0	u	<108 - 0.04	u	<108 - 0	u	<108 - 0	u	<108 - 0.04	u
Metals (ug/l) DISSOLVED														
Antimony (D)	6	(3)	<1.95	u	<1.95	u	<1.95	u	<1.95	u	<0.39	u	<1.95	u
Arsenic (D)	10	(3)	4.4	v	6.1	v	2.7	J	4.7	J	1.6	v	**14**	Z
Barium (D)	2000	(3)	76	v	74	v	59	v	89	v	35	v	310	v
Beryllium (D)	4	(3)	<0.28	u	<0.28	u	0.34	J	0.62	J	0.32	J	<0.28	u
Cadmium (D)	5	(3)	<0.55	u	<0.55	u	<0.55	u	<0.55	u	<0.55	u	<0.55	u
Calcium (D)	-	-	1300000	v	1200000	v	1600000	v	1300000	v	1200000	v	530000	v
Chromium (D)	50	(3)	<1.53	u	<1.53	u	<1.53	u	<1.53	u	<1.53	u	2.4	J
Cobalt (D)	50	(3)	6.4	v	27	v	<3.09	u	14	v	<3.09	u	3.1	J
Iron (D)	1000	(3)	21	v	67	v	11	J	94	v	18	J	**1600**	Z
Lead (D)	15	(3)	<0.00013	u	<0.00013	J	<0.00013	u	0.81	J	<0.27	u	0.38	J
Magnesium (D)	-	-	250,000	v	210,000	v	290,000	v	230,000	v	190,000	v	150,000	v
Manganese (D)	200	(3)	**12,000**	Z	**26,000**	Z	**12,000**	Z	**27,000**	Z	**4,400**	Z	**5,900**	Z
Nickel (D)	372	(4)	220	Z	370	Z	75	v	250	Z	13	v	45	v

Table 6 - Groundwater Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	Screening Levels	Source	SWMU 13-2-GW		SWMU 13-3-GW		SWMU 13-4-GW		SWMU 13-5-GW		SWMU 13-6-GW		SWMU 13-7-GW	
Lab ID			1911232-001		1911232-002		1911232-003		1911310-001		1911310-002		1911310-003	
Sample Date			11/6/2019		11/6/2019		11/6/2019		11/7/2019		11/7/2019		11/7/2019	
Potassium (D)	-	-	7800	v	3100	v	4000	v	3200	v	2600	v	40000	v
Selenium (D)	50	(3)	2.2	v	1.7	v	<0.86	u	<0.86	u	0.59	J	6.7	v
Sodium (D)	-	-	2,700,000	v	2,800,000	v	2,400,000	v	2,800,000	v	1,700,000	v	3,400,000	v
Silver (D)	50	(3)	25	v	22	v	29	v	21	v	20	v	9.4	v
Vanadium (D)	63.1	(4)	5	J	5.5	J	7.1	J	3.7	J	5	J	9.9	J
Zinc (D)	10000	(3)	13	v	9.5	J	7	J	9.6	J	13	v	14	v
Volatiles (ug/l)														
1,1,1,2-Tetrachloroethane	5.74	(4)	0	u	<1.03	u	<0.21	u	<0.41	u	<0.41	u	<1.03	u
1,1,1-Trichloroethane	200	(3)	<0.86	u	<0.86	u	<0.17	u	<0.35	u	<0.35	u	<0.86	u
1,1,2,2-Tetrachloroethane	10	(3)	<2.74	u	<2.74	u	<0.55	u	<1.1	u	<1.1	u	<2.74	u
1,1,2-Trichloroethane	5	(3)	<1.08	u	<1.08	u	<0.22	u	<0.43	u	<0.43	u	<1.08	u
1,1-Dichloroethane	25	(3)	<0.7	u	<0.7	u	<0.14	u	<0.28	u	<0.28	u	<0.7	u
1,1-Dichloroethene	7	(3)	<1.03	u	<1.03	u	<0.21	u	<0.41	u	<0.41	u	<1.03	u
1,1-Dichloropropene	-	-	<0.81	u	<0.81	u	<0.16	u	<0.33	u	<0.33	u	<0.81	u
1,2,3-Trichlorobenzene	7	(1)	<1.49	u	<1.49	u	<0.3	u	<0.6	u	<0.6	u	<1.49	u
1,2,4-Trichlorobenzene (V)	70	(3)	<0.98	u	<0.98	u	<0.2	u	<0.39	u	<0.39	u	<0.98	u
1,2,4-Trimethylbenzene	56	(1)	<1.07	u	<1.07	u	<0.21	u	<0.43	u	<0.43	u	2.3	J
1,2-Dibromoethane (EDB)	0.05	(3)	<0.83	u	<0.83	u	<0.17	u	<0.33	u	<0.33	u	<0.83	u
1,2-Dichlorobenzene (V)	600	(3)	<1.49	u	<1.49	u	<0.3	u	<0.59	u	<0.59	u	<1.49	u
1,2-Dichloroethane (EDC)	5	(3)	<0.97	u	<0.97	u	<0.19	u	<0.39	u	<0.39	u	<0.97	u
1,2-Dichloropropane	5	(3)	<1.04	u	<1.04	u	<0.21	u	<0.42	u	<0.42	u	<1.04	u
1,3,5-Trimethylbenzene	60	(1)	<0.94	u	<0.94	u	<0.19	u	<0.38	u	<0.38	u	<0.94	u
1,3-Dichlorobenzene (V)	-	-	<1.24	u	<1.24	u	<0.25	u	<0.5	u	<0.5	u	<1.24	u
1,3-Dichloropropane	370	(1)	<1	u	<1	u	<0.2	u	<0.4	u	<0.4	u	<1	u
1,4-Dichlorobenzene (V)	75	(2)	<1.47	u	<1.47	u	<0.29	u	<0.59	u	<0.59	u	<1.47	u
1-Methylnaphthalene (V)	11.37	(4)	<1.57	u	<1.57	u	<0.31	u	1.7	J	<0.63	u	6	J
2,2-Dichloropropane	-	-	<1.17	u	<1.17	u	<0.23	u	<0.47	u	<0.47	u	<1.17	u
2-Butanone	5564	(4)	<10.45	u	<10.45	u	<2.09	u	<4.18	u	<4.18	u	<10.45	u
2-Chlorotoluene	233	(4)	<1.23	u	<1.23	u	<0.25	u	<0.49	u	<0.49	u	<1.23	u
2-Hexanone	38	(1)	<7.74	u	<7.74	u	<1.55	u	<3.09	u	<3.09	u	<7.74	u
2-Methylnaphthalene (V)	35.11	(4)	<1.73	u	<1.73	u	<0.35	u	<0.69	u	<0.69	u	<1.73	u
4-Chlorotoluene	250	(1)	<1.17	u	<1.17	u	<0.23	u	<0.47	u	<0.47	u	<1.17	u
4-Isopropyltoluene	-	-	<1.09	u	<1.09	u	<0.22	u	<0.43	u	<0.43	u	<1.09	u
4-Methyl-2-pentanone	1243	(4)	<3.57	u	<3.57	u	<0.71	u	<1.43	u	<1.43	u	<3.57	u
Acetone	14063	(4)	<6	u	<6	u	<1.2	u	4.5	J	<2.4	u	18	J
Benzene	5	(3)	<0.83	u	<0.83	u	<0.17	u	0.89	J	<0.33	u	1	J
Bromobenzene	62	(1)	<1.22	u	<1.22	u	<0.24	u	<0.49	u	<0.49	u	<1.22	u

Table 6 - Groundwater Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	Screening Levels	Source	SWMU 13-2-GW		SWMU 13-3-GW		SWMU 13-4-GW		SWMU 13-5-GW		SWMU 13-6-GW		SWMU 13-7-GW	
Lab ID			1911232-001		1911232-002		1911232-003		1911310-001		1911310-002		1911310-003	
Sample Date			11/6/2019		11/6/2019		11/6/2019		11/7/2019		11/7/2019		11/7/2019	
Bromodichloromethane	1.34	(4)	<0.67	u	<0.67	u	<0.13	u	<0.27	u	<0.27	u	<0.67	u
Bromoform	32.85	(4)	<1.44	u	<1.44	u	<0.29	u	<0.58	u	<0.58	u	<1.44	u
Bromomethane	7.54	(4)	<1.37	u	<1.37	u	<0.27	u	<0.55	u	<0.55	u	<1.37	u
Carbon disulfide	810	(4)	<2.26	u	<2.26	u	<0.45	u	<0.91	u	<0.91	u	<2.26	u
Carbon Tetrachloride	5	(3)	<0.7	u	<0.7	u	<0.14	u	<0.28	u	<0.28	u	<0.7	u
Chlorobenzene	100	(2)	<0.97	u	<0.97	u	<0.19	u	<0.39	u	<0.39	u	<0.97	u
Chloroethane	20900	(4)	<0.89	u	<0.89	u	<0.18	u	<0.36	u	<0.36	u	<0.89	u
Chloroform	100	(3)	<0.61	u	<0.61	u	<0.12	u	<0.24	u	<0.24	u	<0.61	u
Chloromethane	20.3	(4)	<1.6	u	<1.6	u	<0.32	u	<0.64	u	<0.64	u	<1.6	u
cis-1,2-DCE	70	(3)	<0.95	u	< 0.951	u	<0.19	u	<0.38	u	<0.38	u	<0.95	u
cis-1,3-Dichloropropene	4.71	(4)	<0.69	u	<0.69	u	<0.14	u	<0.28	u	<0.28	u	<0.69	u
Dibromochloromethane	1.68	(4)	<1.19	u	<1.19	u	<0.24	u	<0.48	u	<0.48	u	<1.19	u
Dibromomethane	8.3	(1)	<1.05	u	<1.05	u	<0.21	u	<0.42	u	<0.42	u	<1.05	u
Dichlorodifluoromethane	197	(4)	<1.3	u	<1.3	u	<0.26	u	<0.52	u	<0.52	u	<1.3	u
Ethylbenzene	700	(3)	<0.66	u	<0.66	u	<0.13	u	<0.26	u	<0.26	u	<0.66	u
Hexachlorobutadiene (V)	1.39	(4)	<1.55	u	<1.55	u	< 0.31	u	<0.62	u	<0.62	u	<1.55	u
Isopropylbenzene	447	(4)	<0.96	u	<0.96	u	<0.19	u	<0.38	u	<0.38	u	<0.96	u
Methyl tert-butyl ether (MTBE)	100	(4)	21	Z	21	Z	15	v	36	v	6.8	v	<2.28	u
Methylene Chloride	5	(3)	<0.77	u	<0.77	u	<0.15	u	<0.31	u	<0.31	u	<0.77	u
Naphthalene (V)	30	(3)	<1.38	u	<1.38	u	<0.28	u	<0.55	u	<0.55	u	<1.38	u
n-Butylbenzene	1000	(1)	<1.14	u	<1.14	u	<0.23	u	<0.46	u	<0.46	u	<1.14	u
n-Propylbenzene	660	(1)	<1.07	u	<1.07	u	<0.21	u	<0.43	u	<0.43	u	<1.07	u
sec-Butylbenzene	2000	(1)	<1.24	u	<1.24	u	<0.25	u	<0.5	u	<0.5	u	<1.24	u
Styrene	100	(3)	<0.96	u	<0.96	u	<0.19	u	<0.38	u	<0.38	u	<0.96	u
tert-Butylbenzene	690	(1)	<1.03	u	<1.03	u	<0.21	u	<0.41	u	<0.41	u	<1.03	u
Tetrachloroethene (PCE)	5	(3)	<0.75	u	<0.75	u	<0.15	u	<0.3	u	<0.3	u	<0.75	u
Toluene	1000	(3)	<1.75	u	<1.75	u	<0.35	u	<0.7	u	<0.7	u	<1.75	u
trans-1,2-DCE	100	(3)	<0.9	u	<0.9	u	<0.18	u	<0.36	u	<0.36	u	<0.9	u
trans-1,3-Dichloropropene	4.71	(4)	<0.83	u	< 0.833	u	<0.17	u	<0.33	u	<0.33	u	<0.83	u
Trichloroethene (TCE)	5	(3)	<0.83	u	<0.83	u	<0.17	u	<0.33	u	<0.33	u	<0.83	u
Trichlorofluoromethane	1140	(4)	<0.95	u	<0.95	u	<0.19	u	<0.38	u	<0.38	u	<0.95	u
Vinyl chloride	2	(3)	<0.9	u	<0.9	u	<0.18	u	<0.36	u	<0.36	u	<0.9	u
Xylenes, Total	620	(3)	<2.27	u	<2.27	u	<0.45	u	<0.91	u	<0.91	u	<2.27	u
Semivolatiles (ug/l)														
1,2,4-Trichlorobenzene	70	(2)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
1,2-Dichlorobenzene	600	(3)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
1,3-Dichlorobenzene	-	-	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u

Table 6 - Groundwater Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	Screening	Source	SWMU 13-2-GW		SWMU 13-3-GW		SWMU 13-4-GW		SWMU 13-5-GW		SWMU 13-6-GW		SWMU 13-7-GW	
Lab ID	Levels		1911232-001		1911232-002		1911232-003		1911310-001		1911310-002		1911310-003	
Sample Date			11/6/2019		11/6/2019		11/6/2019		11/7/2019		11/7/2019		11/7/2019	
1,4-Dichlorobenzene	75	(3)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
1-Methylnaphthalene	11.38	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	3.3	v
2,4,5-Trichlorophenol	1166	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
2,4,6-Trichlorophenol	11.9	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
2,4-Dichlorophenol	45.3	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
2,4-Dimethylphenol	354	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	1.5	v
2,4-Dinitrophenol	38.7	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
2,4-Dinitrotoluene	2.37	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
2,6-Dinitrotoluene	0.485	(4)	<0.2	u	<0.2	u	<0.2	u	<0.2	u	<0.2	u	<0.2	u
2-Chloronaphthalene	733	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
2-Chlorophenol	91	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
2-Methylnaphthalene	35.11	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
2-Methylphenol	930	(1)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
2-Nitroaniline	190	(1)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
2-Nitrophenol	-	-	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
3,3´-Dichlorobenzidine	1.25	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
3+4-Methylphenol	930	(1)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
3-Nitroaniline	-	-	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
4,6-Dinitro-2-methylphenol	1.52	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
4-Bromophenyl phenyl ether	-	-	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
4-Chloro-3-methylphenol	-	-	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
4-Chlorophenyl phenyl ether	-	-	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
4-Nitroaniline	38	(5)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
4-Nitrophenol	-	-	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Acenaphthene	535	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	0.97	v
Acenaphthylene	-	-	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Aniline	130	(5)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Anthracene	1721	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Benz(a)anthracene	0.12	(4)	<0.1	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u
Benzo(a)pyrene	0.2	(3)	<0.1	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u
Benzo(b)fluoranthene	0.343	(4)	<0.1	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u
Benzo(g,h,i)perylene	-	-	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Benzo(k)fluoranthene	3.43	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Benzoic acid	75000	(1)	<1	u	<1	u	<1	u	<1	u	<1	u	<1	u
Benzyl alcohol	2000	(1)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Bis(2-chloroethoxy)methane	59	(1)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Bis(2-chloroisopropyl)ether	9.81	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u

Table 6 - Groundwater Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	Screening	Source	SWMU 13-2-GW		SWMU 13-3-GW		SWMU 13-4-GW		SWMU 13-5-GW		SWMU 13-6-GW		SWMU 13-7-GW	
Lab ID	Levels		1911232-001		1911232-002		1911232-003		1911310-001		1911310-002		1911310-003	
Sample Date			11/6/2019		11/6/2019		11/6/2019		11/7/2019		11/7/2019		11/7/2019	
Bis(2-ethylhexyl)phthalate	6	(2)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Butyl benzyl phthalate	160	(5)	0.55	v	0.51	v	0.9	v	<0.5	u	<0.5	u	<0.5	u
Carbazole	-	-	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Chrysene	34.3	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Dibenz(a,h)anthracene	0.0343	(4)	<0.03	u	<0.03	u	<0.03	u	<0.03	u	<0.03	u	<0.03	u
Dibenzofuran	7.9	(1)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Diethyl phthalate	14800	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Dimethyl phthalate	611.56	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Di-n-butyl phthalate	885	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Di-n-octyl phthalate	200	(1)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Fluoranthene	802	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Fluorene	288	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	0.5	v
Hexachlorobenzene	1	(2)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Hexachlorobutadiene	1.39	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Hexachlorocyclopentadiene	50	(2)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Hexachloroethane	3.28	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Indeno(1,2,3-cd)pyrene	0.343	(4)	<0.2	u	<0.2	u	<0.2	u	<0.2	u	<0.2	u	<0.2	u
Isophorone	780.63	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Naphthalene	30	(3)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Nitrobenzene	1.4	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
N-Nitrosodiphenylamine	121.9219	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Phenanthrene	170	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Pentachlorophenol	1	(3)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Phenol	5760	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Pyrene	117	(4)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
Pyridine	20	(1)	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u	<0.5	u
TPH (ug/l)														
Gasoline Range Organics (GRO)	10.1	(6)	**350**	v	**450**	v	**100**	v	**330**	v	**42**	v	**730**	v
Diesel Range Organics (DRO)	85.8	(6)	**500**	v	**610**	v	<132	u	**280**	J	<132	u	**530**	v
Motor Oil Range Organics (MRO)	85.8	(6)	<2500	u	<2500	u	<2500	u	<2500	u	<2500	u	<2500	u

- No screening level or analytical result available

450 - bolded value exceeds screening level

(1) EPA - Regional Screening Levels (November 2019) -Tap Water

(2) EPA - Regional Screening Levels (November 2019) - MCL

(3) NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/l TDS Concentration or less (December 2018)

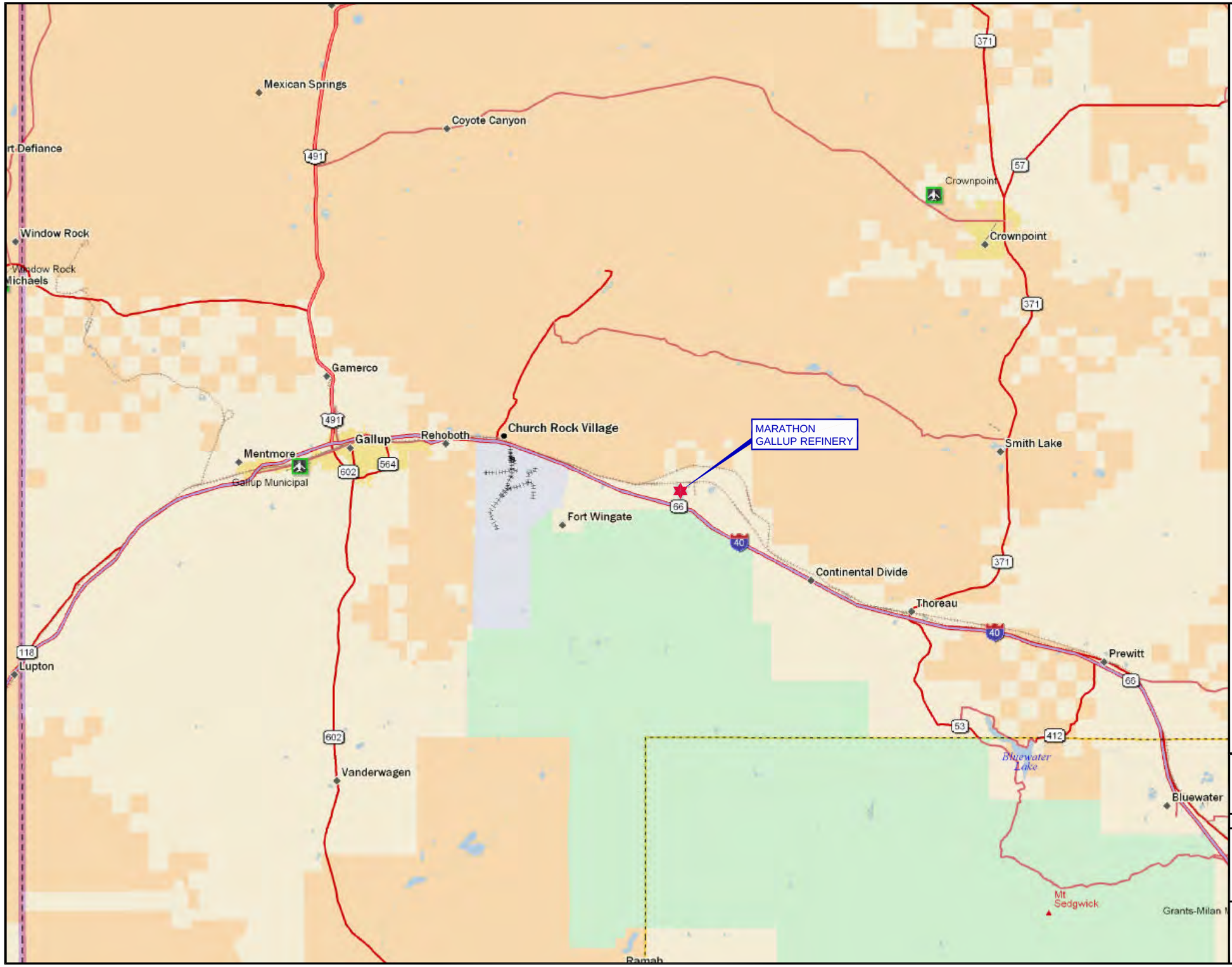
Table 6 - Groundwater Analytical Results Summary
Marathon Petroleum Company - Gallup Refinery
Gallup, New Mexico

	Screening Levels	Source	SWMU 13-2-GW	SWMU 13-3-GW	SWMU 13-4-GW	SWMU 13-5-GW	SWMU 13-6-GW	SWMU 13-7-GW
Lab ID			1911232-001	1911232-002	1911232-003	1911310-001	1911310-002	1911310-003
Sample Date			11/6/2019	11/6/2019	11/6/2019	11/7/2019	11/7/2019	11/7/2019

(4) NMED Tap Water Screening Level - Risk Assessment Guidance for Site Investigations and Remediation (March 2019)
(5) EPA Screening Level - Tap Water x 10 for carcinogenic compounds
(6) NMED Soil Screening Guidance - "gasoline and unknown oil" (March 2019)
(7) laboratory results for nitrate and nitrite followed by results using field test kit
v = reportable detection above the Practical quantitation limit (PQL)
u - result is not detected at method detection limit (MDL)
j - estimated result at concentration above MDL but less than PQL
z - concentration exceeds MCL

Figures

Map Source: DeLorme Street Atlas USA 2007 Plus.



0 5
SCALE IN MILES

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 12/09/18 | FILE: Mathon-dB206

FIGURE 1
SITE LOCATION MAP
GALLUP REFINERY

DiSorbo
Environmental Consulting Firm
8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

Aerial Map Source: Google Map, 03/18/2016.

N

0 300

SCALE IN FEET

NEW MEXICO

SITE LOCATION

LEGEND

MKTF-43 ● MONITORING WELL LOCATION (CHINLE / ALLUVIAL) AND IDENTIFICATION NUMBER

OW-01 ● MONITORING WELL LOCATION (SONSELA) AND IDENTIFICATION NUMBER

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon	DATE: 01/19/20	FILE: Mathon-dA174

FIGURE 2
SITE MAP

DiSorbo Environmental Consulting Firm
8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

Aerial Map Source: Google Map, 10/06/2016.

N

0 50

SCALE IN FEET

LEGEND

SWMU 13-8 ▲ HAND AUGER BORING LOCATION

SWMU 13-1 ⊕ SOIL BORING / TEMPORARY WELL LOCATION

A —— A' LINE OF CROSS SECTION

4" PVC PIPELINE

NEW MEXICO

SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 01/19/20 | FILE: Mathon-dA175

FIGURE 3
LOCATION OF SOIL BORINGS
AND TEMPORARY WELLS

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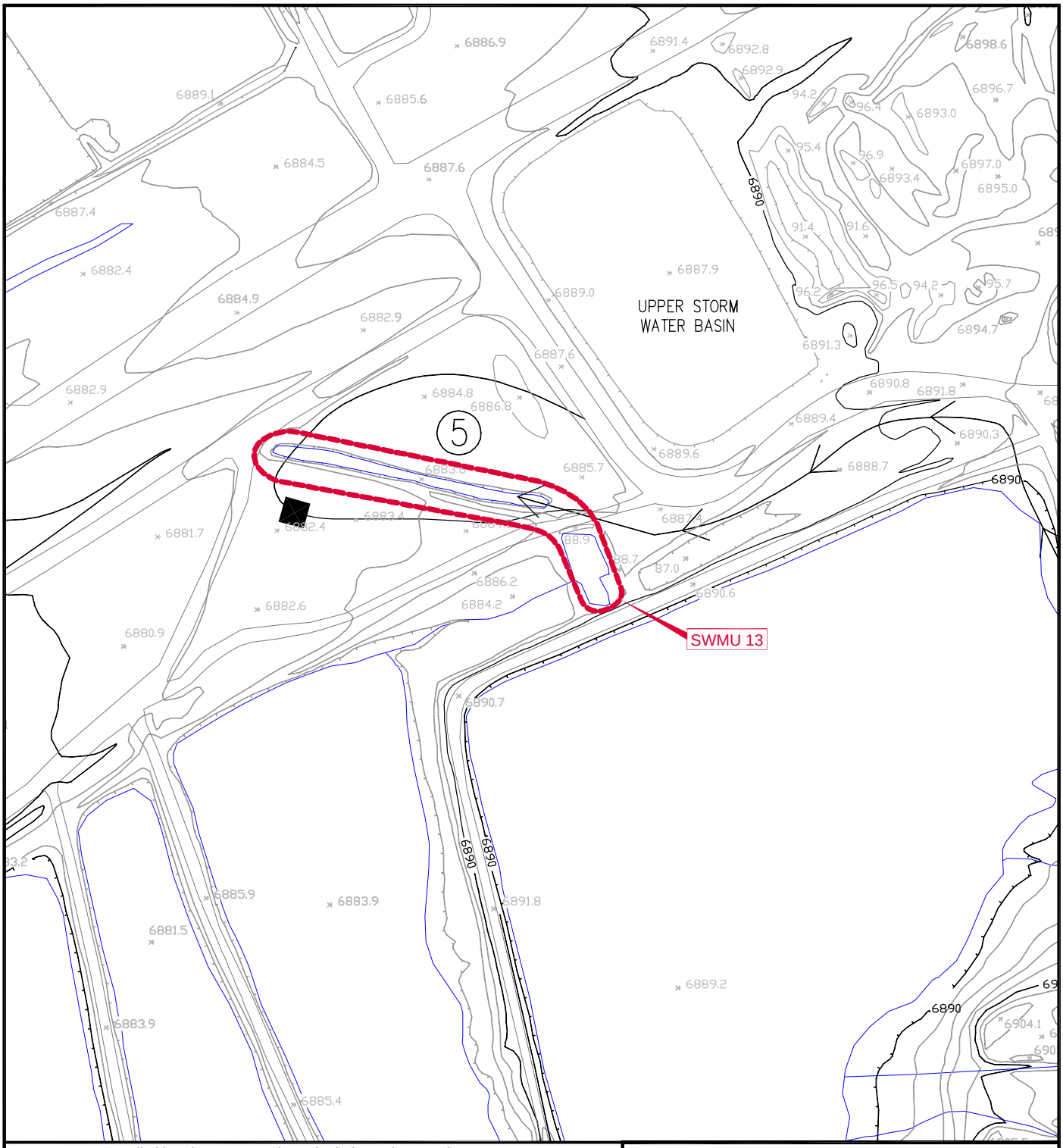
Suite 300
Austin, Texas 78759



Map Source: Compiled by Photogrammetric Methods from Photography Acquired on March 1, 1998.

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon	DATE: 05/06/19	FILE: Mathon-dA156

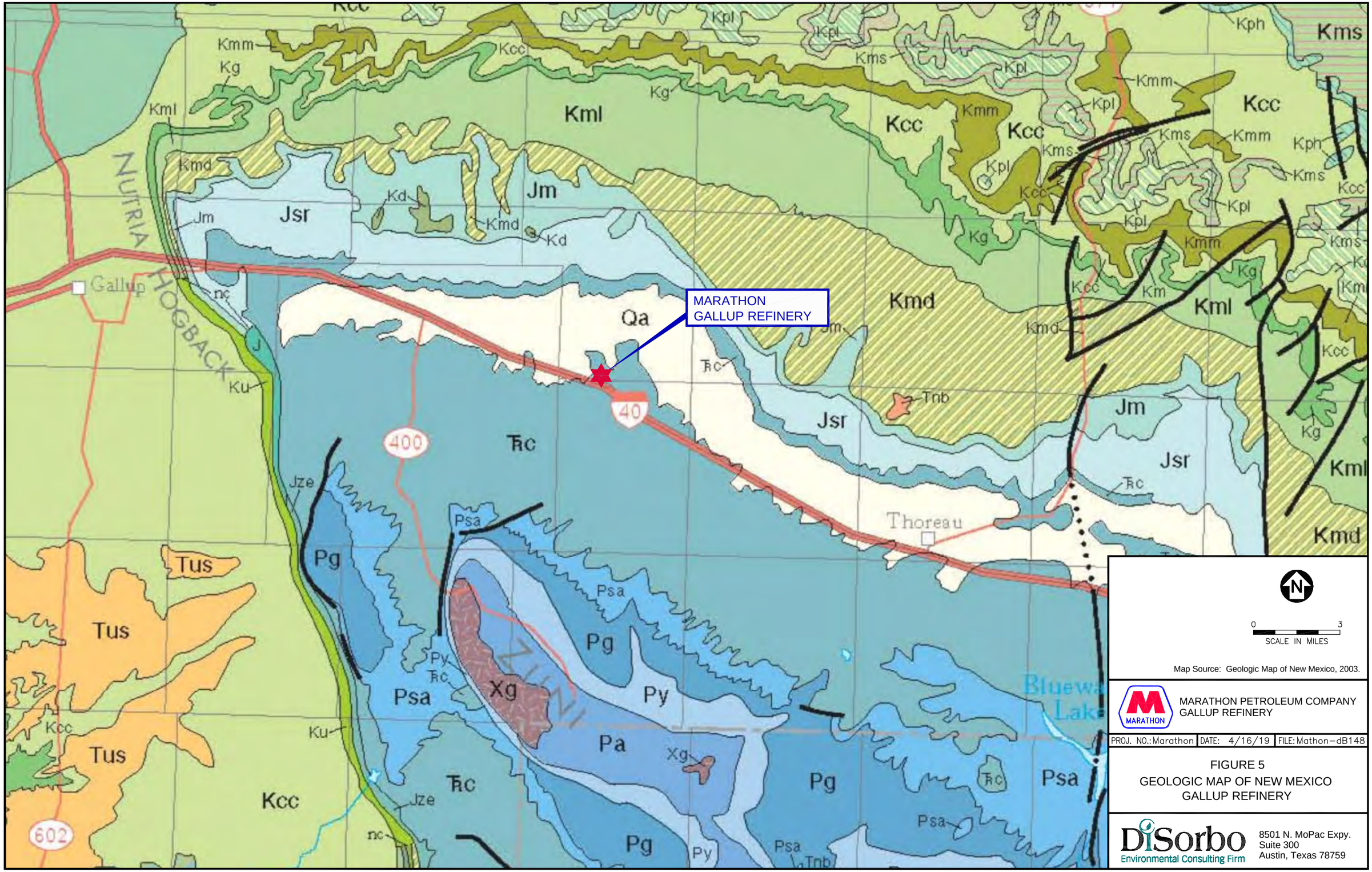
FIGURE 4
TOPOGRAPHIC MAP

0 150
SCALE IN FEET

NEW MEXICO
SITE LOCATION

DiSorbo
Environmental Consulting Firm

8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759



Map Source: Geologic Map of New Mexico, 2003.

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon	DATE: 4/16/19	FILE: Mathon-dB148

FIGURE 5
GEOLOGIC MAP OF NEW MEXICO
GALLUP REFINERY

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Environmental Consulting Firm
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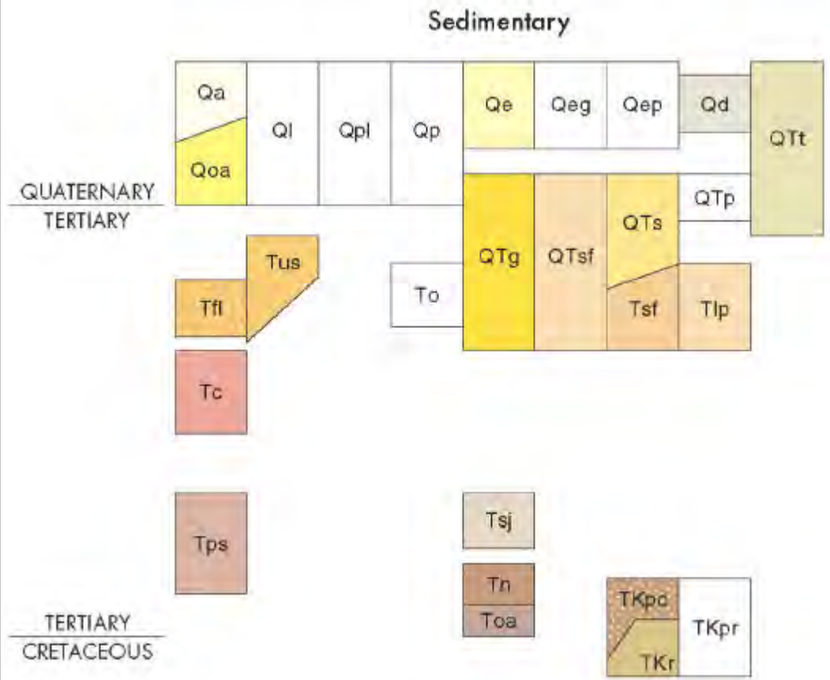
Suite 300
Austin, Texas 78759



DESCRIPTION OF MAP UNITS

QUATERNARY

Qa Alluvium (Holocene to upper Pleistocene)

Ql Landslide deposits and colluvium (Holocene to Pleistocene)—Landslide deposits on western flanks of Socorro Mountains not shown for clarity

Qpl Lacustrine and playa deposits (Holocene)—Includes associated alluvial and eolian deposits of major lake basins

Qp Piedmont alluvial deposits (Holocene to lower Pleistocene)—Includes deposits of higher gradient tributaries bordering major stream valleys, alluvial veneers of the piedmont slope, and alluvial fans. May locally include uppermost Pliocene deposits

Qe Eolian deposits (Holocene to middle Pleistocene)

Qeg Gypsiferous eolian deposits (Holocene to middle Pleistocene)

Qep Eolian and piedmont deposits (Holocene to middle Pleistocene)—Interlayed eolian sands and piedmont-slope deposits along the eastern flank of the Pecos River valley, primarily between Roswell and Carlsbad. Typically capped by thin eolian deposits

Qd Glacial deposits; till and outwash (upper to middle Pleistocene)

Qoa Older alluvial deposits of upland plains and piedmont areas, and calcic soils and eolian cover sediments of High Plains region (middle to lower Pleistocene)—Includes scattered lacustrine, playa, and alluvial deposits of the Tahoka, Double Tanks, Tule, Blackwater Draw, and Gatuña Formations, the latter of which may be Pliocene at base; outcrops, however, are basically of Quaternary deposits

Qb Basaltic to andesitic lava flows (Holocene to middle Pleistocene)—Flows south of Grants and west of Carrizozo are Holocene. Includes minor vent deposits

Qv Basaltic tephra and lavas near vents (upper to middle Pleistocene)—Tuff rings, maars, cinder cones, and minor proximal lavas. Includes maars at Kilbourne Hole and Zuni Salt Lake

Qbo Basaltic to andesitic lava flows (middle to lower Pleistocene)—Includes vent deposits

Qvr Ring-fracture rhyolite lava domes of the Valles caldera (uppermost to lower Pleistocene)—Upper members of the Valles Rhyolite in Jemez Mountains. Includes 60-ka Banco Bonito and El Cajete Members on south margin of caldera

Qr Older rhyolite lavas and early volcaniclastic sedimentary fill deposits of the Valles caldera (lower Pleistocene)—Units are associated with resurgent doming or predate doming of the caldera core. Includes minor middle Pleistocene tuffs of the upper Valles Rhyolite on north side of caldera

Qbt Bandelier Tuff (lower Pleistocene)—Includes large blocks of older andesite in caldera-collapse breccia facies locally exposed on resurgent dome of the Valles caldera

QUATERNARY and TERTIARY

QTt Travertine (Holocene to Pliocene)—Includes some pedogenic carbonate south of Sierra Ladrones

QTp Older piedmont alluvial deposits and shallow basin fill (middle Pleistocene to uppermost Pliocene)—Includes Quemado Formation and in northeast, high-level pediment gravels

QTs Upper Santa Fe Group (middle Pleistocene to uppermost Miocene)—Includes Camp Rice, Fort Hancock, Palomas, Sierra Ladrones, Arroyo Ojito, Ancha, Puye, and Alamosa Formations

QTsf Santa Fe Group, undivided (middle Pleistocene to uppermost Oligocene)—Basin fill of the Rio Grande rift. Locally represents upper Miocene formations of the middle Santa Fe Group in the northern Albuquerque Basin

QTg Gila Group, Formation, or Conglomerate (middle Pleistocene to uppermost Oligocene?)—Includes Mimbres Formation and several informal units in southwestern basins

QTb Basaltic to andesitic lava flows (upper Pleistocene to lower Pliocene)—Includes minor vent deposits

Map Source: Geologic Map of New Mexico, 2003.

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 4/16/19 | FILE: Mathon-dB148

FIGURE 5
LEGEND SHEET 1 OF 8
GEOLOGIC MAP OF NEW MEXICO
GALLUP REFINERY

DiSorbo Environmental Consulting Firm
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Suite 300
Austin, Texas 78759

TERTIARY

Tus Upper Tertiary sedimentary units (Pliocene to upper Oligocene)—Includes Bidahochi Formation (Pliocene to upper Miocene), Picuris Formation, (Miocene to Oligocene), Las Feveras Formation (Pliocene), lower Gila Group units in the southwest, and unnamed Pliocene unit in northwestern Socorro County

To Ogallala Formation (lower Pliocene to middle Miocene)—Alluvial and eolian deposits, and petrocalcic soils of the southern High Plains. Locally includes Qoa

Tfl Fence Lake Formation (Miocene)—Conglomerate and conglomeratic sandstone, coarse fluvial volcaniclastic sediments, minor eolian facies, and pedogenic carbonates of the southern Colorado Plateau region

Tsf Lower Santa Fe Group (upper Miocene to uppermost Oligocene)—Includes Hayner Ranch, Rincon Valley, Popotosa, Cochiti, Tesuque, Chamita, Abiquiu, Zia, and other formations

Tlp Los Pinos Formation of lower Santa Fe Group (Miocene and upper Oligocene)—Includes Carson Conglomerate (Dane and Bachman, 1965) in Tusas Mountains-San Luis Basin area

Tc Chuska Sandstone (middle to upper Oligocene)—Restricted to Chuska Mountains

Tpb Basaltic to andesitic lava flows (Pliocene)—Includes minor vent deposits and small shield volcanoes. Flows are commonly interbedded in the Santa Fe and Gila Groups

Tmb Basaltic to andesitic lava flows (Miocene)—Includes minor vent deposits. Flows are commonly interbedded in the Santa Fe and Gila Groups

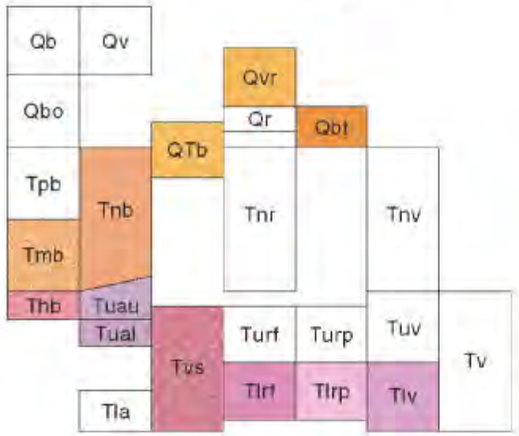
Tnb Basaltic to andesitic lava flows (Neogene)—Includes minor vent deposits. Flows are commonly interbedded in the Santa Fe and Gila Groups

Tnr Silicic to intermediate volcanic rocks (Neogene, mostly Miocene)—Rhyolite and dacite flows with associated minor tuffs. Commonly interbedded with Santa Fe or Gila Group sedimentary units. Dacitic lavas in northern Jemez Mountains are Pliocene

Tnv Intermediate to silicic volcanic rocks (Neogene)—Mostly andesitic to dacitic stratovolcanoes. Includes rhyolite lavas and tuffs in the Jemez Mountains. Volcanoes in Jemez Mountains and eastern Colfax County are upper Miocene. Mount Taylor and composite volcanoes in the Taos Plateau volcanic field are Pliocene

Thb Hinsdale Basalt (Miocene and upper Oligocene)—Northern Taos and eastern Rio Arriba Counties; basalt flows interbedded with Los Pinos Formation

Igneous



QUATERNARY
TERTIARY

TERTIARY
CRETACEOUS

Tuau Upper middle Tertiary basaltic andesites and andesites of the Mogollon Group (lower Miocene and uppermost Oligocene, 22–26 Ma)—Includes Bearwallow Mountain Andesite and basaltic andesite of Mangas Mountain; also near vent basaltic lavas and shallow intrusions in the Chuska Mountains

Tual Lower-upper middle Tertiary basaltic andesites and andesites of the Mogollon Group (upper Oligocene, 26–29 Ma)—Includes La Jara Peak Basaltic Andesite, Uvas Basaltic Andesite, basaltic andesites of Poverty Creek and Twin Peaks, Squirrel Springs Canyon Andesite, Razorback Basalt, Bear Springs Basalt, flows of Gila Flat, Salt Creek Formation, Middle Mountain Formation, and the Alum Mountain Group. Pre-Amalia Tuff lavas in the Questa caldera are dominantly silicic andesites and dacites; elsewhere silicic lavas are a minor component of Tual

Tvs Middle Tertiary volcaniclastic sedimentary units (Oligocene to upper Eocene)—Mostly syneruptive volcaniclastic sedimentary aprons. Lower units dominantly derived from volcanic highlands of andesitic to dacitic composition. Locally includes minor lavas and tuffs. Younger units (above and intertongued with Mogollon Group tuffs, Turp) include upper Bell Top Formation, South Crosby Peak Formation, and upper Spears Group units near Quemado. Older units (below and intertongued with Datil Group tuffs, Tlrp) include Palm Park, lower Bell Top, Espinaso and Pueblo Creek Formations and lower Spears Group formations such as Rincon Windmill, Chavez Canyon, and Dog Springs

Map Source: Geologic Map of New Mexico, 2003.

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FIGURE 5
LEGEND SHEET 2 OF 8
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Turf — Upper middle Tertiary rhyolitic lavas and local tuffs (upper Oligocene, 24–29 Ma)—Includes Taylor Creek Rhyolite, Fanney Rhyolite, rhyolite of Rocky Canyon, rhyolite of Hardy Ridge, and upper rhyolite members of the Luis Lopez and Sawmill Canyon formations

Trf — Lower middle Tertiary rhyolitic lavas and local tuffs (lower Oligocene to upper Eocene, 36–31 Ma)—Includes Mimbres Peak Formation, rhyolite of Cedar Hills, and other units in the Bootheel region

Turp — Upper middle Tertiary rhyolitic pyroclastic rocks of the Mogollon Group, ash-flow tuffs (upper Oligocene, 24–30 Ma)—Regional ash-flow tuffs include the La Jencia, Vicks Peak, Lemitar, South Canyon, Bloodgood Canyon, Shelly Peak, Davis Canyon, Park, Rhyolite Canyon, Apache Spring, and Amalia Tuffs; the tuffs of Horseshoe Canyon, Diamond Creek, Garcia Camp, Caronita Canyon, Turkey Springs, and Little Mineral Creek; and the Jordan Canyon Formation. Includes some locally erupted lavas and tuffs within thick intracaldera units; includes minor volcaniclastic sedimentary units between thin outflow sheets

Tirp — Lower middle Tertiary rhyolitic to dacitic pyroclastic rocks of the Datil Group, ash-flow tuffs (lower Oligocene to upper Eocene, 31–36 Ma)—Regional ash-flow tuffs include Hells Mesa, Kneeling Nun, Caballo Blanco, Datil Well, Lebya Well, Rock House Canyon, Blue Canyon, Sugarlump, Oak Creek, Bluff Creek, Gillespie, Box Canyon, Cooney, and Chiquito Peak Tuffs; the tuffs of Steins Mountain, Black Bill Canyon, Woodhaul Canyon, and Farr Ranch; tuffs of the Organ cauldron; and lower tuffs in the Bell Top Formation. Includes some locally erupted lavas and tuffs within thick intracaldera units; includes minor volcaniclastic sedimentary units and lavas between thin outflow sheets

Tla — Lower middle Tertiary andesitic to dacitic lavas and pyroclastic flow breccias (upper to middle Eocene, 33–43 Ma)—Includes Rubio Peak Formation, Orejon Andesite, andesite of Dry Leggett Canyon, andesite of Telephone Canyon, and other units in southwestern, central, and northern New Mexico. Locally includes minor mafic lavas. Ancient landslide blocks of Madera Limestone, as much as one mile long, occur within Rubio Peak lavas in the central Black Range, west of Winston

Tuv — Upper middle Tertiary volcanic rocks (lower Miocene to upper Oligocene, younger than 30 Ma)—Mostly a combination of basaltic andesite lavas and rhyolitic ash-flow tuffs of the Mogollon Group (Tuau + Tual + Turp). Includes locally erupted lavas and tuffs in some calderas

Tlv — Lower middle Tertiary volcanic rocks (lower Oligocene to upper Eocene, older than 31 Ma)—Mostly intermediate lavas of the lower Datil Group and intermediate volcaniclastic sediments of the lower Spears Group (Tla + Tvs). Locally includes ash-flow tuffs of the upper Datil Group (Tirp). Includes intermediate volcaniclastic sedimentary rocks of the Conejos Formation in northern New Mexico

Tv — Middle Tertiary volcanic rocks, undifferentiated (lower Miocene to upper Eocene)—Includes the predominantly andesitic to dacitic stratovolcano complex at Sierra Blanca (Oligocene to upper Eocene) and many smaller outliers

Ti — Tertiary intrusive rocks of intermediate to silicic composition (Pliocene to Eocene)—Includes monzonitic to granitic plutons, stocks, laccoliths, and porphyritic dikes in deeply eroded magmatic centers; and andesitic, dacitic, or rhyolitic plugs and dikes near cauldrons or stratovolcanoes. In the Latir field, fine-grained rhyolitic dikes commonly cut coarse-grained granitic plutons. Includes alkaline laccoliths, plugs, and dikes in Colfax County. North-trending dikes near Capitan include some mafic diabase dikes

Tm — Tertiary mafic intrusive rocks (Pliocene to upper Eocene)—Includes many long basaltic andesite dikes of Oligocene age near Pie Town, Acoma, Riley, Chupadera, Truth or Consequences, Roswel, Raton, and Dulce; and several elongate or shoestring-like sills of basalt or basaltic andesite. Also includes basaltic necks of Pliocene age that dot the landscape northeast of Mount Taylor. Where dikes extend into Quaternary alluvium the contact is an unconformity

Tps — **Paleogene sedimentary units**—Includes Baca, Galisteo, El Rito, Blanco Basin, Hart Mine, Love Ranch, Lobo, Sanders Canyon, Skunk Ranch, Timberlake, and Cub Mountain Formations

Tsj — San Jose Formation (Eocene)—San Juan Basin

Tn — Nacimiento Formation (Paleocene)—San Juan Basin

Toa — Ojo Alamo Formation (Paleocene)—San Juan Basin

TERTIARY and CRETACEOUS

TKpc — Poison Canyon Formation (Paleocene and Upper Cretaceous)—Proximal conglomerates and sandstones in western Raton Basin; generally lacking coal beds. Cretaceous beds mostly restricted to subsurface

TKr — Raton Formation (Paleocene and Upper Cretaceous)—Distal sandstones, mudstones, and coal beds in eastern Raton Basin. Middle barren zone laterally equivalent to Poison Canyon Formation. K/T boundary discontinuously exposed about 100 m above basal conglomerate in area southwest of Raton

TKpr — Poison Canyon and Raton Formations (Paleocene and Upper Cretaceous)—Broadly intertonguing conglomeratic sandstones, sandstones and mudstones; minor coal beds

TKa — Animas Formation (Paleocene and Upper Cretaceous)—Volcaniclastic sedimentary rocks of intermediate composition in northern San Juan Basin

TKav — Tertiary-Cretaceous andesitic to dacitic lavas and pyroclastic breccias (Paleocene and Upper Cretaceous)—Includes many remnants of eruptive centers in Grant and Hidalgo Counties and Upper Cretaceous andesitic lavas in Sierra County

TKi — Tertiary-Cretaceous intrusive rocks (Paleocene and Upper Cretaceous)—Includes granodiorite to quartz monzonite stocks and plutons at Hanover, Fierro, Tyrone, Lordsburg, and the 73-Ma quartz monzonite porphyry stock at Copper Flats in Sierra County. Also includes many northeast-trending monzonite porphyry dikes in the Silver City region

Map Source: Geologic Map of New Mexico, 2003.

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FIGURE 5
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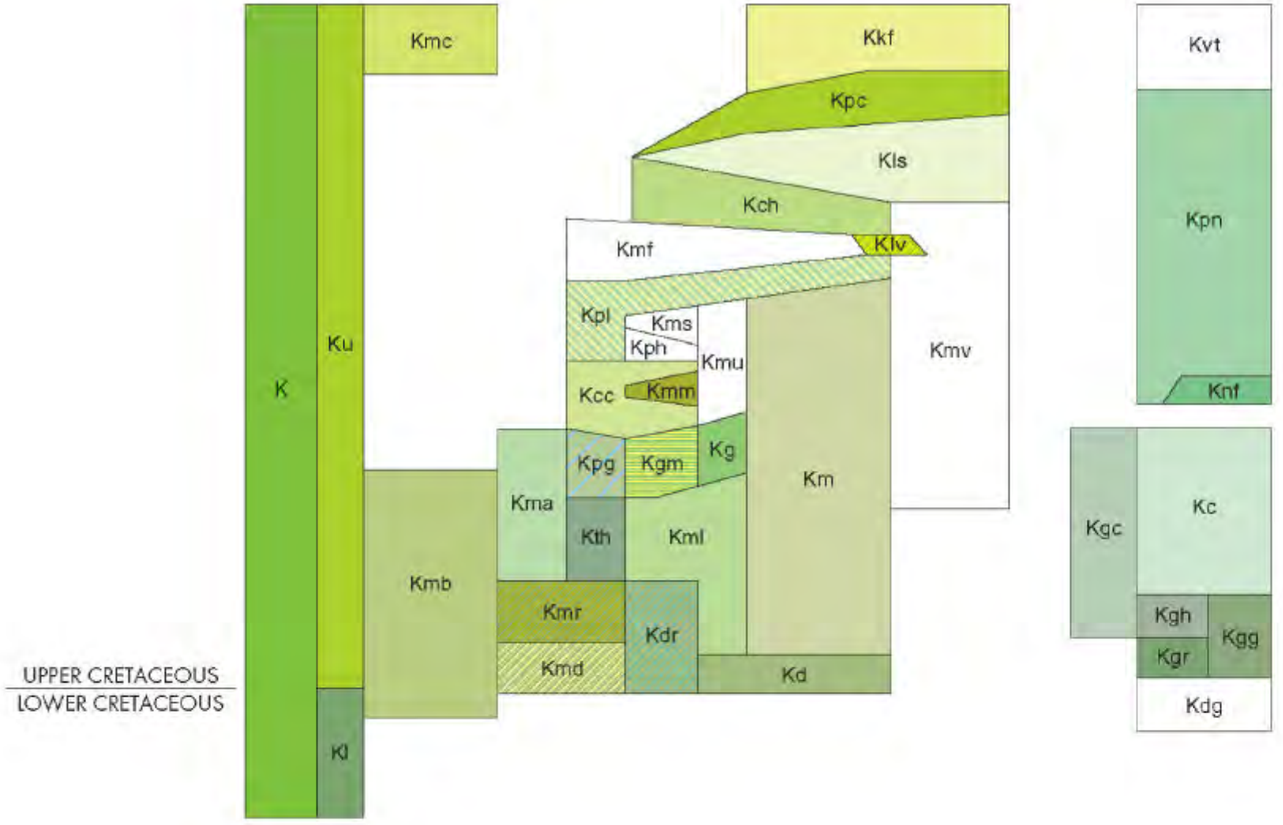

CRETACEOUS

K — **Cretaceous rocks, undivided**

Ku — **Upper Cretaceous rocks of southwestern New Mexico, undivided** (Maastrichtian to Cenomanian for most part, although Beartooth and Sarten Formations are in part Albian)—Includes Virden Formation in northern Hidalgo County, Ringbone Formation in Hidalgo, Luna, and Grant Counties, Beartooth and Sarten Formations in Luna and Grant Counties, Mancos Shale in Silver City area

Kmc — **McRae Formation** (Maastrichtian)—Engle Basin-Cutter sag area

Kvt — **Vermejo Formation and Trinidad Sandstone** (Maastrichtian to Campanian)

Kkf — **Kirtland and Fruitland Formations** (Campanian)—Coal-bearing, primarily in the Fruitland

Kpc — **Pictured Cliffs Sandstone** (Campanian)—Prominent, cliff-forming marine sandstone

Kpg — **Pescado Tongue of the Mancos Shale and Gallup Sandstone** (Turonian)—In Zuni Basin only; Pescado is chronostratigraphic equivalent of Juana Lopez Member of Mancos Shale

Kth — **Tres Hermanos Formation** (Turonian)—Formerly designated as lower Gallup Sandstone in the Zuni Basin

Kma — **Moreno Hill Formation and Atarque Sandstone** (Turonian)—In Salt Lake coal field and extreme southern Zuni Basin

Km — **Mancos Shale** (Cenomanian to Campanian)—Divided into upper and lower parts by Gallup Sandstone

Kmu — **Mancos Shale, upper part** (Campanian to Coniacian)

Kml — **Mancos Shale, lower part** (Turonian and Cenomanian)

Kdr — **Dakota Sandstone** (Cenomanian) **and Rio Salado Tongue of the Mancos Shale**—In northwest Socorro County locally includes overlying Tres Hermanos Formation

Map Source: Geologic Map of New Mexico, 2003.

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Kls **Lewis Shale** (Campanian)—Marine shale and mudstone

Kpn **Pierre Shale and Niobrara Formation** (Campanian to Coniacian)

Knf **Fort Hays Limestone Member of Niobrara Formation** (Coniacian to Turonian)

Kmv **Mesaverde Group** (Campanian to Turonian)—Includes Cliff House Sandstone, Menefee Formation and Point Lookout Sandstone.

Kch **Cliff House Sandstone** (Campanian)—Transgressive marine sandstone

Klv **La Ventana Tongue of the Cliff House Sandstone** (Turonian)

Kmf **Menefee Formation** (Campanian to Santonian)—Mudstone, shale, and sandstone; coal-bearing

Kpl **Point Lookout Sandstone** (Campanian to Santonian)—Regressive marine sandstone in McKinley and Sandoval Counties; the lower, Hosta Tongue, of Point Lookout is transgressive, and is separated from main body by the Satan Tongue of Mancos Shale

Kms **Satan Tongue of Mancos Shale** (Santonian)

Kph **Hosta Tongue of Point Lookout Sandstone** (Santonian)—Transgressive marine sandstone

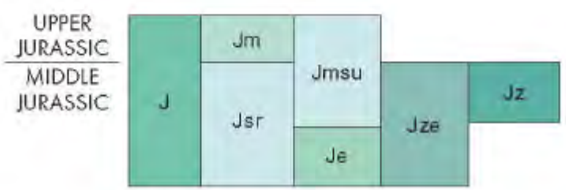
Kmm **Mulatto Tongue of Mancos Shale** (Santonian to Coniacian)

Kcc **Crevasse Canyon Formation** (Santonian to Coniacian)—Coal-bearing units are Dilco and Gibson Coal Members; other members are Bartlett Barren, Dalton Sandstone, and Borrego Pass Sandstone (or Lentil)

Kg **Gallup Sandstone** (Turonian)—Generally regressive marine sandstone

Kgm **Gallup Sandstone and underlying D-Cross Tongue of the Mancos Shale** (Turonian)

Kmr **Rio Salado Tongue of the Mancos Shale** (Turonian)—Overlies Twowells Tongue of Dakota Sandstone; mapped only where Tres Hermanos Formation or the Atarque Sandstone is present; mapped as Kdr in parts of Socorro County



Jsr **San Rafael Group** (Middle Jurassic)—Consists of Entrada Sandstone, Todilto and Summerville Formations, Bluff Sandstone, and locally Zuni Sandstone (or only Acoma Tongue of Zuni)

Kgc **Greenhorn Formation and Carlile Shale, undivided** (Turonian to Cenomanian)—Locally includes Graneros Shale

Kc **Carlile Shale** (Turonian)—Limited to northeastern area

Kgg **Greenhorn Formation and Graneros Shale** (Turonian and Cenomanian)—Limited to northeastern area

Kgh **Greenhorn Formation** (Turonian to Cenomanian)—Limited to northeastern area; the upper member (Bridge Creek Limestone Member) can be traced into western area where it is commonly shown as a bed-rank unit in Mancos Shale on detailed maps

Kgr **Graneros Shale** (Cenomanian)—Limited to northeastern area

Kmd **Intertongued Mancos Shale and Dakota Sandstone of west-central New Mexico** (Cenomanian)—Includes the Whitewater Arroyo Tongue of Mancos Shale and the Twowells Tongue of the Dakota

Kd **Dakota Sandstone** (Cenomanian)—Includes Oak Canyon, Cubero, and Paguate Tongues; includes Clay Mesa Tongue of Mancos Shale

Kdg **Upper and Lower Cretaceous rocks of east-central and northeast New Mexico**—Consists of Dakota Group, which includes Romeroville Sandstone (Cenomanian), Pajarito Shale, and Mesa Rica Sandstone (Albian); the underlying Tucumcari Shale (Albian) in Tucumcari area; and Glencairn Formation (Albian) in Union County

Kmb **Mancos Shale** (Cenomanian) **and Beartooth and Sarten Formations** (Albian)—Mancos includes what was formerly referred to as Colorado Shale, which in turn may include equivalents of Tres Hermanos Formation

Kl **Lower Cretaceous, undivided**—In northern Lea and Roosevelt Counties includes equivalents of Tucumcari Shale; in Cornudas Mountains includes Campagrande and Cox Formations and Washita Group; at Cerro de Cristo Rey includes several formations of the Fredericksburg and Washita Groups, and the Boquillas Formation (Cenomanian); in the southwest, includes Mojado, U-Bar (Aptian), and Hell-to-Finish Formations, which are equivalent to Bisbee Group of Arizona

JURASSIC

To compare this map nomenclature to the USGS nomenclature, see the diagram included on this sheet (at right)

J **Upper and Middle Jurassic rocks, undivided.** In southwest includes the basalt-bearing Broken Jug Formation

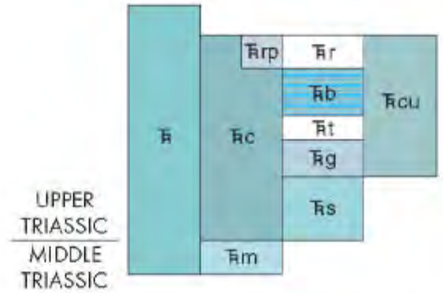
Jm **Morrison Formation**—Upper Jurassic nonmarine rocks

Jmsu **Morrison Formation and upper San Rafael Group** (lowermost Cretaceous?-upper Jurassic)

Jz **Zuni Sandstone** (Callovian)—Consists of undivided equivalents of the Summerville Formation and Bluff Sandstone; restricted to Zuni Basin area

Jze **Zuni and Entrada Sandstones, undivided**

Je **Entrada Sandstone** (Middle Jurassic)



TRIASSIC

Chinle Formation of previous workers (e.g., Stewart et al., 1972) is used here as Chinle Group, following Lucas (1993)

Tr **Triassic rocks, undivided**—Continental red beds

Trrp **Rock Point Formation of Chinle Group** (Upper Triassic)—May locally include Wingate Sandstone (Triassic)

Trc **Chinle Group** (Upper Triassic)—Map unit includes Moenkopi Formation (Middle Triassic) at base in many areas; in eastern part of state the following five formations are mapped:

Trr **Redonda Formation** (Upper Triassic)

Trb **Bull Canyon Formation** (Norian)

Trt **Trujillo Formation** (Norian)

Trg **Garita Creek Formation** (Carnian)

Trs **Santa Rosa Formation** (Carnian)—Includes Moenkopi Formation (Middle Triassic) at base in most areas

Trcu **Upper Chinle Group, Garita Creek through Redonda Formations, undivided**

Trm **Moenkopi Formation** (Middle Triassic)

Map Source: Geologic Map of New Mexico, 2003.

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FIGURE 5
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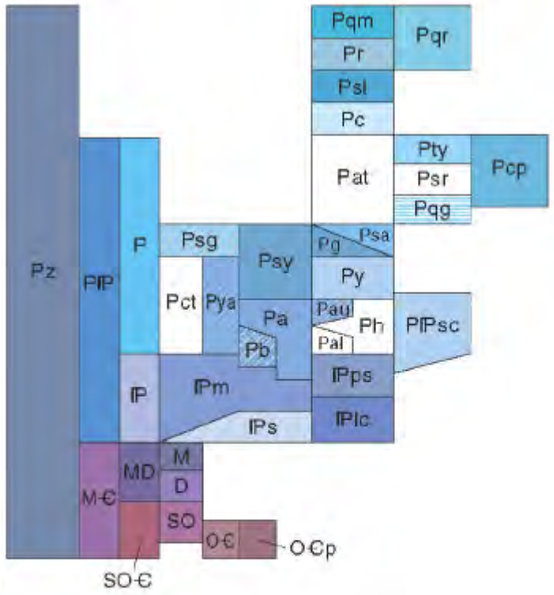

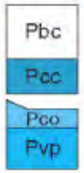

PALEOZOIC

Pz **Paleozoic rocks, undivided**

P **Permian rocks, undivided**

Pqm **Quartermaster Formation** (Upper Permian)—Red sandstone and siltstone

Pqr **Quartermaster and Rustler Formations** (Upper Permian)

Pr **Rustler Formation** (Upper Permian)—Siltstone, gypsum, sandstone, and dolomite

Psl **Salado Formation** (Upper Permian)—Evaporite sequence, dominantly halite

Pc **Castile Formation** (Upper Permian)—Dominantly anhydrite sequence

Pat **Artesia Group** (Guadalupian)—Shelf facies forming broad south-southeast trending outcrop from Glorieta to Artesia area; includes Tansill, Yates, Seven Rivers, Queen and Grayburg Formations (Guadalupian). May locally include Moenkopi Formation (Triassic) at top

Pty **Tansill and Yates Formations** (Guadalupian)—Sandstone, siltstone, limestone, dolomite, and anhydrite

Psr **Seven Rivers Formation** (Guadalupian)—Gypsum, anhydrite, salt, dolomite, and siltstone

Pqg **Queen and Grayburg Formations** (Guadalupian)—Sandstone, gypsum, anhydrite, dolomite, and red mudstone

Pcp **Capitan Formation** (Guadalupian)—Limestone (reef facies)

Pbc **Bell Canyon Formation** (Guadalupian)—Basin facies—sandstone, limestone, and shale

Pcc **Cherry Canyon Formation** (Guadalupian)—Basin facies—sandstone, limestone, and shale

Psa **San Andres Formation** (Guadalupian in south, in part Leonardian to north)—Limestone and dolomite with minor shale

Pg **Glorieta Sandstone** (Leonardian)—Texturally and mineralogically mature, high-silica quartz sandstone

Psg **San Andres Limestone and Glorieta Sandstone** (Guadalupian and Leonardian)

Pco **Cutoff Shale** (Leonardian)—In Brokeoff Mountains only

Pvp **Victorio Peak Limestone** (Leonardian)—In Brokeoff Mountains only

Py **Yeso Formation** (Leonardian)—Sandstones, siltstones, anhydrite, gypsum, halite, and dolomite

Pa **Abo Formation** (Wolfcampian)—Red beds, arkosic at base, finer and more mature above; may include limestone beds of Pennsylvanian age (Virgilian) in Zuni Mountains; in Robledo Mountains the Abo may be considered a member of the Hueco Formation

Pau **Upper part of Abo Formation** (Wolfcampian)

Pal **Lower part of Abo Formation** (locally Virgilian to Upper Pennsylvanian)

Psy **San Andres, Glorieta, and Yeso Formations, undivided**

Pya **Yeso and Abo Formations, undivided** (Lower Permian)

Pct **Cutler Formation** (Wolfcampian to Upper Pennsylvanian)—Used in northern areas and Chama embayment only

Ph **Hueco Formation or Group** (Wolfcampian)—Limestone unit restricted to south-central area. Pendejo Tongue of Hueco Formation divides Abo Formation into upper and lower parts in Sacramento Mountains

Pb **Bursum Formation** (lowermost Permian to uppermost Pennsylvanian)—Shale, arkose, and limestone

PIP **Permian and Pennsylvanian rocks, undivided**—Includes Concha, Scherrer, Colina, Epitaph, and Earp Formations (Permian) and Horquilla Limestone (Permian to Pennsylvanian)

PIPsc **Sangre de Cristo Formation** (Wolfcampian to Desmoinesian)—In Sangre de Cristo Mountains

IP **Pennsylvanian rocks, undivided**—In Sangre de Cristo Mountains may include Sandia, Madera, La Pasada, Alamitos, and Flechado Formations; elsewhere may include Bar-B, Nakaye, Red House, Oswaldo, and Syrena Formations

IPm **Madera Group** (Pennsylvanian)—In Manzano Mountains includes Wild Cow Formation and Los Moyos Limestone; in Lucero Mesa includes Red Tanks, Atrasado, Gray Mesa Formations; in Sacramento Mountains includes the non-Madera Holder, Beeman, and Gobbler Formations. May include strata lumped as Magdalena Group in a few areas

IPs **Sandia Formation** (Atokan)—Predominantly clastic unit (commonly arkosic) with minor black shales, and limestone in lower part; map unit locally includes Morrowan Osha Canyon Formation in Sierra Nacimiento

IPps **Panther Seep Formation** (Virgilian)—In Organ, Franklin, and San Andres Mountains

IPlc **Lead Camp Formation** (Atokan to Missourian)—In San Andres and Organ Mountains

M **Mississippian rocks, undivided**—Arroyo Peñasco Group in Sangre de Cristo Mountains, Sierra Nacimiento, San Pedro Mountains, and Sandia Mountains; Lake Valley Limestone in south-central New Mexico

MD **Mississippian and Devonian rocks, undivided**—Includes Helms, Rancheria, Las Cruces, Lake Valley, and Caballero Formations and Escabrosa Group (Mississippian); Percha Shale, Contadero, Sly Gap, and Oñate Formations of south-central New Mexico, and Canutillo Formation of northern Franklin Mountains and Bishops Cap area (Devonian)

M-C **Mississippian through Cambrian rocks, undivided**—Includes Lake Valley Limestone (Mississippian); Devonian rocks, undivided; El Paso Formation and Montoya Group or Formation (Ordovician); and Bliss Sandstone (Ordovician and Cambrian)

D **Devonian rocks undivided**—Includes Percha Shale, Oñate, and Sly Gap Formations

SO **Silurian and Ordovician rocks, undivided**

SO-C **Silurian through Cambrian rocks, undivided**

O-C **Ordovician and Cambrian rocks, undivided**—Includes Montoya Formation (or Group), El Paso Formation, and Bliss Sandstone

O-Cp **Ordovician and Cambrian plutonic rocks of Florida Mountains**

Map Source: Geologic Map of New Mexico, 2003.

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FIGURE 5
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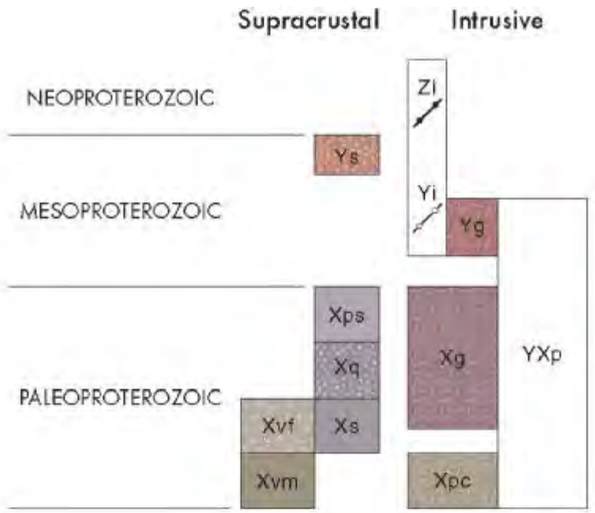

MAP SYMBOLS

- Contact
- Nomenclature change
- Gradational facies boundary
- Fault–Dashed where approximately located, dotted where concealed
- Tertiary dikes
- Proterozoic dikes
- Proterozoic ductile shear zone
- Playa

PROTEROZOIC

Zi **Neoproterozoic mafic dikes**–Exposed in Taos Range

Yi **Mesoproterozoic mafic dikes, diabase, metadiabase, metadiorite**–Mainly in Burro Mountains; age not well constrained

Ys **Mesoproterozoic sedimentary rocks**–Exposed in Sacramento Mountains, present in subsurface in southeastern New Mexico as De Baca Group

Yg **Mesoproterozoic granitic plutonic rocks**–Mainly 1.45-1.35 Ga megacrystic granites, generally weakly foliated except locally at their margins

YXp **Mesoproterozoic and Paleoproterozoic plutonic rocks, undivided**

Xg **Paleoproterozoic granitic plutonic rocks**–Variably foliated granites and granitic gneisses; 1.71-1.65 Ga in northern New Mexico; 1.66-1.65 Ga in central and southern New Mexico

Xps **Paleoproterozoic pelitic schist**–Includes Rinconada Formation in northern New Mexico and Blue Springs Schist in Manzano Mountains

Xq **Paleoproterozoic quartzite**–Includes ~1.70 Ga Ortega Quartzite and equivalents in northern New Mexico and ~1.67 Ga quartzites in central New Mexico

Xs **Paleoproterozoic metasedimentary rocks**–Pelitic schist, quartz-muscovite schist, immature quartzite, and subordinate amphibolite; includes parts of Vadito Group in northern New Mexico, immature metasedimentary rocks of central New Mexico, and Bullard Peak Series mixed supracrustal rocks in Burro Mountains

Xvf **Paleoproterozoic rhyolite and felsic volcanic schist**–Includes 1.70 Ga Vadito Group in northern New Mexico and ~1.68 Ga Sevilleta Metarhyolite in central New Mexico

Xpc **Paleoproterozoic calc-alkaline plutonic rocks**–Granodiorite, diorite, and gabbro complexes; 1.78-1.71 Ga; interpreted to be intrusive part of juvenile volcanic arc basement

Xvm **Paleoproterozoic mafic metavolcanic rocks with subordinate felsic metavolcanic rocks**–Includes the 1.78-1.72 Ga Moppin (Tusas Mountains), Gold Hill (Taos Range), and Pecos (Sangre de Cristo Mountains) complexes; interpreted to be supracrustal part of juvenile volcanic arc basement

Map Source: Geologic Map of New Mexico, 2003.

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 4/16/19 | FILE: Mathon-dB148

FIGURE 5
LEGEND SHEET 7 OF 8
GEOLOGIC MAP OF NEW MEXICO
GALLUP REFINERY

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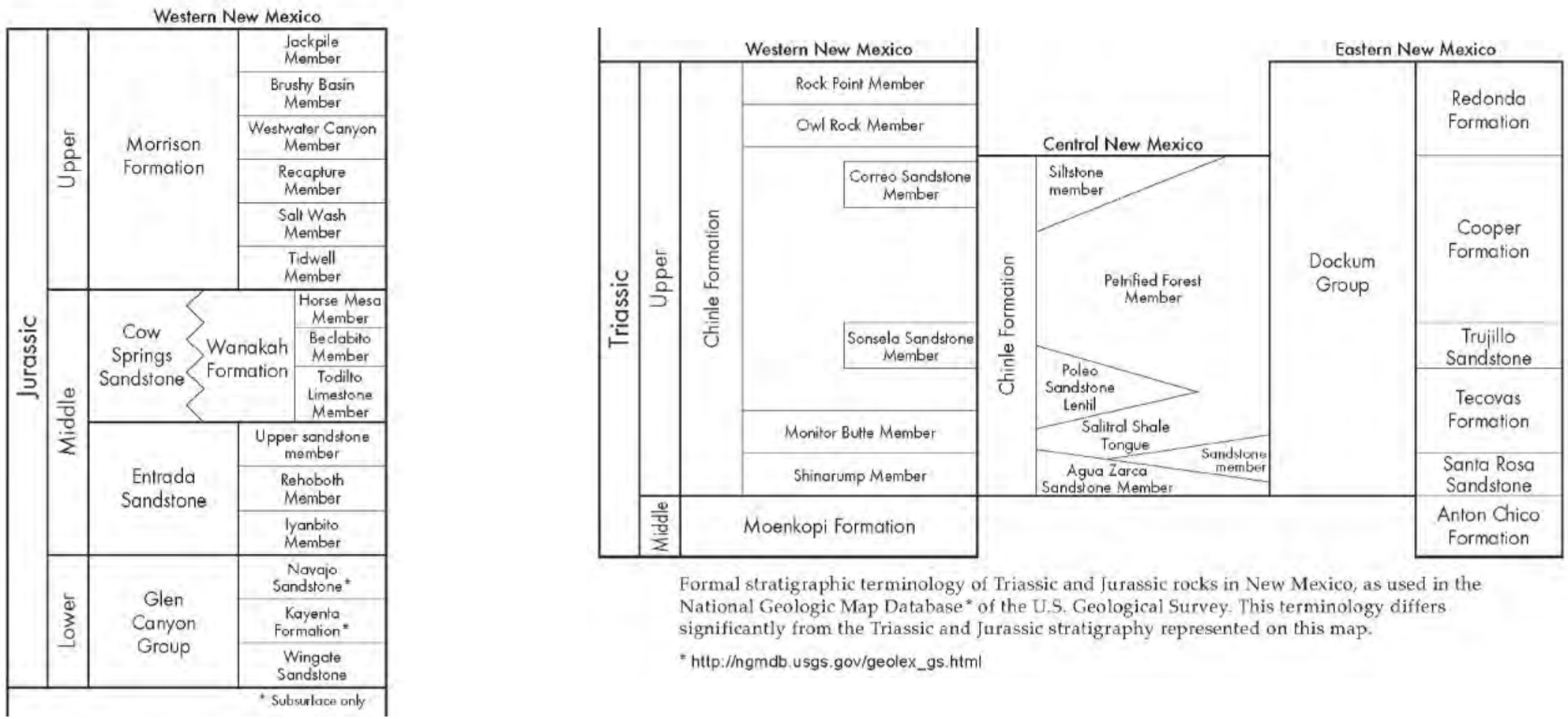
Suite 300
Austin, Texas 78759



Formal stratigraphic terminology of Triassic and Jurassic rocks in New Mexico, as used in the National Geologic Map Database* of the U.S. Geological Survey. This terminology differs significantly from the Triassic and Jurassic stratigraphy represented on this map.

* http://ngmdb.usgs.gov/geolex_gs.html

Map Source: Geologic Map of New Mexico, 2003.

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 4/16/19 | FILE: Mathon-dB148

FIGURE 5
LEGEND SHEET 8 OF 8
GEOLOGIC MAP OF NEW MEXICO
GALLUP REFINERY

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NORTH
A

SOUTH
A'

ELEVATION (FT MSL)

6892
6888
6884
6880
6876
6872
6868
6864

SWMU 13-1
SWMU 13-2
SWMU 13-3
SWMU 13-4
SWMU 13-5
SWMU 13-6
SWMU 13-7

SILT, CLAYEY
CLAY, SILTY
CLAY
SILTY
SAND, CLAYEY
SAND, CLAYEY
CLAY, SANDY
SAND
CLAY
MOIST TO SATURATED AT BASE
CLAY
SILTY
SANDY, SATURATED
SAND, CLAYEY, SATURATED
SILT, CLAYEY
CLAY
SILTY
SAND, CLAYEY
CLAY, SILTY
SAND, SATURATED
SILTY
CLAY
SILT
CLAY
CLAYEY
SILTY
SAND, SATURATED
SILTY
CLAY
SILTY
CLAY, SILTY
SILT, CLAYEY
SAND, SATURATED
CLAY
CLAYEY
SILTY
SAND, SATURATED
SAND, SILTY, SATURATED

LEGEND

SWMU 13-1 ← SOIL BORING / TEMPORARY WELL IDENTIFICATION

BORING / WELL

POTENTIOMETRIC SURFACE (NOVEMBER 2019)

WELL SCREEN

4
0
40
SCALE IN FEET
VERTICAL EXAGGERATION = 10X

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 01/22/20 | FILE: Mathon-dB237

FIGURE 6
CROSS SECTION A - A'

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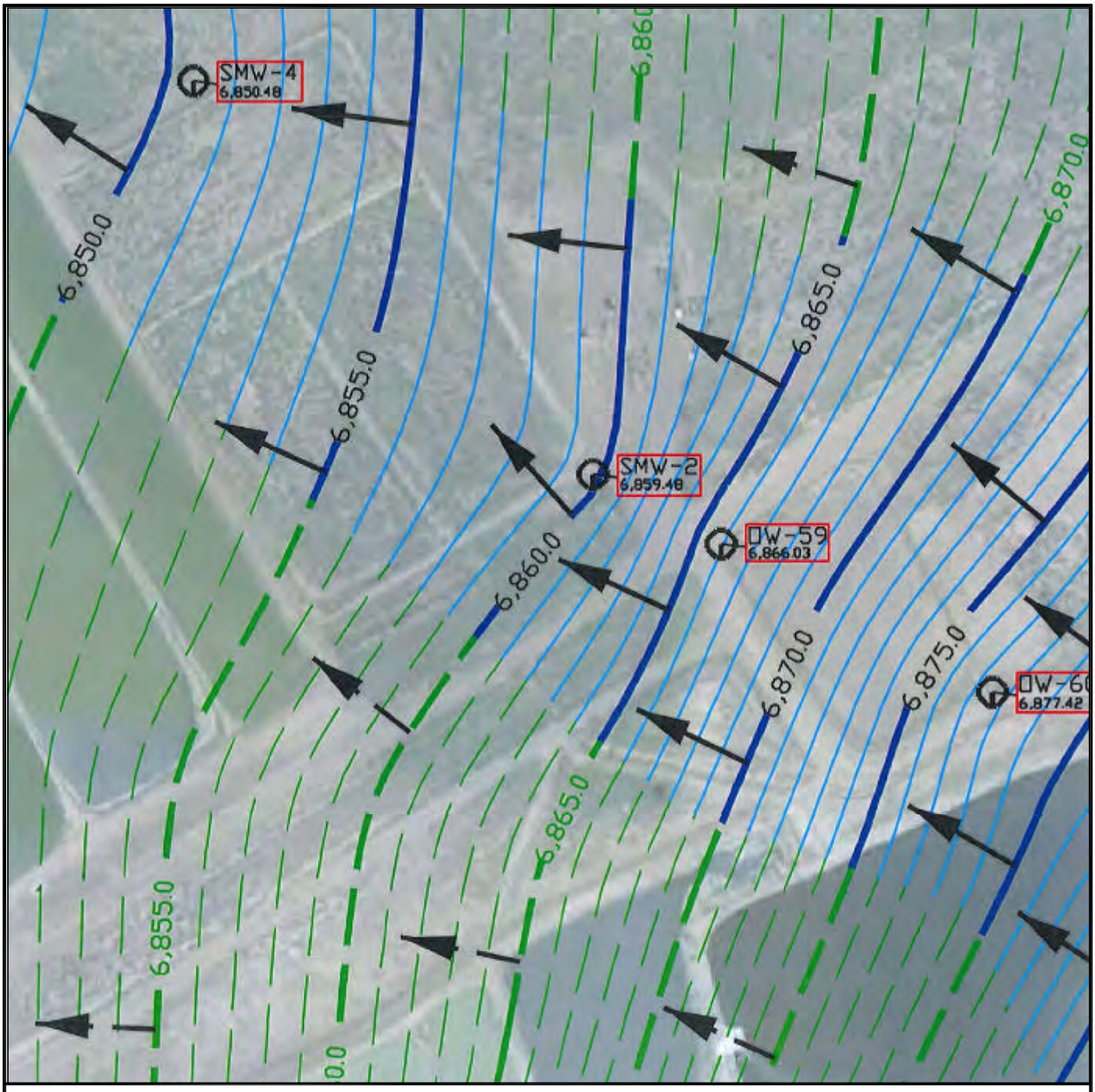

Map Source: Intertek psi, Figure 10 2018 Annual Ground Water Monitoring Report, Marathon Gallup Refinery.

NOT TO SCALE

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon	DATE: 01/19/20	FILE: Mathon-dA177

FIGURE 7
AUGUST 2018
POTENTIOMETRIC SURFACE MAP

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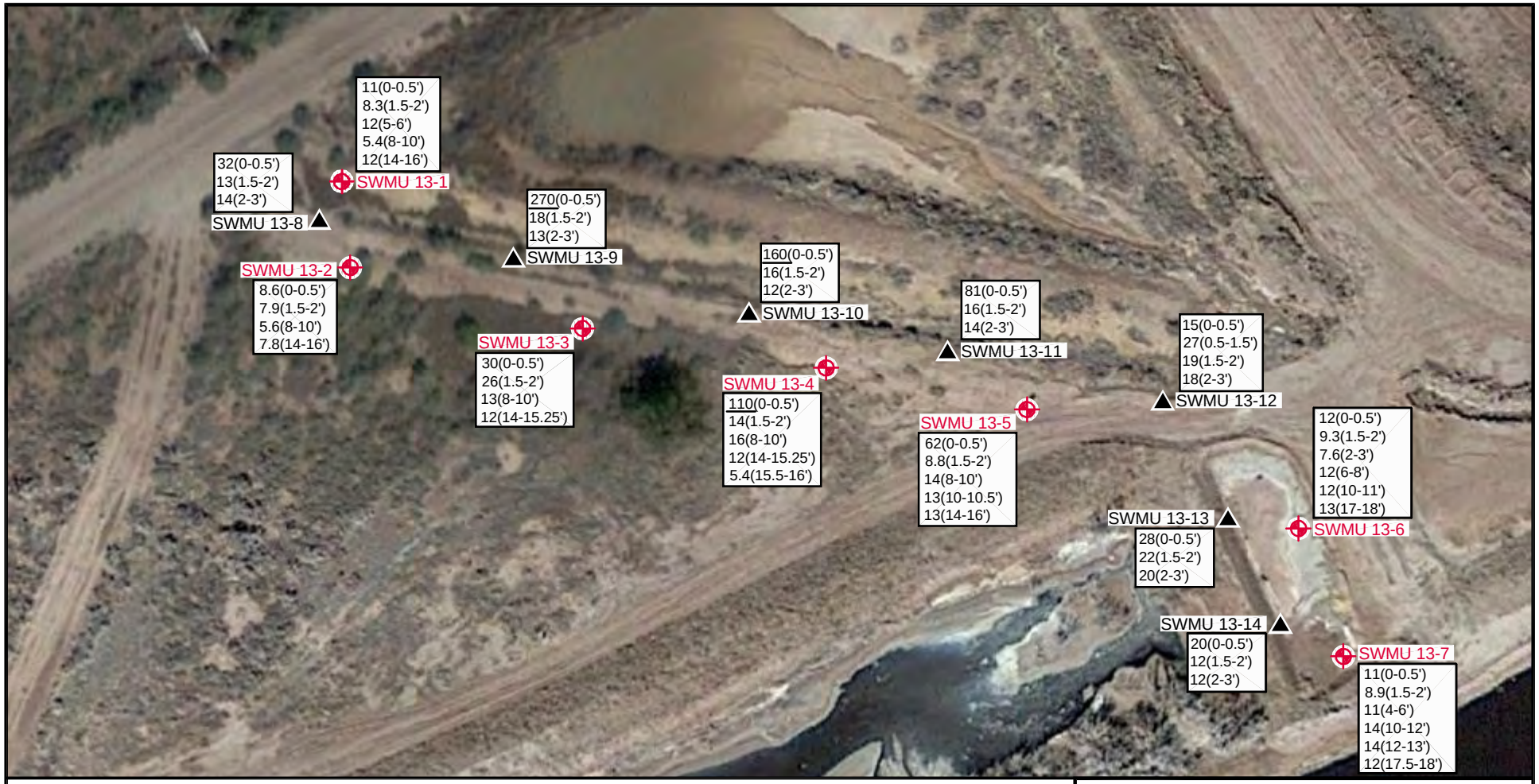

Aerial Map Source: Google Map, 10/06/2016.

LEGEND

SWMU 13-8 ▲	HAND AUGER BORING LOCATION
SWMU 13-1 ⊕	SOIL BORING / TEMPORARY WELL LOCATION
11(0-0.5')	CHROMIUM (TOTAL) CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
96.6	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL

N

0 50

SCALE IN FEET

SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 01/19/20 | FILE: Mathon-dA178

FIGURE 8
CHROMIUM (TOTAL) SOILS CONCENTRATION MAP

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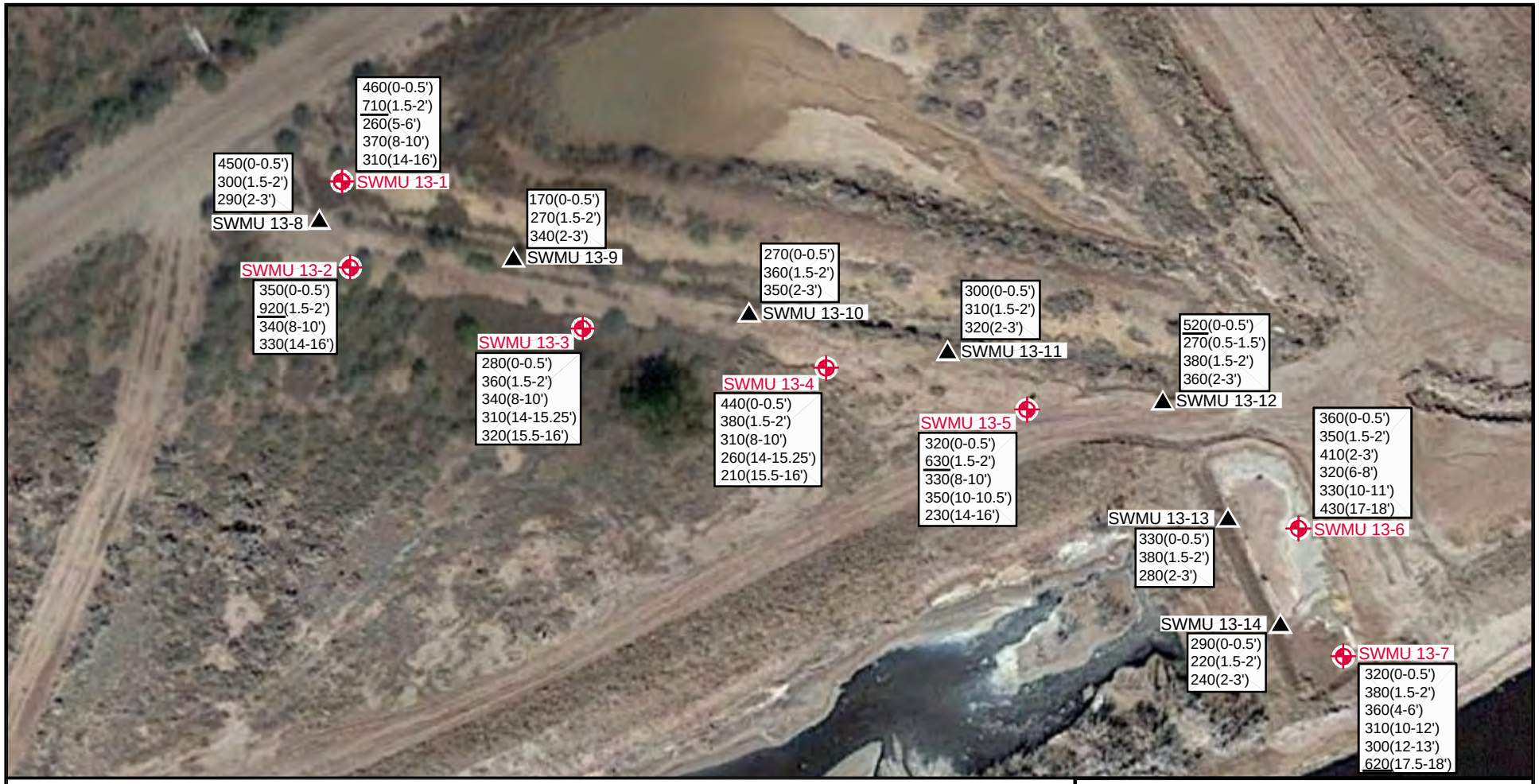
Suite 300
Austin, Texas 78759



Aerial Map Source: Google Map, 10/06/2016.

LEGEND

SWMU 13-8 ▲ HAND AUGER BORING LOCATION

SWMU 13-1 ⊕ SOIL BORING / TEMPORARY WELL LOCATION

170(0-0.5') MANGANESE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)

464 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL

N

0 50

SCALE IN FEET

NEW MEXICO

SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 01/20/20 | FILE: Mathon-dA179

FIGURE 9
MANGANESE SOILS CONCENTRATION MAP

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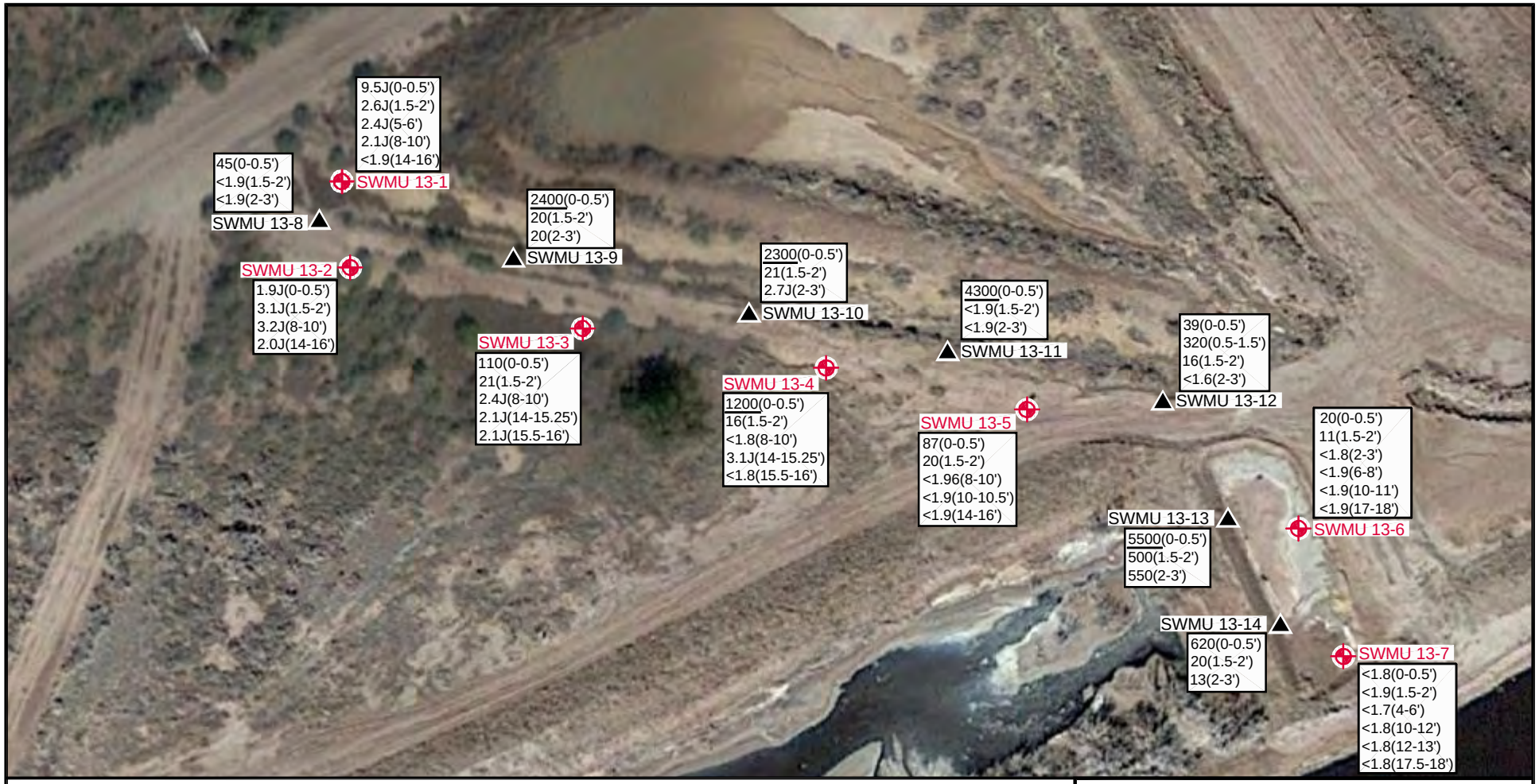
Suite 300
Austin, Texas 78759



Aerial Map Source: Google Map, 10/06/2016.

LEGEND

SWMU 13-8 ▲ HAND AUGER BORING LOCATION

SWMU 13-1 ⊕ SOIL BORING / TEMPORARY WELL LOCATION

45(0-0.5') DIESEL RANGE ORGANICS CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)

1000 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL

N

0 50

SCALE IN FEET

SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 01/20/20 | FILE: Mathon–dA180

FIGURE 10
DIESEL RANGE ORGANICS SOILS
CONCENTRATION MAP

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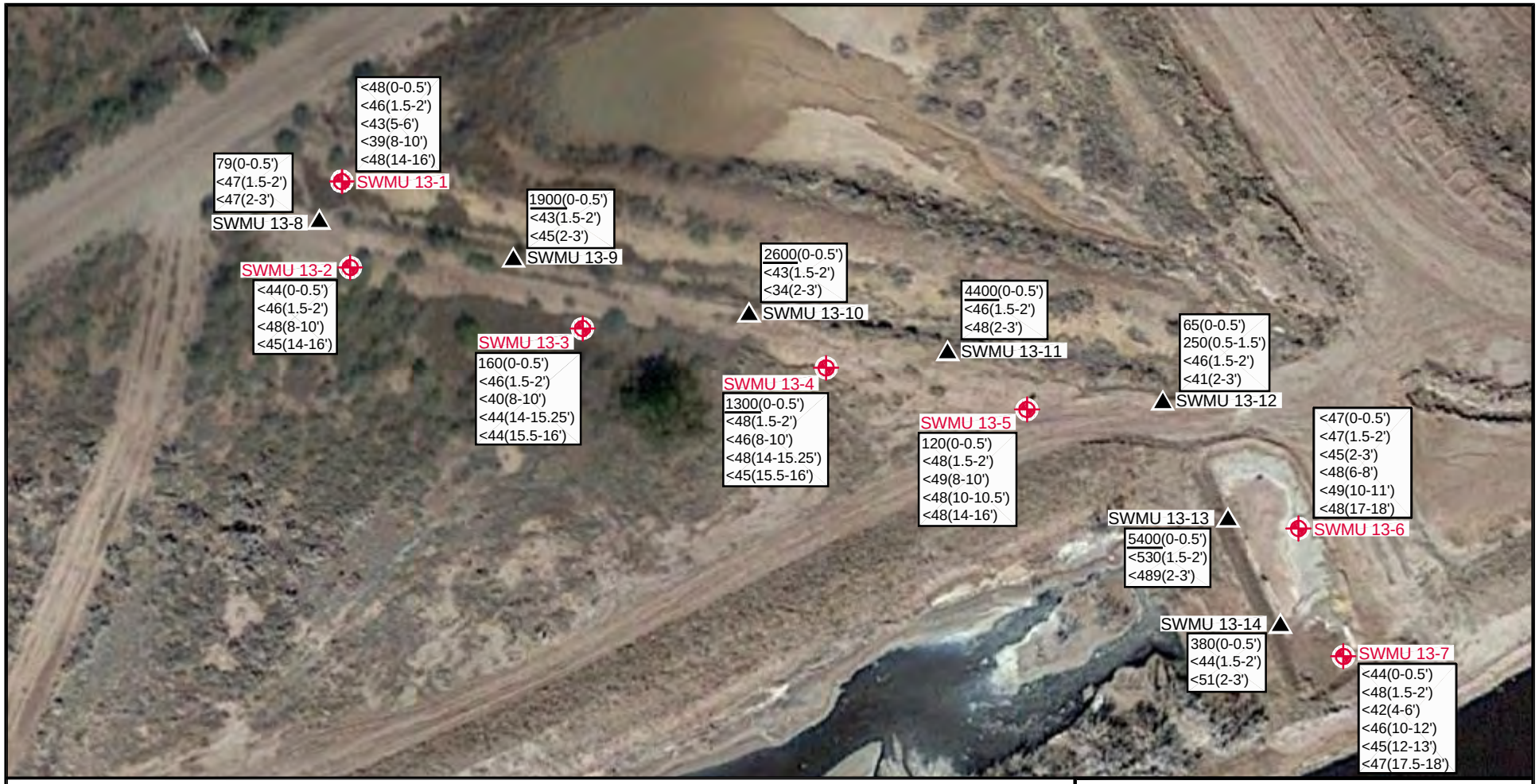
Suite 300
Austin, Texas 78759



Aerial Map Source: Google Map, 10/06/2016.

LEGEND

SWMU 13-8 ▲	HAND AUGER BORING LOCATION
SWMU 13-1 ⊕	SOIL BORING / TEMPORARY WELL LOCATION
160(0-0.5')	MOTOR OIL RANGE ORGANICS CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
1000	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL

N

0 50

SCALE IN FEET

NEW MEXICO

SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 01/20/20 | FILE: Mathon-dA181

FIGURE 11
MOTOR OIL RANGE ORGANICS SOILS
CONCENTRATION MAP

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Suite 300
Austin, Texas 78759

Aerial Map Source: Google Map, 10/06/2016.

LEGEND

SWMU 13-8 ▲ HAND AUGER BORING LOCATION

SWMU 13-1 ⊕ SOIL BORING / TEMPORARY WELL LOCATION

10 ARSENIC CONCENTRATION, µg/L
4 BERYLLIUM CONCENTRATION, µg/L
1000 IRON CONCENTRATION, µg/L
15 LEAD CONCENTRATION, µg/L

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL

N

0 50

SCALE IN FEET

SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 01/21/20 | FILE: Mathon-dA182

FIGURE 12
ARSENIC, BERYLLIUM, IRON AND LEAD TOTAL GROUNDWATER CONCENTRATION MAP

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Suite 300
Austin, Texas 78759

Aerial Map Source: Google Map, 10/06/2016.

LEGEND

SWMU 13-8 ▲ HAND AUGER BORING LOCATION

SWMU 13-1 ⊕ SOIL BORING / TEMPORARY WELL LOCATION

200 MANGANESE (TOTAL) CONCENTRATION, μg/L
250,000 CHLORIDE CONCENTRATION, μg/L
600,000 SULFATE CONCENTRATION, μg/L
1600 FLUORIDE CONCENTRATION, μg/L

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL

N

0 50
SCALE IN FEET

SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 01/21/20 | FILE: Mathon-dA183

FIGURE 13
MANGANESE (TOTAL), CHLORIDE, SULFATE AND FLUORIDE GROUNDWATER CONCENTRATION MAP

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Environmental Consulting Firm
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Suite 300
Austin, Texas 78759

Aerial Map Source: Google Map, 10/06/2016.

LEGEND

SWMU 13-8 ▲ HAND AUGER BORING LOCATION

SWMU 13-1 ⊕ SOIL BORING / TEMPORARY WELL LOCATION

10 ARSENIC CONCENTRATION, µg/L
1000 IRON CONCENTRATION, µg/L
200 MANGANESE CONCENTRATION, µg/L

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL

N

0 50
SCALE IN FEET

NEW MEXICO
SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 01/21/20 | FILE: Mathon-dA184

FIGURE 14
ARSENIC, IRON AND MANGANESE DISSOLVED GROUNDWATER CONCENTRATION MAP

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Suite 300
Austin, Texas 78759

Aerial Map Source: Google Map, 10/06/2016.

LEGEND

SWMU 13-8 ▲ HAND AUGER BORING LOCATION

SWMU 13-1 ⊕ SOIL BORING / TEMPORARY WELL LOCATION

10.1 GASOLINE RANGE ORGANICS CONCENTRATION, µg/L
85.8 DIESEL RANGE ORGANICS CONCENTRATION, µg/L

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL

N

0 50
SCALE IN FEET

SITE LOCATION

MARATHON PETROLEUM COMPANY
GALLUP REFINERY

PROJ. NO.: Marathon | DATE: 01/21/20 | FILE: Mathon-dA185

FIGURE 15
GASOLINE RANGE ORGANICS AND DIESEL RANGE ORGANICS GROUNDWATER CONCENTRATION MAP

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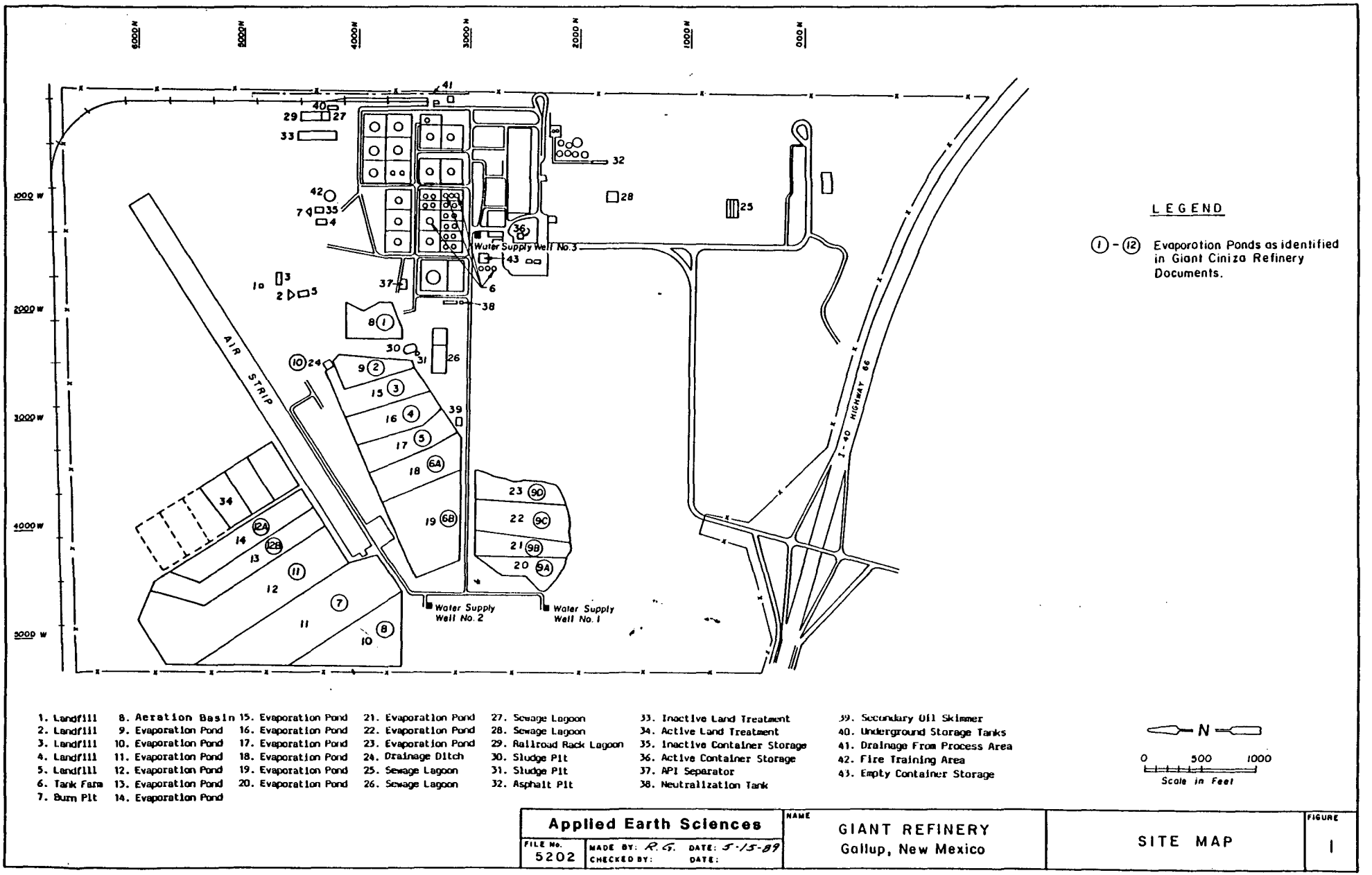
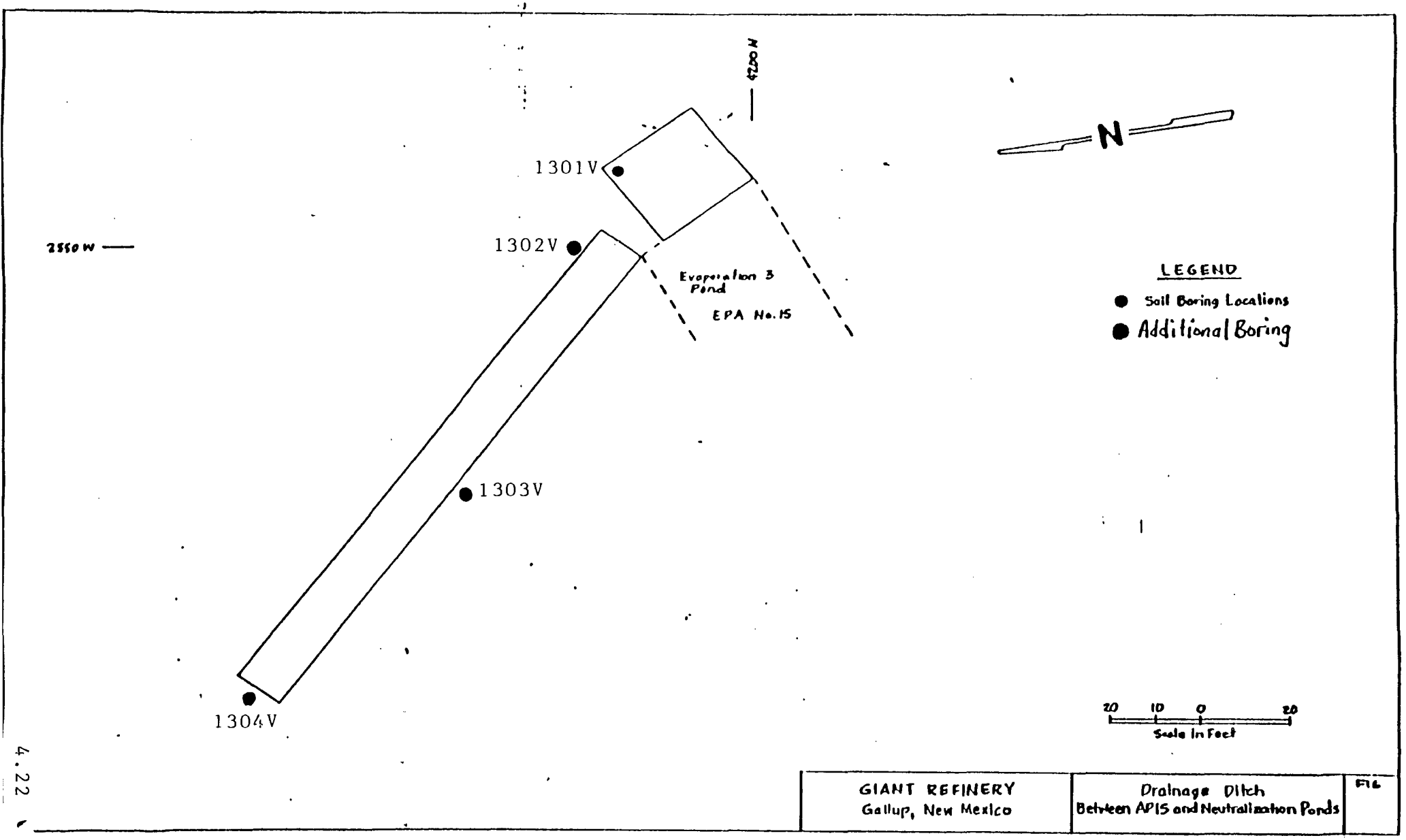
Suite 300
Austin, Texas 78759

Appendix A
1991 RFI Sampling Information



Applied Earth Sciences		NAME		FIGURE
FILE No. 5202	MADE BY: R.G. DATE: 5-15-89 CHECKED BY: DATE:	GIANT REFINERY Gallup, New Mexico	SITE MAP	1

FIGURE 4.4


4750 N
2550 W
1301V
1302V
1303V
1304V
Evaporation 3 Pond
EPA No. 15
N
LEGEND
Soil Boring Locations
Additional Boring
20 10 0 20
Scale in Feet
GIANT REFINERY
Gallup, New Mexico
Drainage Ditch
Between API 5 and Neutralization Ponds
FIG

SWMU #13

PHASE II, RFI 1991
GIANT REFINING
CINIZA

METALS

SAMPLE POINT NUMBER		01	01	02	02	03	03	04	04	04	02
SAMPLE POINT DEPTH		V2.0	V3.5	V2.0	V3.5	V2.0	V3.5	V2.0	V3.5	D3.5	E2.0 (mg/l)
PARAMETER	UNITS										
Antimony	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.05
Arsenic	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.005
Barium	mg/kg	281	287	244	377	244	312	266	250	262	<0.010
Beryllium	mg/kg	2.4	3.6	4.3	3.2	4.1	4.3	4.3	4.6	4.9	<0.005
Cadmium	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.005
Chromium	mg/kg	4.5	5.2	6.0	5.1	5.2	5.3	7.1	6.4	6.5	<0.010
Cobalt	mg/kg	4.4	5.5	5.1	5.0	6.0	5.1	5.9	5.3	5.2	<0.010
Copper	mg/kg	4.6	4.1	4.4	5.4	5.3	4.9	5.5	4.9	5.1	<0.010
Lead	mg/kg	10	10	12	10	11	12	10	9	11	<0.002
Mercury	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0002
Nickel	mg/kg	8.5	8.9	9.0	9.2	10.9	8.9	11.3	9.6	9.1	<0.020
Potassium	mg/kg	1080	1200	1720	1190	1680	1270	1830	2370	2190	<1.0
Selenium	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.005
Vanadium	mg/kg	10.0	11.5	12.3	9.3	12.1	12.0	10.0	12.2	12.6	<0.010
Zinc	mg/kg	9.7	12.4	14.3	13.0	14.6	12.6	16.1	15.3	14.1	0.014

SWMU #13

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 VOLATILE ORGANICS

SAMPLE POINT NUMBER		01	01	02	02	03	03	04	04	04	02
SAMPLE POINT DEPTH		V2.0	V3.5	V2.0	V3.5	V2.0	V3.5	V2.0	V3.5	D3.5	E2.0 (ug/l)
PARAMETER	UNITS										
Carbon Sulfide	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,2-Dichloroethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
2-Chloroethyl vinyl ether	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Chlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Ethylbenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
2-Butanone (MEK)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Styrene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Xylenes (total)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,4-Dioxane	mg/kg	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<10
1,2-Dibromoethane (EDB)	mg/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5

SWMU #13

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS

SAMPLE POINT NUMBER		01	01	02	02	03	03	04	04	04	02
SAMPLE POINT DEPTH		V2.0	V3.5	V2.0	V3.5	V2.0	V3.5	V2.0	V3.5	D3.5	E2.0 (ug/l)
PARAMETER	UNITS										
Anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	0.17	<0.17	<5
Benzenethiol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	0.17	<0.17	<5
Benzo(a)anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzo(b)fluoranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzo(k)fluoranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzo(a)pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Butyl benzyl phthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Chrysene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Dibenz(a,h)anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Di-n-butyl phthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1,2-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1,3-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1,4-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Diethyl phthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
7,12-Dimethylbenz(a)-anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2,4-Dimethylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Dimethyl phthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2,4-Dinitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
Fluoranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Naphthalene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
4-Nitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
Phenanthrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Phenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Methylchrysene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1-Methylnaphthalene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
3-Methyl Phenol	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pyridine	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Quinoline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25

Appendix B

1996 Sampling Information

GIANT REFINERY
Gallup, New Mexico
Drainage Ditch
Between API5 and Neutralization Ponds
FIG
LEGEND
Soil Boring Locations
N
20
0
10
20
Scale in Feet
Evaporation 3
Pond
EPA No. 15
4200 N
2550 W
RFI 1302 A6
RFI 1301 A6
RFI 1303 A6

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

TRACE METAL CONCENTRATION

Client:	**Giant Refining Company**	Date Reported:	11/14/96
Project:	Ciniza Refinery	Date Sampled:	10/24/96
Sample ID:	RFI 1301 A6	Date Received:	10/25/96
Matrix:	Soil		
Condition:	Intact		
Lab ID:	0396G02343		

Parameter	Result (mg/Kg)	Detection Limit (mg/Kg)	Method
Arsenic	<0.25	0.25	SW-846-7000
Barium	119	0.50	SW-846 6010
Cadmium	<0.05	0.05	SW-846 6010
Chromium	4.45	0.50	SW-846 6010
Cobalt	2.25	0.50	SW-846 6010
Copper	2.05	0.50	SW-846 6010
Selenium	<0.250	0.250	SW-846-7000
Lead	4.60	2.50	SW-846-6010
Mercury	<0.050	0.050	SW-846 7171A
Nickel	4.05	0.50	SW-846 6010
Antimony	<0.250	0.250	SW-846 6010
Vanadium	6.90	0.50	SW-846 6010
Zinc	6.40	2.50	SW-846 6010
Beryllium	4.750	0.200	SW-846 6010

References: Method 3050: Acid Digestion for Sediments, Sludges, and Soil, SW-846, Rev. 1, July 1992.

Reported By: _____ Reviewed By: _____

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

TRACE METAL CONCENTRATION

Client:	**Giant Refining Company**	Date Reported:	11/14/96
Project:	Ciniza Refinery	Date Sampled:	10/24/96
Sample ID:	RFI 1302 A6	Date Received:	10/25/96
Matrix:	Soil		
Condition:	Intact		
Lab ID:	0396G02344		

Parameter	Result (mg/Kg)	Detection Limit (mg/Kg)	Method
Arsenic	<0.25	0.25	SW-846-7000
Barium	84.5	0.50	SW-846 6010
Cadmium	<0.05	0.05	SW-846 6010
Chromium	5.15	0.50	SW-846 6010
Cobalt	2.60	0.50	SW-846 6010
Copper	2.30	0.50	SW-846 6010
Selenium	<0.250	0.250	SW-846-7000
Lead	5.55	2.50	Sw-846-6010
Mercury	<0.050	0.050	SW-846 7171A
Nickel	4.60	0.50	SW-846 6010
Antimony	<0.250	0.250	SW-846 6010
Vanadium	8.05	0.50	SW-846 6010
Zinc	7.30	2.50	SW-846 6010
Beryllium	6.00	0.200	SW-846 6010

References: Method 3050: Acid Digestion for Sediments, Sludges, and Soil, SW-846, Rev. 1, July 1992.

Reported By: _____ Reviewed By: _____

Inter-Mountain Laboratories, Inc.

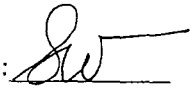
2506 W. Main Street
Farmington, New Mexico 87401

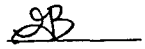
TRACE METAL CONCENTRATION

Client:	**Giant Refining Company**	Date Reported:	11/14/96
Project:	Ciniza Refinery	Date Sampled:	10/24/96
Sample ID:	RFI 1303 A6	Date Received:	10/25/96
Matrix:	Soil		
Condition:	Intact		
Lab ID:	0396G02345		

Parameter	Result (mg/Kg)	Detection Limit (mg/Kg)	Method
Arsenic	<0.25	0.25	SW-846-7000
Barium	93.5	0.50	SW-846 6010
Cadmium	<0.05	0.05	SW-846 6010
Chromium	4.90	0.50	SW-846 6010
Cobalt	2.55	0.50	SW-846 6010
Copper	2.55	0.50	SW-846 6010
Selenium	<0.250	0.250	Sw-846-7000
Lead	5.00	2.50	SW-846-6010
Mercury	<0.050	0.050	SW-846 7171A
Nickel	4.50	0.50	SW-846 6010
Antimony	<0.250	0.250	SW-846 6010
Vanadium	7.55	0.50	SW-846 6010
Zinc	7.30	2.50	SW-846 6010
Beryllium	0.590	0.200	SW-846 6010

References: Method 3050: Acid Digestion for Sediments, Sludges, and Soil, SW-846, Rev. 1, July 1992.

Reported By: 

Reviewed By: 

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control / Quality Assurance

Spike Analysis / Blank Analysis

TOTAL METALS

Client: Giant Refining Company
Project: Ciniza Refinery
Sample Matrix: soil

Date Reported: 11/14/96
Date Analyzed: 11/13/96
Date Received: 10/25/96

Spike Analysis

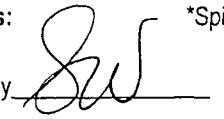
Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Antimony	0.506	0.500	0.500	101%
Arsenic*	*	*	*	*
Barium	0.55	0.50	0.50	98%
Cadium*	*	*	*	*
Chromium	0.53	0.50	0.50	106%
Lead	0.51	0.500	0.50	102%
Mercury	0.520	0.50	0.500	96%
Selenium	0.022	0.025	0.025	114%
Beryllium	0.52	0.50	0.50	104%
Cobalt	0.52	0.50	0.50	104%
Copper	0.52	0.50	0.50	104%
Nickel	0.50	0.50	0.50	101%
Vanadium	0.53	0.50	0.500	107%
Zinc	0.57	0.50	0.50	88%

Method Blank Analysis

Parameter	Result	Detection Limit	Units
Antimony	ND	0.25	mg/L
Arsenic	ND	0.25	mg/L
Barium	ND	0.50	mg/L
Cadmium	ND	0.25	mg/L
Chromium	ND	0.50	mg/L
Lead	ND	0.75	mg/L
Mercury	ND	0.05	mg/L
Selenium	ND	0.25	mg/L
Silver	ND	0.50	mg/L
Beryllium	ND	0.20	mg/L
Cobalt	ND	0.50	mg/L
Copper	ND	0.50	mg/L
Nickel	ND	0.5	mg/L
Vanadium	ND	0.50	mg/L

References: Method 3050: Acid Digestion for Sediments, Sludges, and Soil SW-846, Rev. 1, July 1992.

Comments: *Spikes did not recover due to matrix interferences.

Reported by 

Reviewed by 

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control / Quality Assurance

Known Analysis
TOTAL METALS

Client:	Giant Refining Company	Date Reported:	11/14/96
Project:	Ciniza Refinery	Date Analyzed:	11/13/96
Sample Matrix:	soil	Date Received:	10/25/96

Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Antimony	1.06	1.00	106%	mg/L
Arsenic	0.010	0.010	100%	mg/L
Barium	1.07	1.00	107%	mg/L
Cadmium	1.08	1.00	108%	mg/L
Chromium	1.06	1.00	106%	mg/L
Lead	1.03	1.00	103%	mg/L
Mercury	0.004	0.004	103%	mg/L
Selenium	0.010	0.010	100%	mg/L
Silver	0.49	0.50	98%	mg/L
Beryllium	1.00	1.00	100%	mg/L
Cobalt	1.01	1.00	101%	mg/L
Copper	1.04	1.00	104%	mg/L
Nickel	0.99	1.00	99%	mg/L
Vanadium	1.00	1.00	100%	mg/L

References: Method 3050: Acid Digestion for Sediments, Sludges, and Soil, SW-846, Rev. 1, July 1992.

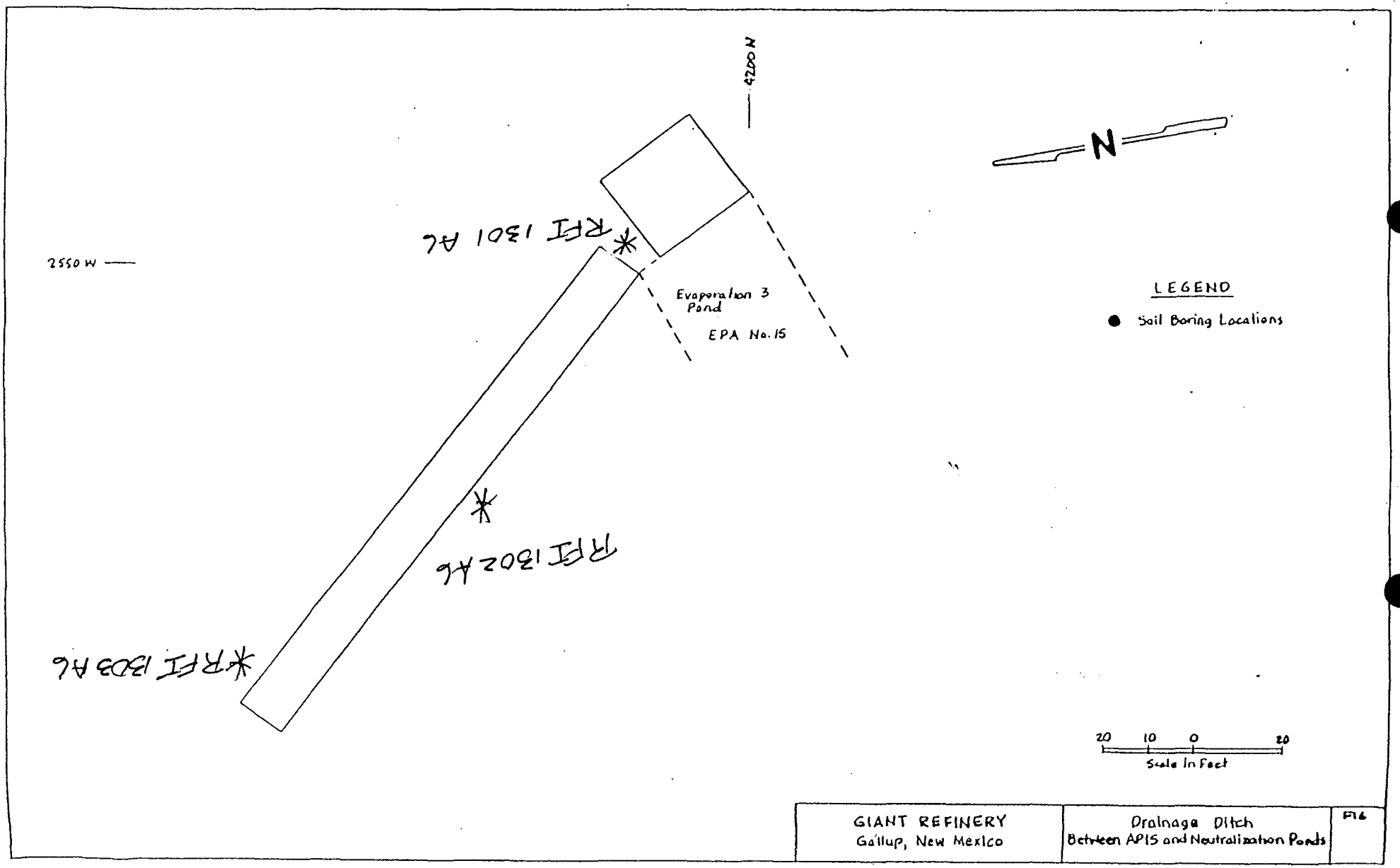
Reported by _____

Reviewed by _____

TABLE -1
BACKGROUND METALS

Total Metals

Parameter	Analytical Method	Reporting Limit mg/kg
Antimony	6010	6.0
Arsenic	7060	0.5
Barium	6010	1.0
Beryllium	6010	0.2
Cadmium	6010	0.5
Chromium	6010	1.0
Cobalt	6010	1.0
Copper	6010	2.0
Lead	6010	5.0
Mercury	7471	0.2
Nickel	6010	4.0
~~Potassium~~ not requested	6010	500
Selenium	7740	0.5
Vanadium	6010	1.0
Zinc	6010	2.0



GIANT REFINERY Gallup, New Mexico	Drainage Ditch Between API S and Neutralization Ponds	F16

Inter-Mountain Laboratories, Inc.
1160 Research Drive
Bozeman, Montana 59715

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY
Sample ID: RFI 1301 A6
Project ID: Ciniza
Lab ID: B969762 0396G02343
Matrix: Soil

Date Reported: 11/07/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,1-Trichloroethane	ND	0.2	mg/kg
1,1,2,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,2-Trichloroethane	ND	0.2	mg/kg
1,1-Dichloroethane	ND	0.2	mg/kg
1,1-Dichloroethene	ND	0.2	mg/kg
1,1-Dichloropropene	ND	0.2	mg/kg
1,2,3-Trichlorobenzene	ND	0.2	mg/kg
1,2,3-Trichloropropane	ND	0.2	mg/kg
1,2,4-Trichlorobenzene	ND	0.2	mg/kg
1,2,4-Trimethylbenzene	ND	0.2	mg/kg
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.2	mg/kg
1,2-Dibromoethane (EDB)	ND	0.2	mg/kg
1,2-Dichlorobenzene	ND	0.2	mg/kg
1,2-Dichloroethane	ND	0.2	mg/kg
1,2-Dichloropropane	ND	0.2	mg/kg
1,3,5-Trimethylbenzene	ND	0.2	mg/kg
1,3-Dichlorobenzene	ND	0.2	mg/kg
1,3-Dichloropropane	ND	0.2	mg/kg
1,4-Dichlorobenzene	ND	0.2	mg/kg
2,2-Dichloropropane	ND	0.2	mg/kg
2-Chlorotoluene	ND	0.2	mg/kg
4-Chlorotoluene	ND	0.2	mg/kg
4-Isopropyltoluene	ND	0.2	mg/kg
Benzene	ND	0.2	mg/kg
Bromobenzene	ND	0.2	mg/kg
Bromochloromethane	ND	0.2	mg/kg
Bromodichloromethane	ND	0.2	mg/kg
Bromoform	ND	0.2	mg/kg
Bromomethane	ND	0.2	mg/kg

Continued

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Bozeman, Montana 59715

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY
Sample ID: RFI 1301 A6
Project ID: Ciniza
Lab ID: B969762 0396G02343
Matrix: Soil

Date Reported: 11/07/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Carbon Tetrachloride	ND	0.2	mg/kg
Chlorobenzene	ND	0.2	mg/kg
Chloroethane	ND	0.2	mg/kg
Chloroform	ND	0.2	mg/kg
Chloromethane	ND	0.2	mg/kg
cis-1,2-Dichloroethene	ND	0.2	mg/kg
cis-1,3-Dichloropropene	ND	0.2	mg/kg
Dibromochloromethane	ND	0.2	mg/kg
Dibromomethane	ND	0.2	mg/kg
Dichlorodifluoromethane	ND	0.2	mg/kg
Ethylbenzene	ND	0.2	mg/kg
Hexachlorobutadiene	ND	0.2	mg/kg
Isopropylbenzene	ND	0.2	mg/kg
m,p-Xylene	ND	0.2	mg/kg
Methylene chloride	ND	1.0	mg/kg
n-Butylbenzene	ND	0.2	mg/kg
n-Propylbenzene	ND	0.2	mg/kg
Naphthalene	ND	0.2	mg/kg
o-Xylene	ND	0.2	mg/kg
sec-Butylbenzene	ND	0.2	mg/kg
Styrene	ND	0.2	mg/kg
tert-Butylbenzene	ND	0.2	mg/kg
Tetrachloroethene (PCE)	ND	0.2	mg/kg
Toluene	ND	0.2	mg/kg
trans-1,2-Dichloroethene	ND	0.2	mg/kg
Trichloroethene (TCE)	ND	0.2	mg/kg
Trichlorofluoromethane	ND	0.2	mg/kg
Vinyl Chloride	ND	0.2	mg/kg
Xylenes (total)	ND	0.2	mg/kg

Continued

Inter-Mountain Laboratories, Inc.
1160 Research Drive
Bozeman, Montana 59715

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY
Sample ID: RFI 1301 A6
Project ID: Ciniza
Lab ID: B969762 0396G02343
Matrix: Soil

Date Reported: 11/07/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units

Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	93	70 - 121
Bromofluorobenzene	100	74 - 121
Toluene-d8	104	81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst E.D.

Reviewed

Inter-Mountain Laboratories, Inc.
1160 Research Drive
Bozeman, Montana 59715

EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY
Sample ID: RFI 1301 A6
Project ID: Ciniza
Lab ID: B969762 0396G02343
Matrix: Soil

Date Reported: 11/08/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,2,4-Trichlorobenzene	ND	1.0	mg/kg
1,2-Dichlorobenzene	ND	1.0	mg/kg
1,3-Dichlorobenzene	ND	1.0	mg/kg
1,4-Dichlorobenzene	ND	1.0	mg/kg
2,4,5-Trichlorophenol	ND	2.0	mg/kg
2,4,6-Trichlorophenol	ND	2.0	mg/kg
2,4-Dichlorophenol	ND	1.0	mg/kg
2,4-Dimethylphenol	ND	1.0	mg/kg
2,4-Dinitrophenol	ND	2.0	mg/kg
2,4-Dinitrotoluene	ND	1.0	mg/kg
2,6-Dinitrotoluene	ND	1.0	mg/kg
2-Chloronaphthalene	ND	1.0	mg/kg
2-Chlorophenol	ND	1.0	mg/kg
2-Methylnaphthalene	ND	1.0	mg/kg
2-Methylphenol	ND	1.0	mg/kg
2-Nitroaniline	ND	5.0	mg/kg
2-Nitrophenol	ND	1.0	mg/kg
3,3'-Dichlorobenzidine	ND	2.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
3-Nitroaniline	ND	5.0	mg/kg
4,6-Dinitro-2-methylphenol	ND	5.0	mg/kg
4-Bromophenyl-phenylether	ND	1.0	mg/kg
4-Chloro-3-methylphenol	ND	2.0	mg/kg
4-Chloroaniline	ND	2.0	mg/kg
4-Chlorophenyl-phenylether	ND	1.0	mg/kg
4-Nitroaniline	ND	2.0	mg/kg
4-Nitrophenol	ND	2.0	mg/kg
Acenaphthene	ND	1.0	mg/kg

Continued

Inter-Mountain Laboratories.

1160 Research Drive
Bozeman, Montana 59715

EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY
Sample ID: RFI 1301 A6
Project ID: Ciniza
Lab ID: B969762 0396G02343
Matrix: Soil

Date Reported: 11/08/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Continued			
Acenaphthylene	ND	1.0	mg/kg
Anthracene	ND	1.0	mg/kg
Benzo(a)anthracene	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Benzo(b)fluoranthene	ND	1.0	mg/kg
Benzo(g,h,i)perylene	ND	1.0	mg/kg
Benzo(k)fluoranthene	ND	1.0	mg/kg
Benzoic Acid	ND	5.0	mg/kg
Benzyl Alcohol	ND	2.0	mg/kg
bis(2-Chloroethoxy)methane	ND	1.0	mg/kg
bis(2-Chloroethyl)ether	ND	1.0	mg/kg
bis(2-Chloroisopropyl)ether	ND	1.0	mg/kg
bis(2-Ethylhexyl)phthalate	ND	5.0	mg/kg
Butylbenzylphthalate	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Di-n-Butylphthalate	ND	5.0	mg/kg
Di-n-Octylphthalate	ND	5.0	mg/kg
Dibenz(a,h)anthracene	ND	1.0	mg/kg
Dibenzofuran	ND	1.0	mg/kg
Diethylphthalate	ND	1.0	mg/kg
Dimethylphthalate	ND	1.0	mg/kg
Fluoranthene	ND	1.0	mg/kg
Fluorene	ND	1.0	mg/kg
Hexachlorobenzene	ND	2.0	mg/kg
Hexachlorobutadiene	ND	2.0	mg/kg
Hexachlorocyclopentadiene	ND	1.0	mg/kg
Hexachloroethane	ND	2.0	mg/kg
Indeno(1,2,3-cd)pyrene	ND	1.0	mg/kg

Continued

Inter-Mountain Laboratories, Inc.
1160 Research Drive
Bozeman, Montana 59715

EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY
Sample ID: RFI 1301 A6
Project ID: Ciniza
Lab ID: B969762 0396G02343
Matrix: Soil

Date Reported: 11/08/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Continued			
Isophorone	ND	1.0	mg/kg
N-Nitrosodi-n-propylamine	ND	1.0	mg/kg
N-Nitrosodiphenylamine	ND	1.0	mg/kg
Naphthalene	ND	1.0	mg/kg
Nitrobenzene	ND	1.0	mg/kg
Pentachlorophenol	ND	5.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Phenol	ND	1.0	mg/kg
Pyrene	ND	1.0	mg/kg

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	59	19 - 122
2-Fluorobiphenyl	59	30 - 115
2-Fluorophenol	62	25 - 121
Nitrobenzene-d5	51	23 - 120
Phenol-d6	78	24 - 113
Terphenyl-d14	62	18 - 137

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, November 1990.

Analyst _____ Reviewed _____

Inter-Mountain Laboratories.

1160 Research Drive
Bozeman, Montana 59715

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY
Sample ID: RFI 1302 A6
Project ID: Ciniza
Lab ID: B969763 0396G02344
Matrix: Soil

Date Reported: 11/07/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,1-Trichloroethane	ND	0.2	mg/kg
1,1,2,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,2-Trichloroethane	ND	0.2	mg/kg
1,1-Dichloroethane	ND	0.2	mg/kg
1,1-Dichloroethene	ND	0.2	mg/kg
1,1-Dichloropropene	ND	0.2	mg/kg
1,2,3-Trichlorobenzene	ND	0.2	mg/kg
1,2,3-Trichloropropane	ND	0.2	mg/kg
1,2,4-Trichlorobenzene	ND	0.2	mg/kg
1,2,4-Trimethylbenzene	ND	0.2	mg/kg
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.2	mg/kg
1,2-Dibromoethane (EDB)	ND	0.2	mg/kg
1,2-Dichlorobenzene	ND	0.2	mg/kg
1,2-Dichloroethane	ND	0.2	mg/kg
1,2-Dichloropropane	ND	0.2	mg/kg
1,3,5-Trimethylbenzene	ND	0.2	mg/kg
1,3-Dichlorobenzene	ND	0.2	mg/kg
1,3-Dichloropropane	ND	0.2	mg/kg
1,4-Dichlorobenzene	ND	0.2	mg/kg
2,2-Dichloropropane	ND	0.2	mg/kg
2-Chlorotoluene	ND	0.2	mg/kg
4-Chlorotoluene	ND	0.2	mg/kg
4-Isopropyltoluene	ND	0.2	mg/kg
Benzene	ND	0.2	mg/kg
Bromobenzene	ND	0.2	mg/kg
Bromochloromethane	ND	0.2	mg/kg
Bromodichloromethane	ND	0.2	mg/kg
Bromoform	ND	0.2	mg/kg
Bromomethane	ND	0.2	mg/kg

Continued

Inter-Mountain Laboratories, Inc.
1160 Research Drive
Bozeman, Montana 59715

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY
Sample ID: RFI 1302 A6
Project ID: Ciniza
Lab ID: B969763 0396G02344
Matrix: Soil

Date Reported: 11/07/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Continued			
Carbon Tetrachloride	ND	0.2	mg/kg
Chlorobenzene	ND	0.2	mg/kg
Chloroethane	ND	0.2	mg/kg
Chloroform	ND	0.2	mg/kg
Chloromethane	ND	0.2	mg/kg
cis-1,2-Dichloroethene	ND	0.2	mg/kg
cis-1,3-Dichloropropene	ND	0.2	mg/kg
Dibromochloromethane	ND	0.2	mg/kg
Dibromomethane	ND	0.2	mg/kg
Dichlorodifluoromethane	ND	0.2	mg/kg
Ethylbenzene	ND	0.2	mg/kg
Hexachlorobutadiene	ND	0.2	mg/kg
Isopropylbenzene	ND	0.2	mg/kg
m,p-Xylene	ND	0.2	mg/kg
Methylene chloride	ND	1.0	mg/kg
n-Butylbenzene	ND	0.2	mg/kg
n-Propylbenzene	ND	0.2	mg/kg
Naphthalene	ND	0.2	mg/kg
o-Xylene	ND	0.2	mg/kg
sec-Butylbenzene	ND	0.2	mg/kg
Styrene	ND	0.2	mg/kg
tert-Butylbenzene	ND	0.2	mg/kg
Tetrachloroethene (PCE)	ND	0.2	mg/kg
Toluene	ND	0.2	mg/kg
trans-1,2-Dichloroethene	ND	0.2	mg/kg
Trichloroethene (TCE)	ND	0.2	mg/kg
Trichlorofluoromethane	ND	0.2	mg/kg
Vinyl Chloride	ND	0.2	mg/kg
Xylenes (total)	ND	0.2	mg/kg

Continued

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1160 Research Drive
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EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client:	GIANT REFINING COMPANY		
Sample ID:	RFI 1302 A6		
Project ID:	Ciniza		
Lab ID:	B969763	0396G02344	
Matrix:	Soil		

Date Reported:	11/07/96
Date Sampled:	10/23/96
Date Received:	10/29/96
Date Extracted:	11/04/96
Date Analyzed:	11/05/96

Parameter	Result	PQL	Units

Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	91	70 - 121
Bromofluorobenzene	100	74 - 121
Toluene-d8	104	81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst F.D.

Reviewed

Inter-Mountain Laboratories, Inc.

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EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY
Sample ID: RFI 1302 A6
Project ID: Ciniza
Lab ID: B969763 0396G02344
Matrix: Soil

Date Reported: 11/08/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,2,4-Trichlorobenzene	ND	1.0	mg/kg
1,2-Dichlorobenzene	ND	1.0	mg/kg
1,3-Dichlorobenzene	ND	1.0	mg/kg
1,4-Dichlorobenzene	ND	1.0	mg/kg
2,4,5-Trichlorophenol	ND	2.0	mg/kg
2,4,6-Trichlorophenol	ND	2.0	mg/kg
2,4-Dichlorophenol	ND	1.0	mg/kg
2,4-Dimethylphenol	ND	1.0	mg/kg
2,4-Dinitrophenol	ND	2.0	mg/kg
2,4-Dinitrotoluene	ND	1.0	mg/kg
2,6-Dinitrotoluene	ND	1.0	mg/kg
2-Chloronaphthalene	ND	1.0	mg/kg
2-Chlorophenol	ND	1.0	mg/kg
2-Methylnaphthalene	ND	1.0	mg/kg
2-Methylphenol	ND	1.0	mg/kg
2-Nitroaniline	ND	5.0	mg/kg
2-Nitrophenol	ND	1.0	mg/kg
3,3'-Dichlorobenzidine	ND	2.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
3-Nitroaniline	ND	5.0	mg/kg
4,6-Dinitro-2-methylphenol	ND	5.0	mg/kg
4-Bromophenyl-phenylether	ND	1.0	mg/kg
4-Chloro-3-methylphenol	ND	2.0	mg/kg
4-Chloroaniline	ND	2.0	mg/kg
4-Chlorophenyl-phenylether	ND	1.0	mg/kg
4-Nitroaniline	ND	2.0	mg/kg
4-Nitrophenol	ND	2.0	mg/kg
Acenaphthene	ND	1.0	mg/kg

Continued

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EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client:	GIANT REFINING COMPANY		Date Reported:	11/08/96
Sample ID:	RFI 1302 A6		Date Sampled:	10/23/96
Project ID:	Ciniza		Date Received:	10/29/96
Lab ID:	B969763	0396G02344	Date Extracted:	11/04/96
Matrix:	Soil		Date Analyzed:	11/05/96

Parameter	Result	PQL	Units
Continued			
Acenaphthylene	ND	1.0	mg/kg
Anthracene	ND	1.0	mg/kg
Benzo(a)anthracene	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Benzo(b)fluoranthene	ND	1.0	mg/kg
Benzo(g,h,i)perylene	ND	1.0	mg/kg
Benzo(k)fluoranthene	ND	1.0	mg/kg
Benzoic Acid	ND	5.0	mg/kg
Benzyl Alcohol	ND	2.0	mg/kg
bis(2-Chloroethoxy)methane	ND	1.0	mg/kg
bis(2-Chloroethyl)ether	ND	1.0	mg/kg
bis(2-Chloroisopropyl)ether	ND	1.0	mg/kg
bis(2-Ethylhexyl)phthalate	ND	5.0	mg/kg
Butylbenzylphthalate	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Di-n-Butylphthalate	ND	5.0	mg/kg
Di-n-Octylphthalate	ND	5.0	mg/kg
Dibenz(a,h)anthracene	ND	1.0	mg/kg
Dibenzofuran	ND	1.0	mg/kg
Diethylphthalate	ND	1.0	mg/kg
Dimethylphthalate	ND	1.0	mg/kg
Fluoranthene	ND	1.0	mg/kg
Fluorene	ND	1.0	mg/kg
Hexachlorobenzene	ND	2.0	mg/kg
Hexachlorobutadiene	ND	2.0	mg/kg
Hexachlorocyclopentadiene	ND	1.0	mg/kg
Hexachloroethane	ND	2.0	mg/kg
Indeno(1,2,3-cd)pyrene	ND	1.0	mg/kg

Continued

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EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client:	GIANT REFINING COMPANY		
Sample ID:	RFI 1302 A6		
Project ID:	Ciniza		
Lab ID:	B969763	0396G02344	
Matrix:	Soil		

Date Reported:	11/08/96
Date Sampled:	10/23/96
Date Received:	10/29/96
Date Extracted:	11/04/96
Date Analyzed:	11/05/96

Parameter	Result	PQL	Units
Continued			
Isophorone	ND	1.0	mg/kg
N-Nitrosodi-n-propylamine	ND	1.0	mg/kg
N-Nitrosodiphenylamine	ND	1.0	mg/kg
Naphthalene	ND	1.0	mg/kg
Nitrobenzene	ND	1.0	mg/kg
Pentachlorophenol	ND	5.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Phenol	ND	1.0	mg/kg
Pyrene	ND	1.0	mg/kg

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	59	19 - 122
2-Fluorobiphenyl	58	30 - 115
2-Fluorophenol	55	25 - 121
Nitrobenzene-d5	49	23 - 120
Phenol-d6	69	24 - 113
Terphenyl-d14	58	18 - 137

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, November 1990.

Analyst _____ Reviewed _____

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EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY
Sample ID: RFI 1303 A6
Project ID: Ciniza
Lab ID: B969764 0396G02345
Matrix: Soil

Date Reported: 11/07/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,1-Trichloroethane	ND	0.2	mg/kg
1,1,2,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,2-Trichloroethane	ND	0.2	mg/kg
1,1-Dichloroethane	ND	0.2	mg/kg
1,1-Dichloroethene	ND	0.2	mg/kg
1,1-Dichloropropene	ND	0.2	mg/kg
1,2,3-Trichlorobenzene	ND	0.2	mg/kg
1,2,3-Trichloropropane	ND	0.2	mg/kg
1,2,4-Trichlorobenzene	ND	0.2	mg/kg
1,2,4-Trimethylbenzene	ND	0.2	mg/kg
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.2	mg/kg
1,2-Dibromoethane (EDB)	ND	0.2	mg/kg
1,2-Dichlorobenzene	ND	0.2	mg/kg
1,2-Dichloroethane	ND	0.2	mg/kg
1,2-Dichloropropane	ND	0.2	mg/kg
1,3,5-Trimethylbenzene	ND	0.2	mg/kg
1,3-Dichlorobenzene	ND	0.2	mg/kg
1,3-Dichloropropane	ND	0.2	mg/kg
1,4-Dichlorobenzene	ND	0.2	mg/kg
2,2-Dichloropropane	ND	0.2	mg/kg
2-Chlorotoluene	ND	0.2	mg/kg
4-Chlorotoluene	ND	0.2	mg/kg
4-Isopropyltoluene	ND	0.2	mg/kg
Benzene	ND	0.2	mg/kg
Bromobenzene	ND	0.2	mg/kg
Bromochloromethane	ND	0.2	mg/kg
Bromodichloromethane	ND	0.2	mg/kg
Bromoform	ND	0.2	mg/kg
Bromomethane	ND	0.2	mg/kg

Continued

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EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY
Sample ID: RFI 1303 A6
Project ID: Ciniza
Lab ID: B969764 0396G02345
Matrix: Soil

Date Reported: 11/07/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Carbon Tetrachloride	ND	0.2	mg/kg
Chlorobenzene	ND	0.2	mg/kg
Chloroethane	ND	0.2	mg/kg
Chloroform	ND	0.2	mg/kg
Chloromethane	ND	0.2	mg/kg
cis-1,2-Dichloroethene	ND	0.2	mg/kg
cis-1,3-Dichloropropene	ND	0.2	mg/kg
Dibromochloromethane	ND	0.2	mg/kg
Dibromomethane	ND	0.2	mg/kg
Dichlorodifluoromethane	ND	0.2	mg/kg
Ethylbenzene	ND	0.2	mg/kg
Hexachlorobutadiene	ND	0.2	mg/kg
Isopropylbenzene	ND	0.2	mg/kg
m,p-Xylene	ND	0.2	mg/kg
Methylene chloride	ND	1.0	mg/kg
n-Butylbenzene	ND	0.2	mg/kg
n-Propylbenzene	ND	0.2	mg/kg
Naphthalene	ND	0.2	mg/kg
o-Xylene	ND	0.2	mg/kg
sec-Butylbenzene	ND	0.2	mg/kg
Styrene	ND	0.2	mg/kg
tert-Butylbenzene	ND	0.2	mg/kg
Tetrachloroethene (PCE)	ND	0.2	mg/kg
Toluene	ND	0.2	mg/kg
trans-1,2-Dichloroethene	ND	0.2	mg/kg
Trichloroethene (TCE)	ND	0.2	mg/kg
Trichlorofluoromethane	ND	0.2	mg/kg
Vinyl Chloride	ND	0.2	mg/kg
Xylenes (total)	ND	0.2	mg/kg

Continued

Continued

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EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY
Sample ID: RFI 1303 A6
Project ID: Ciniza
Lab ID: B969764 0396G02345
Matrix: Soil

Date Reported: 11/07/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units

Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	95	70 - 121
Bromofluorobenzene	104	74 - 121
Toluene-d8	116	81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst E.D.

Reviewed

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EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY
Sample ID: RFI 1303 A6
Project ID: Ciniza
Lab ID: B969764 0396G02345
Matrix: Soil

Date Reported: 11/08/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,2,4-Trichlorobenzene	ND	1.0	mg/kg
1,2-Dichlorobenzene	ND	1.0	mg/kg
1,3-Dichlorobenzene	ND	1.0	mg/kg
1,4-Dichlorobenzene	ND	1.0	mg/kg
2,4,5-Trichlorophenol	ND	2.0	mg/kg
2,4,6-Trichlorophenol	ND	2.0	mg/kg
2,4-Dichlorophenol	ND	1.0	mg/kg
2,4-Dimethylphenol	ND	1.0	mg/kg
2,4-Dinitrophenol	ND	2.0	mg/kg
2,4-Dinitrotoluene	ND	1.0	mg/kg
2,6-Dinitrotoluene	ND	1.0	mg/kg
2-Chloronaphthalene	ND	1.0	mg/kg
2-Chlorophenol	ND	1.0	mg/kg
2-Methylnaphthalene	ND	1.0	mg/kg
2-Methylphenol	ND	1.0	mg/kg
2-Nitroaniline	ND	5.0	mg/kg
2-Nitrophenol	ND	1.0	mg/kg
3,3'-Dichlorobenzidine	ND	2.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
3-Nitroaniline	ND	5.0	mg/kg
4,6-Dinitro-2-methylphenol	ND	5.0	mg/kg
4-Bromophenyl-phenylether	ND	1.0	mg/kg
4-Chloro-3-methylphenol	ND	2.0	mg/kg
4-Chloroaniline	ND	2.0	mg/kg
4-Chlorophenyl-phenylether	ND	1.0	mg/kg
4-Nitroaniline	ND	2.0	mg/kg
4-Nitrophenol	ND	2.0	mg/kg
Acenaphthene	ND	1.0	mg/kg

Continued

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EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY
Sample ID: RFI 1303 A6
Project ID: Ciniza
Lab ID: B969764 0396G02345
Matrix: Soil

Date Reported: 11/08/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Continued			
Acenaphthylene	ND	1.0	mg/kg
Anthracene	ND	1.0	mg/kg
Benzo(a)anthracene	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Benzo(b)fluoranthene	ND	1.0	mg/kg
Benzo(g,h,i)perylene	ND	1.0	mg/kg
Benzo(k)fluoranthene	ND	1.0	mg/kg
Benzoic Acid	ND	5.0	mg/kg
Benzyl Alcohol	ND	2.0	mg/kg
bis(2-Chloroethoxy)methane	ND	1.0	mg/kg
bis(2-Chloroethyl)ether	ND	1.0	mg/kg
bis(2-Chloroisopropyl)ether	ND	1.0	mg/kg
bis(2-Ethylhexyl)phthalate	ND	5.0	mg/kg
Butylbenzylphthalate	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Di-n-Butylphthalate	ND	5.0	mg/kg
Di-n-Octylphthalate	ND	5.0	mg/kg
Dibenz(a,h)anthracene	ND	1.0	mg/kg
Dibenzofuran	ND	1.0	mg/kg
Diethylphthalate	ND	1.0	mg/kg
Dimethylphthalate	ND	1.0	mg/kg
Fluoranthene	ND	1.0	mg/kg
Fluorene	ND	1.0	mg/kg
Hexachlorobenzene	ND	2.0	mg/kg
Hexachlorobutadiene	ND	2.0	mg/kg
Hexachlorocyclopentadiene	ND	1.0	mg/kg
Hexachloroethane	ND	2.0	mg/kg
Indeno(1,2,3-cd)pyrene	ND	1.0	mg/kg

Continued

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EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY
Sample ID: RFI 1303 A6
Project ID: Ciniza
Lab ID: B969764 0396G02345
Matrix: Soil

Date Reported: 11/08/96
Date Sampled: 10/23/96
Date Received: 10/29/96
Date Extracted: 11/04/96
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Continued			
Isophorone	ND	1.0	mg/kg
N-Nitrosodi-n-propylamine	ND	1.0	mg/kg
N-Nitrosodiphenylamine	ND	1.0	mg/kg
Naphthalene	ND	1.0	mg/kg
Nitrobenzene	ND	1.0	mg/kg
Pentachlorophenol	ND	5.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Phenol	ND	1.0	mg/kg
Pyrene	ND	1.0	mg/kg

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	62	19 - 122
2-Fluorobiphenyl	59	30 - 115
2-Fluorophenol	58	25 - 121
Nitrobenzene-d5	53	23 - 120
Phenol-d6	72	24 - 113
Terphenyl-d14	64	18 - 137

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, November 1990.

Analyst _____ Reviewed _____

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LAB QA/QC
EPA METHOD 8260
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Date Analyzed: 11/04/96
Lab ID: IBS96309A
Matrix: Water

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,1-Trichloroethane	ND	0.2	mg/kg
1,1,2,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,2-Trichloroethane	ND	0.2	mg/kg
1,1-Dichloroethane	ND	0.2	mg/kg
1,1-Dichloroethene	ND	0.2	mg/kg
1,1-Dichloropropene	ND	0.2	mg/kg
1,2,3-Trichlorobenzene	ND	0.2	mg/kg
1,2,3-Trichloropropane	ND	0.2	mg/kg
1,2,4-Trichlorobenzene	ND	0.2	mg/kg
1,2,4-Trimethylbenzene	ND	0.2	mg/kg
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.2	mg/kg
1,2-Dibromoethane (EDB)	ND	0.2	mg/kg
1,2-Dichlorobenzene	ND	0.2	mg/kg
1,2-Dichloroethane	ND	0.2	mg/kg
1,2-Dichloropropane	ND	0.2	mg/kg
1,3,5-Trimethylbenzene	ND	0.2	mg/kg
1,3-Dichlorobenzene	ND	0.2	mg/kg
1,3-Dichloropropane	ND	0.2	mg/kg
1,4-Dichlorobenzene	ND	0.2	mg/kg
2,2-Dichloropropane	ND	0.2	mg/kg
2-Chlorotoluene	ND	0.2	mg/kg
4-Chlorotoluene	ND	0.2	mg/kg
4-Isopropyltoluene	ND	0.2	mg/kg
Benzene	ND	0.2	mg/kg
Bromobenzene	ND	0.2	mg/kg
Bromochloromethane	ND	0.2	mg/kg
Bromodichloromethane	ND	0.2	mg/kg
Bromoform	ND	0.2	mg/kg
Bromomethane	ND	0.2	mg/kg
Carbon Tetrachloride	ND	0.2	mg/kg
Chlorobenzene	ND	0.2	mg/kg
Chloroethane	ND	0.2	mg/kg

Continued

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LAB QA/QC
EPA METHOD 8260
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Date Analyzed: 11/04/96
Lab ID: IBS96309A
Matrix: Water

Parameter	Result	PQL	Units
Continued			
Chloroform	ND	0.2	mg/kg
Chloromethane	ND	0.2	mg/kg
cis-1,2-Dichloroethene	ND	0.2	mg/kg
cis-1,3-Dichloropropene	ND	0.2	mg/kg
Dibromochloromethane	ND	0.2	mg/kg
Dibromomethane	ND	0.2	mg/kg
Dichlorodifluoromethane	ND	0.2	mg/kg
Ethylbenzene	ND	0.2	mg/kg
Hexachlorobutadiene	ND	0.2	mg/kg
Isopropylbenzene	ND	0.2	mg/kg
m,p-Xylene	ND	0.2	mg/kg
Methylene chloride	ND	1.0	mg/kg
n-Butylbenzene	ND	0.2	mg/kg
n-Propylbenzene	ND	0.2	mg/kg
Naphthalene	ND	0.2	mg/kg
o-Xylene	ND	0.2	mg/kg
sec-Butylbenzene	ND	0.2	mg/kg
Styrene	ND	0.2	mg/kg
tert-Butylbenzene	ND	0.2	mg/kg
Tetrachloroethene (PCE)	ND	0.2	mg/kg
Toluene	ND	0.2	mg/kg
trans-1,2-Dichloroethene	ND	0.2	mg/kg
Trichloroethene (TCE)	ND	0.2	mg/kg
Trichlorofluoromethane	ND	0.2	mg/kg
Vinyl Chloride	ND	0.2	mg/kg
Xylenes (total)	ND	0.2	mg/kg

Continued

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LAB QA/QC
EPA METHOD 8260
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Date Analyzed: 11/04/96
Lab ID: IBS96309A
Matrix: Water

Parameter	Result	PQL	Units

Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	89	80 - 120
Bromofluorobenzene	103	74 - 121
Toluene-d8	115	81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Analyst E.D.

Reviewed

Inter-Mountain Laboratories, Inc.
1160 Research Drive
Bozeman, Montana 59715

LAB QA/QC
EPA METHOD 8260
METHOD BLANK

Date Analyzed: 11/05/96
Lab ID: MBS96309
Matrix: Soil
Date Extracted: 11/04/96

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,1-Trichloroethane	ND	0.2	mg/kg
1,1,2,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,2-Trichloroethane	ND	0.2	mg/kg
1,1-Dichloroethane	ND	0.2	mg/kg
1,1-Dichloroethene	ND	0.2	mg/kg
1,1-Dichloropropene	ND	0.2	mg/kg
1,2,3-Trichlorobenzene	ND	0.2	mg/kg
1,2,3-Trichloropropane	ND	0.2	mg/kg
1,2,4-Trichlorobenzene	ND	0.2	mg/kg
1,2,4-Trimethylbenzene	ND	0.2	mg/kg
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.2	mg/kg
1,2-Dibromoethane (EDB)	ND	0.2	mg/kg
1,2-Dichlorobenzene	ND	0.2	mg/kg
1,2-Dichloroethane	ND	0.2	mg/kg
1,2-Dichloropropane	ND	0.2	mg/kg
1,3,5-Trimethylbenzene	ND	0.2	mg/kg
1,3-Dichlorobenzene	ND	0.2	mg/kg
1,3-Dichloropropane	ND	0.2	mg/kg
1,4-Dichlorobenzene	ND	0.2	mg/kg
2,2-Dichloropropane	ND	0.2	mg/kg
2-Butanone (MEK)	ND	2.0	mg/kg
2-Chlorotoluene	ND	0.2	mg/kg
4-Chlorotoluene	ND	0.2	mg/kg
4-Isopropyltoluene	ND	0.2	mg/kg
Benzene	ND	0.2	mg/kg
Bromobenzene	ND	0.2	mg/kg
Bromochloromethane	ND	0.2	mg/kg
Bromodichloromethane	ND	0.2	mg/kg
Bromoform	ND	0.2	mg/kg
Bromomethane	ND	0.2	mg/kg
Carbon Tetrachloride	ND	0.2	mg/kg
Chlorobenzene	ND	0.2	mg/kg

Continued

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Bozeman, Montana 59715

LAB QA/QC
EPA METHOD 8260
METHOD BLANK

Date Analyzed: 11/05/96
Lab ID: MBS96309
Matrix: Soil
Date Extracted: 11/04/96

Parameter	Result	PQL	Units
Chloroethane	ND	0.2	mg/kg
Chloroform	ND	0.2	mg/kg
Chloromethane	ND	0.2	mg/kg
cis-1,2-Dichloroethene	ND	0.2	mg/kg
cis-1,3-Dichloropropene	ND	0.2	mg/kg
Dibromochloromethane	ND	0.2	mg/kg
Dibromomethane	ND	0.2	mg/kg
Dichlorodifluoromethane	ND	0.2	mg/kg
Ethylbenzene	ND	0.2	mg/kg
Hexachlorobutadiene	ND	0.2	mg/kg
Isopropylbenzene	ND	0.2	mg/kg
m,p-Xylene	ND	0.2	mg/kg
Methylene chloride	ND	1.0	mg/kg
n-Butylbenzene	ND	0.2	mg/kg
n-Propylbenzene	ND	0.2	mg/kg
Naphthalene	ND	0.2	mg/kg
o-Xylene	ND	0.2	mg/kg
sec-Butylbenzene	ND	0.2	mg/kg
Styrene	ND	0.2	mg/kg
tert-Butylbenzene	ND	0.2	mg/kg
Tetrachloroethene (PCE)	ND	0.2	mg/kg
Toluene	ND	0.2	mg/kg
trans-1,2-Dichloroethene	ND	0.2	mg/kg
Trichloroethene (TCE)	ND	0.2	mg/kg
Trichlorofluoromethane	ND	0.2	mg/kg
Vinyl Chloride	ND	0.2	mg/kg
Xylenes (total)	ND	0.2	mg/kg

Continued

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Bozeman, Montana 59715

LAB QA/QC
EPA METHOD 8260
METHOD BLANK

Date Analyzed: 11/05/96
Lab ID: MBS96309
Matrix: Soil
Date Extracted: 11/04/96

Parameter	Result	PQL	Units

Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	99	80 - 120
Bromofluorobenzene	107	74 - 121
Toluene-d8	111	81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Analyst F.D.

Reviewed CTB

Inter-Mountain Laboratories, Inc.

1160 Research Drive
Bozeman, Montana 59715

LAB QA/QC
EPA METHOD 8270
METHOD BLANK

Date Analyzed: 11/05/96
Lab ID: MBS96308
Matrix: Soil
Date Extracted: 11/05/96

Parameter	Result	PQL	Units
1,2,4-Trichlorobenzene	ND	1.0	mg/kg
1,2-Dichlorobenzene	ND	1.0	mg/kg
1,3-Dichlorobenzene	ND	1.0	mg/kg
1,4-Dichlorobenzene	ND	1.0	mg/kg
2,4,5-Trichlorophenol	ND	2.0	mg/kg
2,4,6-Trichlorophenol	ND	2.0	mg/kg
2,4-Dichlorophenol	ND	1.0	mg/kg
2,4-Dimethylphenol	ND	1.0	mg/kg
2,4-Dinitrophenol	ND	2.0	mg/kg
2,4-Dinitrotoluene	ND	1.0	mg/kg
2,6-Dinitrotoluene	ND	1.0	mg/kg
2-Chloronaphthalene	ND	1.0	mg/kg
2-Chlorophenol	ND	1.0	mg/kg
2-Methylnaphthalene	ND	1.0	mg/kg
2-Methylphenol	ND	1.0	mg/kg
2-Nitroaniline	ND	5.0	mg/kg
2-Nitrophenol	ND	1.0	mg/kg
3,3'-Dichlorobenzidine	ND	2.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
3-Nitroaniline	ND	5.0	mg/kg
4,6-Dinitro-2-methylphenol	ND	5.0	mg/kg
4-Bromophenyl-phenylether	ND	1.0	mg/kg
4-Chloro-3-methylphenol	ND	2.0	mg/kg
4-Chloroaniline	ND	2.0	mg/kg
4-Chlorophenyl-phenylether	ND	1.0	mg/kg
4-Nitroaniline	ND	2.0	mg/kg
4-Nitrophenol	ND	2.0	mg/kg
Acenaphthene	ND	1.0	mg/kg
Acenaphthylene	ND	1.0	mg/kg
Anthracene	ND	1.0	mg/kg
Benzo(a)anthracene	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Benzo(b)fluoranthene	ND	1.0	mg/kg

Continued

Inter·Mountain Laboratories, Inc.

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LAB QA/QC
EPA METHOD 8260
MATRIX SPIKE / MATRIX SPIKE DUPLICATE SUMMARY

Date Analyzed: 11/05/96
Lab ID: 0596H09764
Matrix: Soil
Date Extracted: 11/04/96

Original Sample Parameters

Parameter	Spike Added (mg/kg)	Sample Result (mg/kg)	Spike Result (mg/kg)	MS Recovery %		QC Limits Rec.
1,1-Dichloroethene	12.5	0	8.0	64	*	75 - 145
Benzene	12.5	0	11	88		71 - 120
Chlorobenzene	12.5	0	11	88		76 - 127
Toluene	12.5	0	14	112		71 - 127
Trichloroethene (TCE)	12.5	0	9.7	78		75 - 130

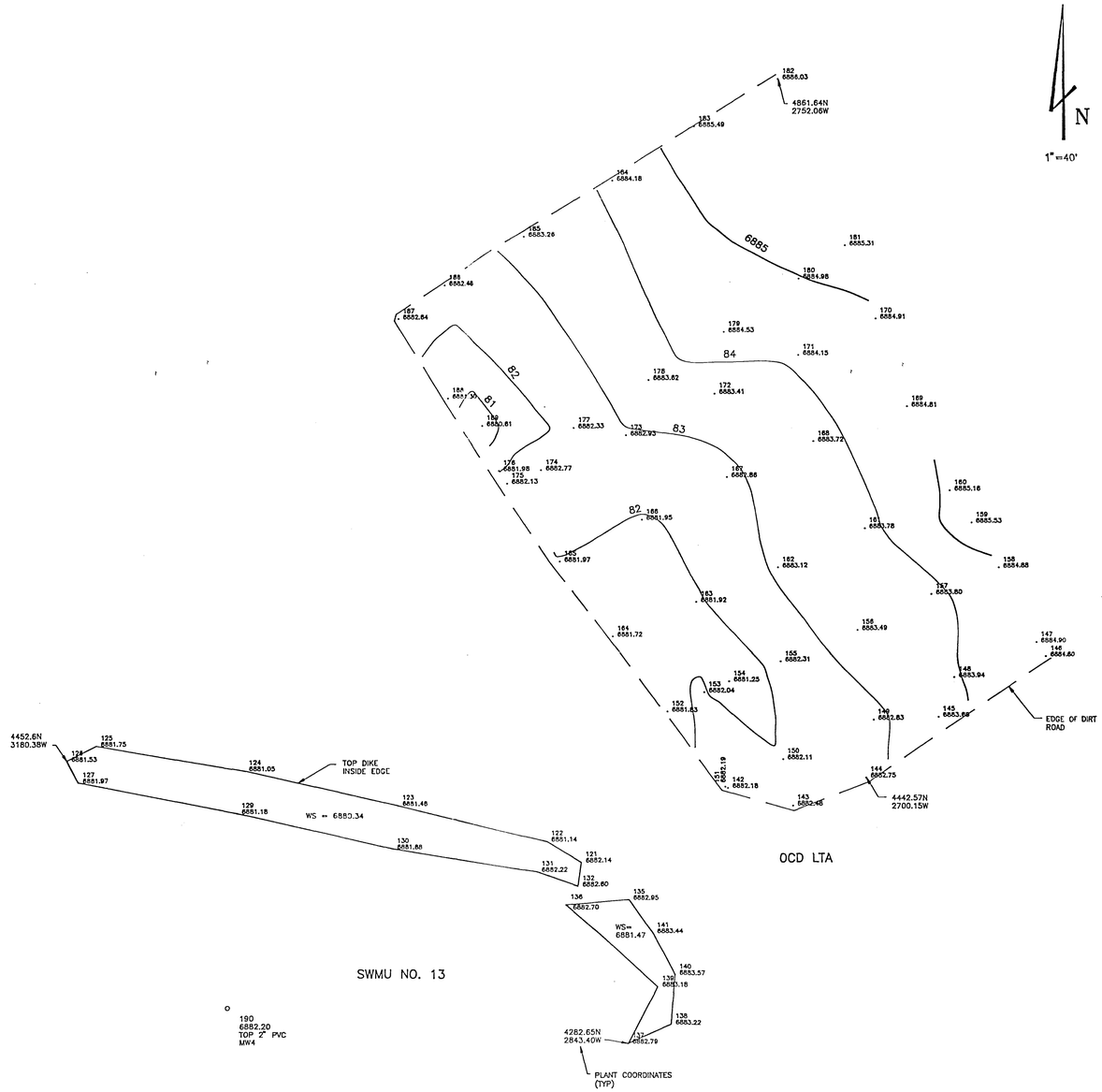
Duplicate Sample Parameters

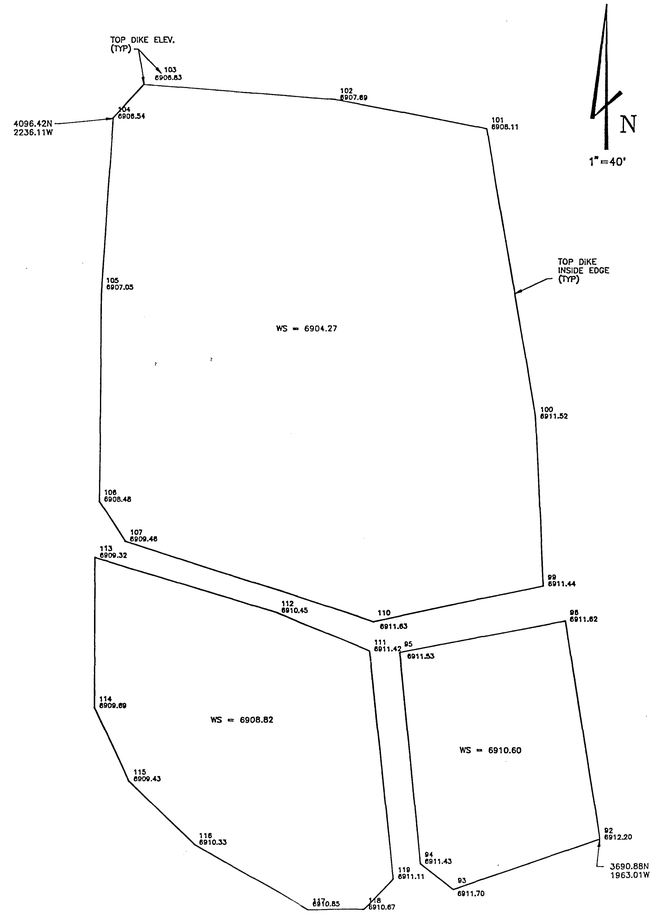
Parameter	Spike Added (mg/kg)	MSD Result (mg/kg)	MSD Recovery %		RPD %		QC Limits RPD	QC Limits Rec.
1,1-Dichloroethene	12.5	6.7	54	*	18		22	75 - 145
Benzene	12.5	8.8	70	*	22		24	71 - 120
Chlorobenzene	12.5	8.7	70	*	23	*	21	76 - 127
Toluene	12.5	10	80		33	*	21	71 - 127
Trichloroethene (TCE)	12.5	8.1	65	*	18		21	75 - 130

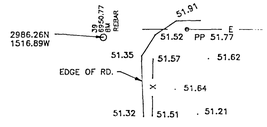
Note: Spike Recoveries are calculated using zero for Sample result if Sample result was less than PQL (Practical Quantitation Level).

Spike Recovery: 5 out of 10 outside QC limits.
RPD: 2 out of 5 outside QC limits.

Analyst E.D. Reviewed







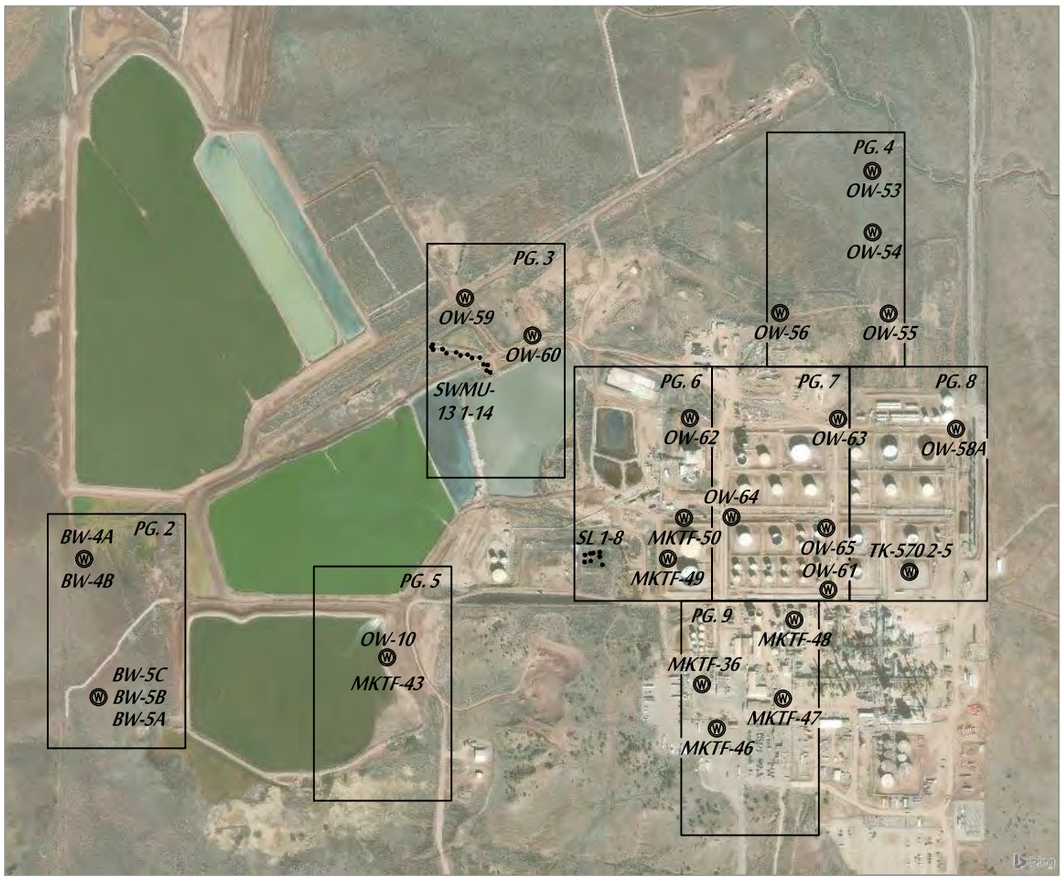
SWMU NO. 3
CONTAINER STORAGE AREA

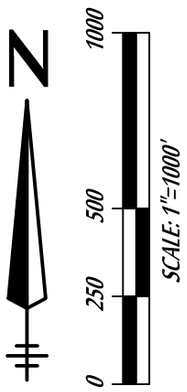
DATE:	SCALE:	DRAWN BY: CHECKED BY:	SHEET OF

Appendix C

Survey Data

MONITORING WELL and BORE SITE SURVEY in Sections 28 & 33, T15N, R15W, N.M.P.M., Marathon Gallup Refinery, Jamestown, McKinley County, New Mexico, U.S.A.





NOTES

1. FIELD SURVEY PERFORMEDNOVEMBER 18, 2019, 8:00 a.m. to 5:00 p.m.
2. FIELD MEASUREMENTS PERFORMED UTILIZING TOPCON 'GR-3' BASE AND ROVER G.P.S. SYSTEM WHICH CAN NOT BE CALIBRATED.
3. THE BORE SITES WERE IDENTIFIED BY DISORBO CONSULTING, LLC. PERSONNEL AND WERE VISIBLE AS EVIDENCE OF A BORE HOLE.
4. STATE PLANE COORDINATES BASED ON THE BRASS CAP I-040-105 USING DIFFERENTIAL G.P.S. DERIVED MEASUREMENTS.
5. THE COORDINATE LIST SHOWN ARE N.M. STATE PLANE WEST ZONE GRID COORDINATES, ELEVATIONS ARE NAVD88 (-3.37 TO REACH NGVD29).

SYMBOLS LEGEND

- Ⓦ MONITORING WELL
- · SOIL BORE

SURVEYOR'S CERTIFICATE

I, Clyde J. King, a New Mexico Professional Surveyor do hereby certify that this plat was prepared from a field survey performed by me or under my direct supervision, that I am responsible for this survey, that this survey is true and correct to the best of my knowledge and belief, that this plat and the field survey upon which it is based meet the Minimum Standards for Surveying in New Mexico and that this survey is not a land division or subdivision as defined by the New Mexico Subdivision Act.

CLYDE J. KING NEW MEXICO 13979 REGISTERED PROFESSIONAL SURVEYOR

Clyde J. King, PS13979

11-19-19
Date

HAMMON ENTERPRISES, INC. H.E.I. PROFESSIONAL SURVEYING SERVICES
P. O. Box 770 Ramah, NM 87321 Tel: 505- 870-6901 HEISurveys@Yahoo.com

191118

MONITORING WELL and BORE SITE SURVEY
in Sections 28 & 33, T15N, R15W, N.M.P.M.,
Marathon Gallup Refinery, Jamestown,
McKinley County, New Mexico, U.S.A.

BW-4A

BW-4B

BW-4A

N: 1634063.04
E: 2542465.11 CENTER OF METAL LID
Z: 6872.55 TOP CENTER OF METAL LID
Z: 6872.20 N. TOP OF PVC PIPE
Z: 6869.68 TOP OF CONCRETE PAD N. OF CASING
Z: 6869.28 NATURAL GROUND N. OF PAD

BW-4B

N: 1634043.32
E: 2542462.85 CENTER OF METAL LID
Z: 6872.68 TOP CENTER OF METAL LID
Z: 6872.24 N. TOP OF PVC PIPE
Z: 6869.80 TOP OF CONCRETE PAD N. OF CASING
Z: 6869.45 NATURAL GROUND N. OF PAD

BW-5C

N: 1633279.48
E: 2542552.85 CENTER OF METAL LID
Z: 6876.32 TOP CENTER OF METAL LID
Z: 6877.30 N. TOP OF PVC PIPE
Z: 6873.31 TOP OF CONCRETE PAD N. OF CASING
Z: 6872.92 NATURAL GROUND N. OF PAD

BW-5B

N: 1633269.46
E: 2542551.64 CENTER OF METAL LID
Z: 6876.24 TOP CENTER OF METAL LID
Z: 6875.84 N. TOP OF PVC PIPE
Z: 6873.36 TOP OF CONCRETE PAD N. OF CASING
Z: 6873.30 NATURAL GROUND N. OF PAD

BW-5C

BW-5B

BW-5A

SYMBOLS LEGEND

- MONITORING WELL
- SOIL BORE

BW-5A

N: 1633259.76
E: 2542551.42 CENTER OF METAL LID
Z: 6876.43TOP CENTER OF METAL LID
Z: 6876.06 N. TOP OF PVC PIPE
Z: 6873.39 TOP OF CONCRETE PAD N. OF CASING
Z: 6873.18 NATURAL GROUND N. OF PAD

N

0 50 100 200

SCALE: 1"=100'

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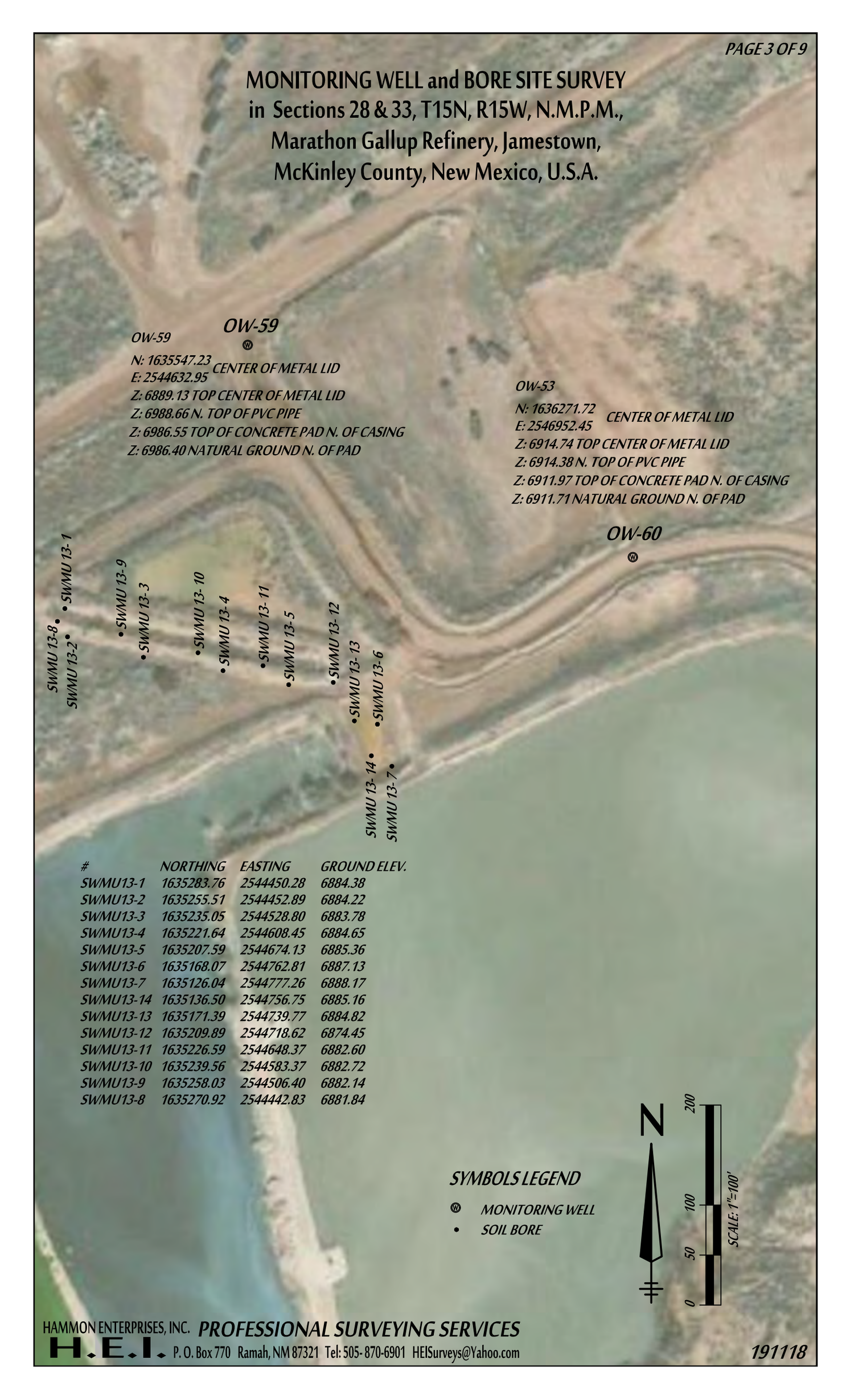
MONITORING WELL and BORE SITE SURVEY
in Sections 28 & 33, T15N, R15W, N.M.P.M., Marathon Gallup Refinery, Jamestown, McKinley County, New Mexico, U.S.A.



#	NORTHING	EASTING	GROUND ELEV.
SWMU13-1	1635283.76	2544450.28	6884.38
SWMU13-2	1635255.51	2544452.89	6884.22
SWMU13-3	1635235.05	2544528.80	6883.78
SWMU13-4	1635221.64	2544608.45	6884.65
SWMU13-5	1635207.59	2544674.13	6885.36
SWMU13-6	1635168.07	2544762.81	6887.13
SWMU13-7	1635126.04	2544777.26	6888.17
SWMU13-14	1635136.50	2544756.75	6885.16
SWMU13-13	1635171.39	2544739.77	6884.82
SWMU13-12	1635209.89	2544718.62	6874.45
SWMU13-11	1635226.59	2544648.37	6882.60
SWMU13-10	1635239.56	2544583.37	6882.72
SWMU13-9	1635258.03	2544506.40	6882.14
SWMU13-8	1635270.92	2544442.83	6881.84

SYMBOLS LEGEND

- Ⓦ MONITORING WELL
- • SOIL BORE

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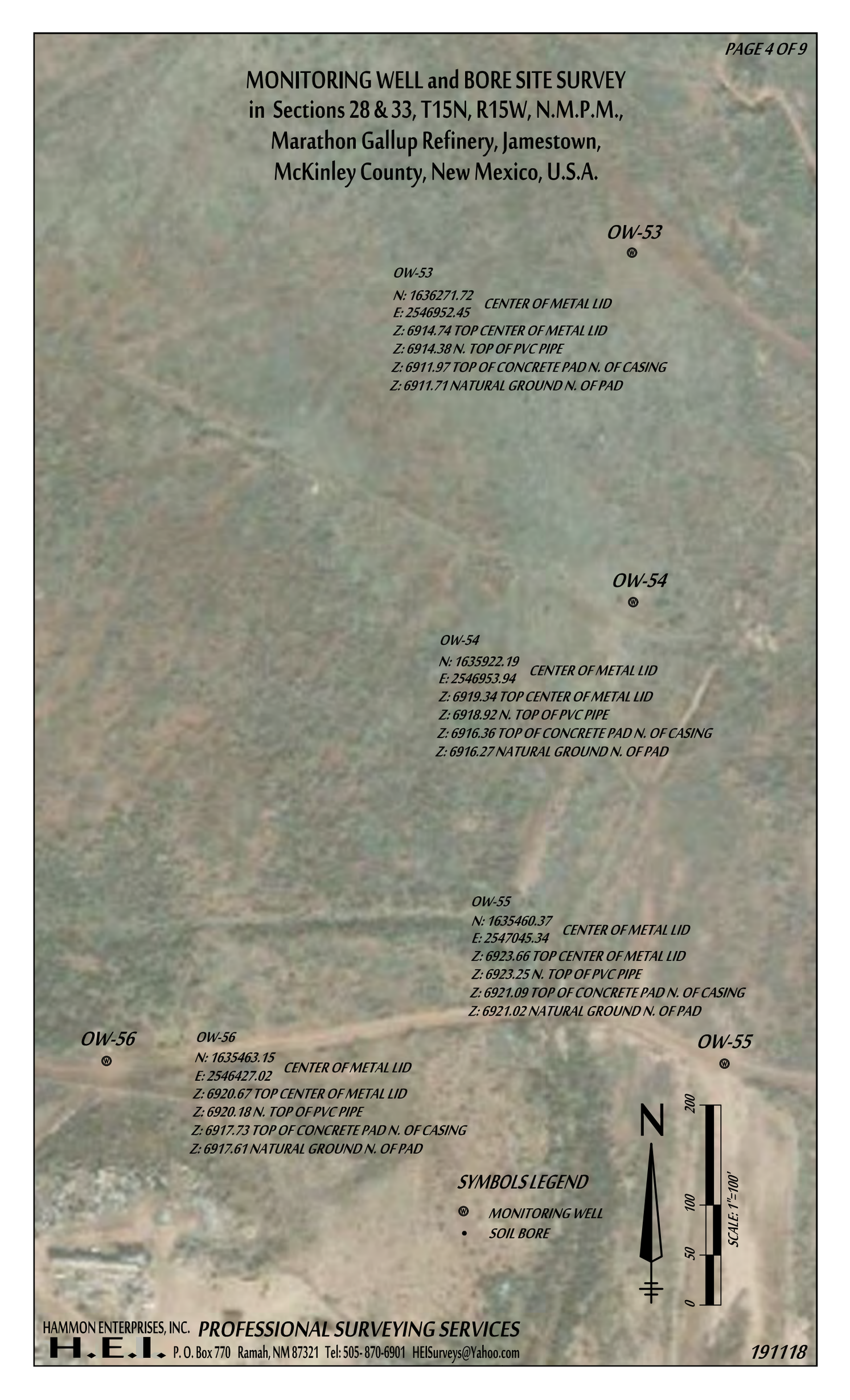
MONITORING WELL and BORE SITE SURVEY
in Sections 28 & 33, T15N, R15W, N.M.P.M.,
Marathon Gallup Refinery, Jamestown,
McKinley County, New Mexico, U.S.A.



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MONITORING WELL and BORE SITE SURVEY
in Sections 28 & 33, T15N, R15W, N.M.P.M.,
Marathon Gallup Refinery, Jamestown,
McKinley County, New Mexico, U.S.A.

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MONITORING WELL and BORE SITE SURVEY
in Sections 28 & 33, T15N, R15W, N.M.P.M., Marathon Gallup Refinery, Jamestown, McKinley County, New Mexico, U.S.A.

OW-62

N: 1634865.81
E: 2545913.84
CENTER OF METAL LID
Z: 6936.61 TOP CENTER OF METAL LID
Z: 6936.09 N. TOP OF PVC PIPE
Z: 6933.51 TOP OF CONCRETE PAD N. OF CASING
Z: 6933.21 NATURAL GROUND N. OF PAD

MKTF-50

N: 1634294.68
E: 2545881.16
CENTER OF METAL LID
Z: 6943.15 TOP CENTER OF METAL LID
Z: 6942.82 N. TOP OF PVC PIPE
Z: 6940.26 TOP OF CONCRETE PAD N. OF CASING
Z: 6939.68 NATURAL GROUND N. OF PAD

#	NORTHING	EASTING	GROUND ELEV.
SL1	1634031.88	2545416.32	6912.71
SL2	1634076.89	2545400.90	6910.74
SL3	1634102.58	2545401.63	6910.01
SL4	1634097.56	2545363.76	6909.37
SL5	1634087.00	2545317.94	6909.72
SL6	1634094.95	2545346.84	6909.54
SL7	1634047.08	2545314.94	6908.81
SL8	1634052.67	2545350.02	6909.67

MKTF-49

N: 1634064.06
E: 2545788.35
CENTER OF METAL LID
Z: 6947.06 TOP CENTER OF METAL LID
Z: 6946.76 N. TOP OF PVC PIPE
Z: 6944.25 TOP OF CONCRETE PAD N. OF CASING
Z: 6944.00 NATURAL GROUND N. OF PAD

SYMBOLS LEGEND

- MONITORING WELL
- SOIL BORE

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MONITORING WELL and BORE SITE SURVEY
in Sections 28 & 33, T15N, R15W, N.M.P.M.,
Marathon Gallup Refinery, Jamestown,
McKinley County, New Mexico, U.S.A.

OW-63

OW-63
N: 1634859.85
E: 2546756.20 CENTER OF METAL LID
Z: 6934.20 TOP CENTER OF METAL LID
Z: 6933.87 N. TOP OF PVC PIPE
Z: 6931.21 TOP OF CONCRETE PAD N. OF CASING
Z: 6930.87 NATURAL GROUND N. OF PAD

OW-64

N: 1634301.16
E: 2546150.83 CENTER OF METAL LID
Z: 6946.67 TOP CENTER OF METAL LID
Z: 6946.09 N. TOP OF PVC PIPE
Z: 6943.90 TOP OF CONCRETE PAD N. OF CASING
Z: 6943.32 NATURAL GROUND N. OF PAD

OW-64

OW-65

N: 1634238.04
E: 2546691.91 CENTER OF METAL LID
Z: 6953.23 TOP CENTER OF METAL LID
Z: 6952.83 N. TOP OF PVC PIPE
Z: 6950.43 TOP OF CONCRETE PAD N. OF CASING
Z: 6949.95 NATURAL GROUND N. OF PAD

OW-65

SYMBOLS LEGEND

- MONITORING WELL
- SOIL BORE

OW-61

N: 1633887.50
E: 2546702.23 CENTER OF METAL LID
Z: 6962.75 TOP CENTER OF METAL LID
Z: 6961.88 N. TOP OF PVC PIPE
Z: 6959.69 TOP OF CONCRETE PAD N. OF CASING
Z: 6959.29 NATURAL GROUND N. OF PAD

N

200 100 50 0

SCALE: 1"=100'

OW-61

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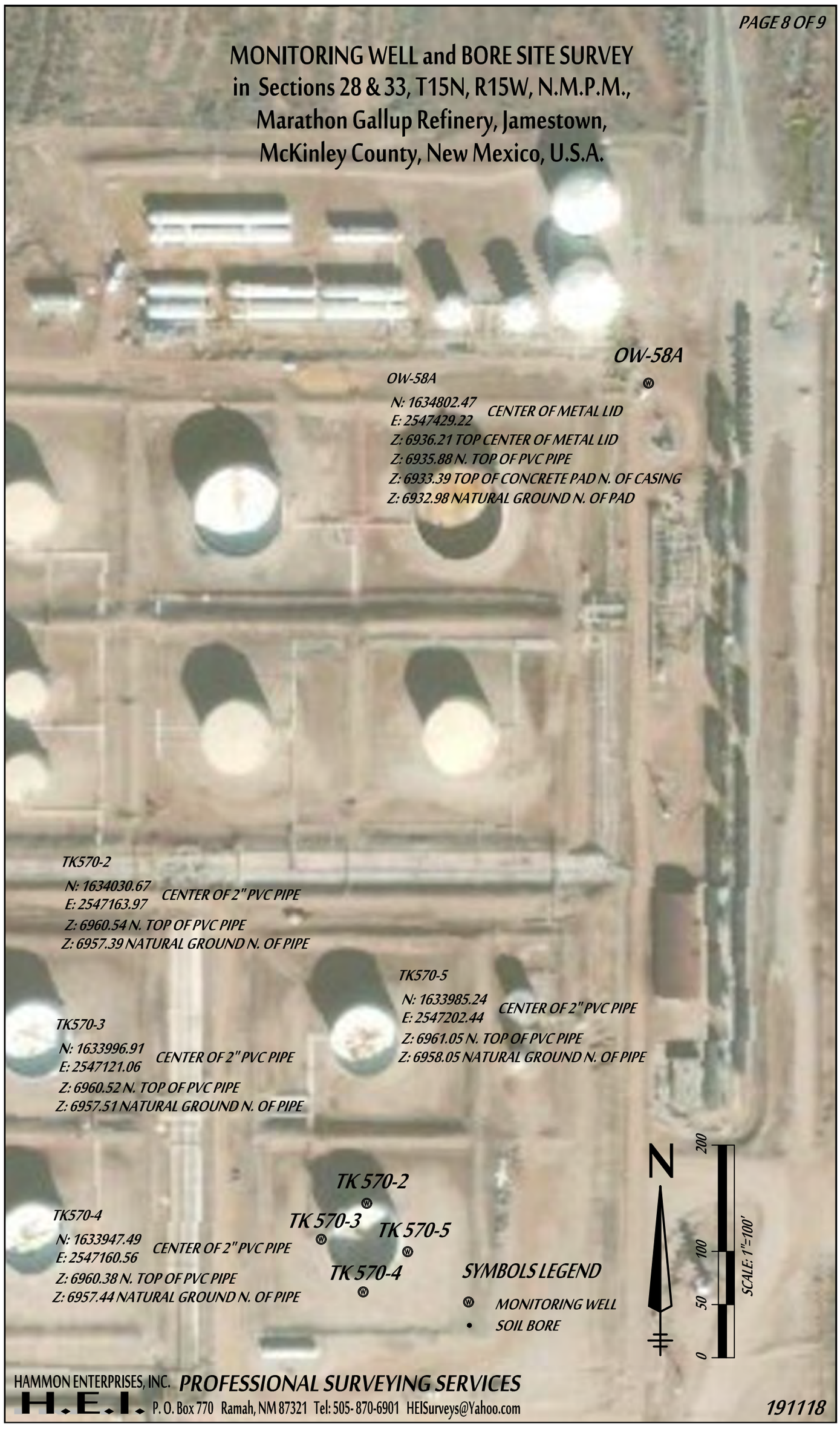
MONITORING WELL and BORE SITE SURVEY
in Sections 28 & 33, T15N, R15W, N.M.P.M., Marathon Gallup Refinery, Jamestown, McKinley County, New Mexico, U.S.A.



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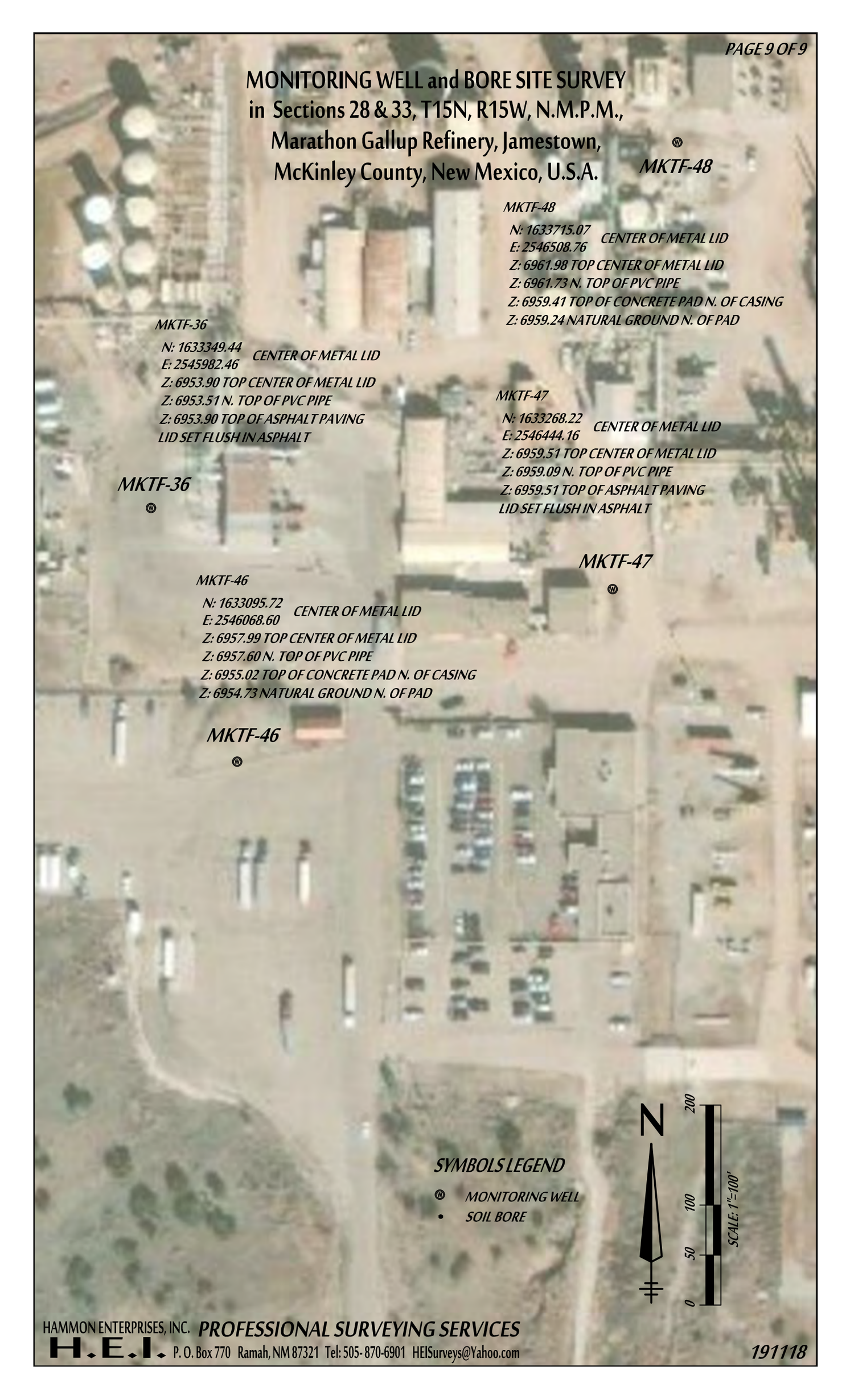
MONITORING WELL and BORE SITE SURVEY
in Sections 28 & 33, T15N, R15W, N.M.P.M., Marathon Gallup Refinery, Jamestown, McKinley County, New Mexico, U.S.A.



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191118

Appendix D
Permeability and Hydraulic Conductivity Evaluations

Appendix E
Field Methods

Field Methods

Pursuant to the *Investigation Work Plan for the SWMU 13 – Drainage Ditch between API Evaporation Ponds and Neutralization Tank Evaporation Ponds*, an investigation of soils and groundwater was conducted to determine and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, soil borings and temporary monitoring wells were installed within and adjacent to the drainage ditch and retention pond north of Evaporation Pond EP-2. The field methods are described below and individual discussions are presented for the following activities:

- Drilling procedures;
- Soil screening;
- Decontamination procedures;
- Fluid level measurements;
- Well development/purging;
- Sample collection and handling procedures;
- Equipment calibration; and
- Management of investigation derived waste.

Drilling Procedures

The soil borings were drilled using the hollow-stem auger (HSA) method. The drilling rig was a track mounted CME 55. In addition, a hand auger was used to collect soil samples from the ground surface to a depth of five feet. Soil samples were collected continuously and logged by a qualified geologist in accordance with the Unified Soil Classification System (USCS) nomenclature. As shown on the boring logs, the data recorded included the lithologic interval, symbol, percent recovery, field screening results, and a sample description of the cuttings and core samples. Soil samples that were collected using the split spoon sampler were photographed.

Soil Screening

Samples obtained from the borings were screened in the field on 2-foot intervals for evidence of contaminants. Samples collected using a hand auger were screened in smaller intervals and generally coincided with the required sampling interval (e.g., 0 to 0-5', 0.5-1.5', 1.5-2', 2-4', and 4-5'). Field screening results were recorded on the soil boring logs. Field screening results were used

to aid in the selection of soil samples for laboratory analysis. The primary screening methods include: (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds.

Visual screening included examining the soil samples for evidence of staining caused by petroleum-related compounds or other substances that may have caused staining of soils such as elemental sulfur or cyanide compounds. Headspace vapor screening was conducted and involved placing a soil sample in a plastic sealable bag allowing space for ambient air. The bag was sealed, labeled and then shaken gently to expose the soil to the air trapped in the container. The sealed bag was allowed to rest for a minimum of 5 minutes while the vapors equilibrated. If the ambient temperatures were 45 degrees or less, the bags were placed inside a warm vehicle prior to screening.

Vapors present within the sample bag's headspace were then measured by inserting the probe of a MiniRae 3000 portable volatile organic constituent (VOC) monitor in a small opening in the bag. The maximum value and the ambient air temperature were recorded on the field boring log for each sample. Field screening results and any conditions that were considered to be capable of influencing the results of the field screening were recorded on the field logs.

Decontamination Procedures

The drilling equipment (e.g., hollow-stem augers) was decontaminated between each borehole using a high-pressure potable water wash. The sampling equipment coming in direct contact with the samples (e.g., hand augers and split-spoon samplers) were decontaminated using a brush, as necessary, to remove larger particulate matter followed by a rinse with potable water, wash with non-phosphate detergent, rinse with potable water, and double rinse with deionized water.

Fluid Level Measurements

The depth to separate phase hydrocarbon, if present, and groundwater was measured prior to and after well development. Fluid levels were also measured prior to and after well purging. If a well was bailed down or bailed dry and required sampling at a later time, fluid level measurements were collected prior to sampling. A Geotech Interface Probe was used to measure fluid levels to 0.01 foot.

Well Development/Purging

The temporary monitoring wells were developed/purged using a new disposable bailer attached to the end of the clean rope. The groundwater and sediment removed from the wells were transported to the bundle cleaning pad in sealed 5-gallon buckets or in a 65-gallon horizontal leg polyethylene tank.

The purge volumes are calculated as follows:

Volume (gallons) = water column thickness (ft) x 3.14 x radius of well casing^2 (ft) x 7.48 (gals/ft).
The calculated purge volumes and actual volumes removed from each well are presented below.

Well (Date)	Water Column Thickness (ft)	Calculated Purge Volume (gallons) – 3 well volumes	Actual Purge Volume (gallons)
SWMU 13-1	DRY	NA	NA
SWMU 13-2	4.50	2.30	2.75
SWMU 13-3	6.63	3.40	6.50
SWMU 13-4	6.84	3.50	Bailed dry at 3.0
SWMU 13-5	6.19	3.30	Bailed dry at 6.3
SWMU 13-6	5.89	3.00	Bailed dry at 0.75
SWMU 13-7	5.05	2.58	Bailed dry at 1.5

NA – not applicable

During well development and well purging the following information was recorded on a field worksheet:

- Time;
- Purge Volume;
- Temperature (^{o}F);
- Dissolved Oxygen (mg/L);
- Conductivity (uS/cm);
- Total Dissolved Solids (mg/L);
- pH;
- Oxidation-Reduction Potential (MV); and
- Turbidity (NTUs).

The field work sheets are included at the end of this appendix.

Sample Collection and Handling Procedures

Soil samples were collected using split-spoon samplers or directly from the auger bucket for borings completed with a hand auger. The selected portion of the sample interval was placed in pre-cleaned, laboratory-prepared sample containers for laboratory chemical analysis. Two soil samples were collected for VOC analysis in the following manner:

- Two sample aliquots were collected using a syringe for preservation with methanol. For the methanol preserved kits, 10 grams (10 cc) of soil was injected into each methanol vial using the syringe. The syringes were disposed after soil collection; and
- The third sample aliquot was placed in an 8-ounce glass jar, which was filled to the top to minimize any head space.

Two additional soil samples were collected in 8-ounce glass jars for semi-volatile and metals analyses.

Groundwater samples were collected using disposable bailers and clean rope. The water was immediately poured directly into clean laboratory supplied sample containers with the exception of samples collected for dissolved metals analyses. Samples specified for dissolved metals analyses were filtered in the field using a disposable 0.45 micron filter. A new filter and syringe were used for each sample.

All samples were immediately placed into an ice chest with ice. The samples were maintained in the custody of the sampler until the chain-of-custody form was completed and the ice chest was sealed for delivery to the laboratory.

In addition to collecting groundwater samples for nitrate/nitrite analyses, field tests were conducted to determine the comparability of field data with laboratory data. In accordance with the instruction manual for the Nitrate-Nitrite Test Kit, Hach Model NI-12, the color disc was placed in the color comparator box. Two vials were each filed with 5mL of sample water. The nitrate test method was diazotization cadmium reduction, with a result range between 0 - 40 mg/L. The nitrite method was diazotization with a range of 0 - 0.4 mg/L. The reagents, NitraVer 5 Nitrate Reagent Powder Pillow and NitriVer 3 Nitrite Reagent Powder Pillow, were mixed with the water to create a solution. The cap

was placed on the vials and shook for 1 minute. After 10 minutes the solutions' colors were compared to the individual color wheels and when the color of the solution matched the color on the wheel, the numeric value was recorded. To calculate the results in mg/L, the nitrate result was multiplied by 4.4 and the nitrite result was multiplied by 3.33. The data was recorded on the groundwater sampling worksheets.

Equipment Calibration

Soil vapor screening was conducted using a MiniRae 3000 portable VOC monitor. The instrument was calibrated at the beginning of each work day to a concentration of 100 ppm isobutylene.

The instruments used to measure groundwater stabilization parameters included an YSI Professional Series Data Logger and YSI Quatro Sonde. The calibration solutions used prior to using the water quality meter are as follows:

- 4.0 pH solution;
- 7.0 pH solution;
- 10.0 pH solution; and
- 1.413 uS/cm conductivity solution.

Management of Investigation Derived Waste

The drilling rig and drilling equipment were decontaminated on the bundle cleaning pad. The water is diverted to the Refinery's wastewater treatment system up-stream of the API Separator. The decontamination water generated from sampling equipment was collected in buckets and disposed at the bundle cleaning pad at the end of each day of sampling. All development/purge water was collected in five-gallon buckets or a 65-gallon horizontal leg polyethylene tank and disposed at the bundle cleaning pad.

Soil cuttings were placed into open top 55-gallon drums and were sealed when not in use. Each drum of soils was labeled and temporarily stored in a concrete curbed area pending waste characterization and disposal.

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-1 Date: 10.23.19 Time: 0822
Client / Location: MARATHON PETROLEUM CO. LP
Temperature: 41 (Clear?) Cloudy?
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: (Slight) Moderate Strong Very Strong

PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Top of Casing 3 feet above ground level _____ feet below ground level
Depth to SPH: ND ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: ND ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 18.60 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Appearance: ☐ SPH ☐ Sheen ☐ Silty ☐ Turbid ☐ Clear ☐ Opaque
Odor: ☐ Yes ☐ No Type: _____
Additional notes: _____
Development method: ☐ Bailing ☐ Pumping ☐ Air lift ☐ Surge & block

DEVELOPMENT MEASUREMENTS

Parameter	Readings						
Time							
Purge Volume							
Temperature (°F)							
Dissolved Oxygen (mg/L)							
Conductivity (uS/cm)							
Total Dissolved Solids (mg/L)							
pH							
ORP(MV)							
Turbidity (NTUs)							
Parameter	**Readings**						
Time							
Purge Volume							
Temperature (°F)							
Dissolved Oxygen (mg/L)							
Conductivity (uS/cm)							
Total Dissolved Solids (mg/L)							
pH							
ORP(MV)							
Turbidity (NTUs)							

Development Time: _____ minutes / hours Amount of Fluids Developed: _____ gallons
Disposition of Fluids: ☐ Drummed Number of drums: _____
☐ Facility wastewater treatment system

Completed by: TRACY PAYNE Signature: _____

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-1 Date: 10-28-2019 Time: 0930

POST-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	18.56	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Appearance: ☐ SPH ☐ Sheen ☐ Silty ☐ Turbid ☐ Clear ☐ Opaque N/A

Odor: ☐ Yes ☑ No Type:

Additional notes:

ADDITIONAL FLUID LEVEL MEASUREMENTS:

Date: 11-5.19 Time: 1240 JR

Depth to SPH:	ND	☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:	ND	☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:	18.55	☑ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: 11.11.19 Time: 1505 JR

Depth to SPH:	ND	☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:	ND.	☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:	18.56	☑ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Completed by: James Reis Signature: [signature]

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-2 Date: 10.23.19 Time: 0822
Client / Location: MPC - GR
Temperature: 41 (Clear?) Cloudy?
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: (Slight) Moderate Strong Very Strong

PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Top of Casing: 3 feet above ground level ____ feet below ground level
Depth to SPH: ND ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: 14.86 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 19.15 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Appearance: ☐ SPH ☐ Sheen ☑ Silty ☑ Turbid ☐ Clear ☐ Opaque
Odor: ☑ Yes ☐ No Type: Hydrocarbon
Additional notes:
Development method: ☑ Bailing ☐ Pumping ☐ Air lift ☐ Surge & block

DEVELOPMENT MEASUREMENTS

Parameter	Readings						
Time	0853	0903	0908	0913	0921		
Purge Volume (gallons)	0	0.25	1.25	2.25	3.10		
Temperature (°F)	55.1	56.3	56.2	55.8	(BAILED DRY)		
Dissolved Oxygen (mg/L)	4.84	5.00	4.52	4.80			
Conductivity (uS/cm)	12,913	13,102	13,194	13,266			
Total Dissolved Solids (mg/L)	956	907	1004.5	1128			
pH	7.71	7.31	7.14	7.19			
ORP(MV)	256.2	263.8	266.7	264.2			
Turbidity (NTUs)	217	44.1	13.6	0.02			

Parameter	Readings						
Time							
Purge Volume							
Temperature (°F)							
Dissolved Oxygen (mg/L)							
Conductivity (uS/cm)							
Total Dissolved Solids (mg/L)							
pH							
ORP(MV)							
Turbidity (NTUs)							

Development Time: 28 (minutes) / hours Amount of Fluids Developed: 3.10 gallons
Disposition of Fluids: ☐ Drummed Number of drums: ____
☑ Facility wastewater treatment system

Completed by: James Reis Signature: [signature]

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-2 Date: 10.23.19 Time: 0930

POST-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Depth to SPH: ND ☐ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: 19.05 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 19.40 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Appearance: ☐ SPH ☐ Sheen ☑ Silty ☑ Turbid ☐ Clear ☐ Opaque
Odor: ☑ Yes ☐ No Type: Hydrocarbon
Additional notes: Bailed down at 9.10 gallons

ADDITIONAL FLUID LEVEL MEASUREMENTS:

Date: 10.24.19 Time: 08:20
Depth to SPH: ND ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: 17.11 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 19.39 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter

Date: 10.28.2019 Time: 0935
Depth to SPH: ND ☐ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: 15.48 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 19.41 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter

Date: ______ Time: ______
Depth to SPH: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Depth to GW: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Total Depth: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter

Date: ______ Time: ______
Depth to SPH: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Depth to GW: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Total Depth: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter

Date: ______ Time: ______
Depth to SPH: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Depth to GW: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Total Depth: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter

Date: ______ Time: ______
Depth to SPH: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Depth to GW: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Total Depth: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter

Date: ______ Time: ______
Depth to SPH: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Depth to GW: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Total Depth: ______ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter

Completed by: James Reis Signature: [signature]

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-3 Date: 10.23.19 Time: 0825
Client / Location: MPC-GR
Temperature: 49 Clear? Cloudy?
Current Precipitation: None Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: Slight Moderate Strong Very Strong

PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Top of Casing: 3 feet above ground level _____ feet below ground level

Depth to SPH:	ND	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	12.52	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	19.15	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Appearance: ☐ SPH ☐ Sheen ☐ Silty ☐ Turbid ☐ Clear ☐ Opaque
Odor: ☐ Yes ☐ No Type:
Additional notes:
Development method: ☑ Bailing ☐ Pumping ☐ Air lift ☐ Surge & block

DEVELOPMENT MEASUREMENTS

Parameter	Readings						
Time	0954	1000	1007	1013	1018	1025	1035
Purge Volume	0	0.50	2.00	3.00	4.00	5.00	8.00
Temperature (°F)	58.3	57.9	57.5	57.2	57.5	57.4	56.6
Dissolved Oxygen (mg/L)	6.38	4.94	4.62	3.18	4.20	6.26	2.83
Conductivity (uS/cm)	14,038	14,227	14,134	14,101	14,209	14,246	14,116
Total Dissolved Solids (mg/L)	1420	1687	1583	1609	1648	1693.5	1713
pH	7.25	7.22	7.04	6.99	7.07	6.91	7.08
ORP(MV)	213.7	211.7	206.9	201.1	201.8	196.7	202.1
Turbidity (NTUs)	101	486	250	284	427	312	621

Parameter	Readings						
Time	1100	1142	1227	1241	1254	1308	1325
Purge Volume	13.00	13.35	18.00	23.00	28.00	33.00	38.00
Temperature (°F)	56.8	57.4	59.6	57.7	57.8	57.2	57.8
Dissolved Oxygen (mg/L)	2.66	4.84	5.94	9.71	4.18	6.74	5.35
Conductivity (uS/cm)	14,377	14,237	14,796	14,400	14,502	14,405	14,484
Total Dissolved Solids (mg/L)	1895	1706	1745	1726	1817	1830	1817
pH	7.02	7.03	7.07	7.03	7.11	7.25	7.11
ORP(MV)	202.5	245.8	171.6	188.2	189	200	202.4
Turbidity (NTUs)	>1100	31.4	>1100	1020	>1100	786	1050

Development Time: 1:06 minutes / hours Amount of Fluids Developed: 48 gallons
Disposition of Fluids: ☐ Drummed Number of drums: _____
☑ Facility wastewater treatment system

Completed by: James Reis Signature:

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-3 Date: 10-23-19 Time: 1400

Client / Location:

Temperature: _____ Clear? Cloudy?

Current Precipitation: None Drizzle Light Moderate Heavy Continuous? Intermittent?

Estimated Wind Speed: Slight Moderate Strong Very Strong

PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Top of Casing _____ feet above ground level _____ feet below ground level

Depth to SPH: _____ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter

Depth to GW: _____ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter

Total Depth: _____ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter

Appearance: ☐ SPH ☐ Sheen ☐ Silty ☐ Turbid ☐ Clear ☐ Opaque

Odor: ☐ Yes ☐ No Type: _____

Additional notes: _____

Development method: ☐ Bailing ☐ Pumping ☐ Air lift ☐ Surge & block

DEVELOPMENT MEASUREMENTS

Parameter	Readings						
Time	1410	1420	1430	1440	1455	1500	1505
Purge Volume	39.00	43.00	46.00	48.00	53.00	53.25	53.75
Temperature (°F)	58.00	57.4	56.8	57.6	56.7	56.3	56.2
Dissolved Oxygen (mg/L)	9.18	3.62	3.76	2.82	3.87	3.36	2.90
Conductivity (uS/cm)	14,713	14,426	14,353	14,287	14,281	14,162	14100
Total Dissolved Solids (mg/L)	1934	1836	1869	1680	1804	1778	1752
pH	7.17	7.23	7.19	7.10	7.10	7.03	7.06
ORP(MV)	194.6	200.2	212.9	211.5	217.2	219.8	228.3
Turbidity (NTUs)	>1100	>1100	399	391	360	169	102
Parameter	**Readings**						
Time	1515	1553	1600	1615	1635		
Purge Volume	56.00	57.00	58.00	62.00	66.00		
Temperature (°F)	56.5	57.5	56.5	56.1	55.7		
Dissolved Oxygen (mg/L)	4.90	5.45	4.05	2.8	3.05		
Conductivity (uS/cm)	14,260	14,545	14,276	14,247	14,205		
Total Dissolved Solids (mg/L)	1849	1882	1862	1888	1934		
pH	7.02	7.24	7.16	7.25	7.30		
ORP(MV)	226.1	217.1	225.8	236.0	232.1		
Turbidity (NTUs)	257	198	184	210.0	164		

Development Time: 6:41 minutes / hours Amount of Fluids Developed: 66 gallons

Disposition of Fluids: ☐ Drummed Number of drums: _____

☑ Facility wastewater treatment system

Completed by: James Reis Signature: _____

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-2 Date: 10/23/19 Time:

POST-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe		☐ Water level meter
Depth to GW:	17.98	☑ BTOC	☐ BGL	☑ Interface probe		☐ Water level meter
Total Depth:	19.18	☑ BTOC	☐ BGL	☑ Interface probe		☐ Water level meter
Appearance:	☐ SPH	☐ Sheen	☐ Silty	☑ Turbid	☐ Clear	☐ Opaque
Odor: ☑ Yes	☐ No	Type:	Hydrocarbon			

Additional notes:

ADDITIONAL FLUID LEVEL MEASUREMENTS:

Date: 10-24-19 Time: 08:30

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	12.57	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	19.10	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Date: 10-28-2019 Time: 0940

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	12.35	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	19.10	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Completed by: James Reis Signature:

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMW 13-4 Date: 10-24-19 Time: 08:15
Client / Location: Marathon Petroleum Co. LP - Gallup Refinery
Temperature: 30° Clear? Cloudy?
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: Slight (Moderate) Strong Very Strong

PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Top of Casing	3	feet above ground level				feet below ground level
Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter	
Depth to GW:	12.78	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter	
Total Depth:	18.89	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter	
Appearance:	☐ SPH	☐ Sheen	☑ Silty	☐ Turbid	☐ Clear	☐ Opaque

Odor: ☐ Yes ☐ No Type:
Additional notes:
Development method: ☑ Bailing ☐ Pumping ☐ Air lift ☐ Surge & block

DEVELOPMENT MEASUREMENTS

Parameter	Readings						
Time	0915	09:25	09:40				
Purge Volume	0	2.00	3.5 BAILED DOWN (DRY)				
Temperature (°F)	55.2	55.5					
Dissolved Oxygen (mg/L)	3.25	2.55					
Conductivity (uS/cm)	14,366	12,873					
Total Dissolved Solids (mg/L)	2155	842					
pH	6.48	6.99					
ORP(MV)	354.6	338.4					
Turbidity (NTUs)	881	>1100					
Parameter	**Readings from 10/29/19**						
Time	1325	1335	1345				
Purge Volume	0	3.00	3.50 (BAILED DOWN DRY)				
Temperature (°F)	55.0	54.6					
Dissolved Oxygen (mg/L)	3.35	3.45					
Conductivity (uS/cm)	16480	16325					
Total Dissolved Solids (mg/L)	3949	3916					
pH	6.87	6.81					
ORP(MV)	320.1	209.0					
Turbidity (NTUs)	189	>1100					

Development Time: 25 ~~minutes~~ / hours Amount of Fluids Developed: 3.5 gallons
Disposition of Fluids: ☐ Drummed Number of drums:
☑ Facility wastewater treatment system

Completed by: James Reis Signature:

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-4 Date: 10/29/2019 Time: 0845
Client / Location: MPC-GR
Temperature: 36° (Clear?) Cloudy?
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: Slight (Moderate) Strong Very Strong

PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Top of Casing _____ feet above ground level _____ feet below ground level
Depth to SPH: _____ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Depth to GW: _____ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Total Depth: _____ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Appearance: ☐ SPH ☐ Sheen ☐ Silty ☐ Turbid ☐ Clear ☐ Opaque
Odor: ☐ Yes ☐ No Type: _____
Additional notes: _____
Development method: ☑ Bailing ☐ Pumping ☐ Air lift ☐ Surge & block

(RE-) DEVELOPMENT MEASUREMENTS

Parameter	Readings						
Time	0900	0910	0920				
Purge Volume	0	2.75	3.00				
Temperature (°F)	53.2	53.9	BAILED DOWN				
Dissolved Oxygen (mg/L)	3.80	5.72	DTW=19.53'BTOC				
Conductivity (uS/cm)	15917	15786	TD=19.56'BTOC				
Total Dissolved Solids (mg/L)	3923	3598	3.0 gals total developed				
pH	5.71	6.26	20 min. of developing				
ORP(MV)	342.6	322.4					
Turbidity (NTUs)	174	>1100					

Parameter	Readings						
Time							
Purge Volume							
Temperature (°F)							
Dissolved Oxygen (mg/L)							
Conductivity (uS/cm)							
Total Dissolved Solids (mg/L)							
pH							
ORP(MV)							
Turbidity (NTUs)							

Development Time: _____ minutes / hours Amount of Fluids Developed: _____ gallons
Disposition of Fluids: ☐ Drummed Number of drums: _____
☐ Facility wastewater treatment system

Completed by: _____ Signature: _____

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-4 Date: 10-24-19 Time: 09:40

POST-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	19.21	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	19.56	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Appearance: ☐ SPH ☐ Sheen ☑ Silty ☐ Turbid ☐ Clear ☐ Opaque

Odor: ☑ Yes ☐ No Type: Hydrocarbon

Additional notes:

ADDITIONAL FLUID LEVEL MEASUREMENTS:

Date: 10-28-2019 Time: 0945

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	12.64	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	19.57	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Date: 10-29-2019 Time: 0900 (Prelim.)

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	12.74	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	19.56	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Completed by: James Reis Signature: [signature]

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-5 Date: 10-24-19 Time: 10:05
Client / Location: Marathon Petroleum Co. LP - Gallup Refinery
Temperature: 40 (Clear?) Cloudy?
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: Slight (Moderate) Strong Very Strong

PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Top of Casing: 3' feet above ground level _____ feet below ground level
Depth to SPH: ND ☐ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: 13.14' ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 19.13' ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Appearance: ☐ SPH ☐ Sheen ☐ Silty ☐ Turbid ☐ Clear ☐ Opaque
Odor: ☑ Yes ☐ No Type: Hydrocarbon
Additional notes:
Development method: ☑ Bailing ☐ Pumping ☐ Air lift ☐ Surge & block

DEVELOPMENT MEASUREMENTS

Parameter	Readings						
Time	10:15	10:25	10:35	10:45	11:05		
Purge Volume	0	2.00	4.50	6.00	6.50	BAILED DOWN (DRY)	
Temperature (°F)	56.6	56.8	55.2	54.5			
Dissolved Oxygen (mg/L)	5.09	4.05	2.87	3.50			
Conductivity (uS/cm)	14,953	14,316	13,818	14,269			
Total Dissolved Solids (mg/L)	2399.0	1882.0	1713.0	2174.5			
pH	6.75	6.82	6.73	6.82			
ORP(MV)	349.1	339.2	335.9	317.4			
Turbidity (NTUs)	402	>1100	71100	>1100			

Parameter	Readings						
Time							
Purge Volume							
Temperature (°F)							
Dissolved Oxygen (mg/L)							
Conductivity (uS/cm)							
Total Dissolved Solids (mg/L)							
pH							
ORP(MV)							
Turbidity (NTUs)							

Development Time: 50 (minutes) hours Amount of Fluids Developed: 6.5 gallons
Disposition of Fluids: ☐ Drummed Number of drums: _____
☑ Facility wastewater treatment system

Completed by: James Reis Signature: [signature]

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-5 Date: 10/29/2019 Time: 0930
Client / Location: MPC-GR
Temperature: 38 (Clear?) Cloudy?
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: Slight (Moderate) Strong Very Strong

PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Top of Casing _____ feet above ground level _____ feet below ground level
Depth to SPH: _____ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Depth to GW: _____ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Total Depth: _____ ☐ BTOC ☐ BGL ☐ Interface probe ☐ Water level meter
Appearance: ☐ SPH ☐ Sheen ☐ Silty ☐ Turbid ☐ Clear ☐ Opaque
Odor: ☐ Yes ☐ No Type: _____
Additional notes: _____
Development method: ☑ Bailing ☐ Pumping ☐ Air lift ☐ Surge & block

DEVELOPMENT MEASUREMENTS

Parameter	Readings						
Time	0940	0950	10:00	10:35			
Purge Volume	0	2.0	4.0	7.0			
Temperature (°F)	55.2	55.8	54.8	BAILED DOWN			
Dissolved Oxygen (mg/L)	3.27	3.26	3.19	DTW=18.65' BTOC			
Conductivity (uS/cm)	17,270	17,033	16,982	TD = 19.13' BTOC			
Total Dissolved Solids (mg/L)	4612	4358	4475	7.0 gals total developed			
pH	6.42	6.34	6.32	55 mins of developing			
ORP(MV)	282.5	283.0	286.6				
Turbidity (NTUs)	84	122	298				

Parameter	Readings						
Time							
Purge Volume							
Temperature (°F)							
Dissolved Oxygen (mg/L)							
Conductivity (uS/cm)							
Total Dissolved Solids (mg/L)							
pH							
ORP(MV)							
Turbidity (NTUs)							

Development Time: _____ minutes / hours Amount of Fluids Developed: _____ gallons
Disposition of Fluids: ☐ Drummed Number of drums: _____
☐ Facility wastewater treatment system

Completed by: _____ Signature: _____

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU B-5 Date: 10-24-19 Time: 11:05

POST-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	18.95	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	19.15	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Appearance: ☐ SPH ☐ Sheen ☑ Silty ☐ Turbid ☐ Clear ☐ Opaque

Odor: ☑ Yes ☐ No Type: Hydrocarbon

Additional notes:

ADDITIONAL FLUID LEVEL MEASUREMENTS:

Date: 10-28-2019 Time: 0950

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	12.85	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	19.15	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Date: 10-29-2019 Time: 0930 (Prelim)

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	12.78	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	19.21	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Completed by: James Reis Signature: [signature]

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-6 Date: 10.28.2019 Time: 1025
Client / Location: MARATHON PETROLEUM Co. LP
Temperature: 33°F Clear? (Cloudy)
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: Slight (Moderate) Strong Very Strong

PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Top of Casing	2	feet above ground level			_____	feet below ground level
Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter	
Depth to GW:	13.98	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter	
Total Depth:	19.71	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter	
Appearance:	☐ SPH	☐ Sheen	☑ Silty	☑ Turbid	☐ Clear	☐ Opaque
Odor: ☐ Yes	☐ No	Type:				

Additional notes:
Development method: ☒ Bailing ☐ Pumping ☐ Air lift ☐ Surge & block

DEVELOPMENT MEASUREMENTS

Parameter	10/28/2019		Readings				
Time	1030	1040	BAILED				
Purge Volume	~~5~~ 0	1	DRY @				
Temperature (°F)	54.8	55.2	1.1 GALS				
Dissolved Oxygen (mg/L)	7.24	5.48					
Conductivity (uS/cm)	11,443	11471					
Total Dissolved Solids (mg/L)	9912	9776					
pH	7.36	7.04					
ORP(MV)	248.1	262.6					
Turbidity (NTUs)	434	>1100					
Parameter	10/29/2019		**Readings**				
Time	11:10	11:20	11:25				
Purge Volume	0	1.5	2.0				
Temperature (°F)	56.0	55.6	BAILED DOWN				
Dissolved Oxygen (mg/L)	3.09	4.92	DTW = 19.29' BTOC				
Conductivity (uS/cm)	12024	11,723	TD = 19.89' BTOC				
Total Dissolved Solids (mg/L)	42.5	9873	2 gals total bailed				
pH	6.83	6.78	15 min total bailing				
ORP(MV)	278.3	305.1					
Turbidity (NTUs)	138	>1100					

Development Time: 35 minutes / hours Amount of Fluids Developed: 1.1 gallons
Disposition of Fluids: ☐ Drummed Number of drums: _____
☒ Facility wastewater treatment system

Completed by: James Reis Signature: [signature]

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-6 Date: 10-28-2019 Time: 1025

POST-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	13.98	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	19.71	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Appearance: ☐ SPH ☐ Sheen ☑ Silty ☑ Turbid ☐ Clear ☐ Opaque

Odor: ☑ Yes ☐ No Type: ______

Additional notes:

ADDITIONAL FLUID LEVEL MEASUREMENTS:

Date: 10-29-2019 Time: 11:00 (Prelim.)

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	13.94	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	19.85	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Date: ______ Time: ______

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: ______ Time: ______

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: ______ Time: ______

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: ______ Time: ______

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: ______ Time: ______

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: ______ Time: ______

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Completed by: James Ros Signature: [signature]

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-7 Date: 10.28.2019 Time: 1125
Client / Location: MARATHON PETROLEUM Co. LP
Temperature: 34°F Clear? (Cloudy?)
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: Slight (Moderate) Strong Very Strong

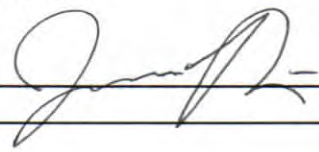
PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Top of Casing	3	feet above ground level			_____	feet below ground level
Depth to SPH:	ND	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter	
Depth to GW:	15.44	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter	
Total Depth:	20.37	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter	
Appearance:	☐ SPH	☐ Sheen	☑ Silty	☑ Turbid	☐ Clear	☐ Opaque
Odor:	☑ Yes	☐ No	Type:	Hydrocarbon?		
Additional notes:						
Development method:	☑ Bailing	☐ Pumping	☐ Air lift	☐ Surge & block		

DEVELOPMENT MEASUREMENTS

Parameter	10/28/2019 Readings						
Time	1130	1135	1140	1200			
Purge Volume	0	0.8	1.5	2.5			
Temperature (°F)	55.2	56.2	55.9	54.3	BAILED		
Dissolved Oxygen (mg/L)	2.43	2.68	3.60	3.82	DRY AT		
Conductivity (uS/cm)	16,711	16,707	15,674	16,389	2.6 GALS		
Total Dissolved Solids (mg/L)	4456	3968	3201	4215			
pH	6.94	6.98	7.01	7.03			
ORP(MV)	264.6	233.6	63.2	112.0			
Turbidity (NTUs)	>1100	>1100	>1100	>1100			
Parameter	**10/29/2019 Readings**						
Time	1145	1158	12:05				
Purge Volume	0	1.2	2.2				
Temperature (°F)	57.4	56.4	BAILED DOWN				
Dissolved Oxygen (mg/L)	3.18	3.60	DTW=19.79' BTOC				
Conductivity (uS/cm)	17,646	17407	TD=20.43' BTOC				
Total Dissolved Solids (mg/L)	4469	4499	2.2 gals total bailed				
pH	6.74	6.85	20 min total bailing				
ORP(MV)	258.1	244.5					
Turbidity (NTUs)	202	36.6					

Development Time: 40 (minutes) / hours Amount of Fluids Developed: 2.6 gallons
Disposition of Fluids: ☐ Drummed Number of drums: _____
☑ Facility wastewater treatment system

Completed by: James Reis Signature: 

WELL DEVELOPMENT WORKSHEET

Well Identification: SWMU 13-7 Date: 10-28-2019 Time: 1125

POST-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

Depth to SPH:	ND	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	15.44	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	20.37	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Appearance:	☐ SPH	☐ Sheen	☑ Silty	☑ Turbid	☐ Clear ☐ Opaque

Odor: ☑ Yes ☐ No Type: Odor, possibly hydrocarbon

Additional notes:

ADDITIONAL FLUID LEVEL MEASUREMENTS:

Date: 10-29-2019 Time: 11:35 (Prelim)

Depth to SPH:	ND	☐ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Depth to GW:	15.39	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter
Total Depth:	20.43	☑ BTOC	☐ BGL	☑ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Date: Time:

Depth to SPH:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Depth to GW:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter
Total Depth:		☐ BTOC	☐ BGL	☐ Interface probe	☐ Water level meter

Completed by: James Reis Signature: [signature]

WELL SAMPLING WORKSHEET

Well Identification: SWMU 13-2 Date: 11-5-2019 Time: 11:25
Client / Location: Marathon Petroleum Co LP - Gallup Refinery
Temperature: 60°F (Clear?) Cloudy? 0
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: (Slight) Moderate Strong Very Strong
Top of Casing 3 feet above ground level _____ feet below ground level
Depth to SPH: ND ☐ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: 14.94 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 19.40 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Fluid column length: 4.5 (feet) 0.17
One well volume = Fluid column length x ~~0.75~~ gal/ft = 0.75 gals: 3 vols = 2.3 gals
(2" = 0.17 gal/ft) 4" = 0.66 gal/ft 6" = 1.5 gal/ft 8" = 2.60 gal/ft

Parameter	Readings						
Purge Volume	0	1	2	3	4	5	6
Temperature (°F)	59.2	58.3	57.7	57.7			
Dissolved Oxygen (mg/L)	4.83	3.35	5.84	4.08			
Conductivity (uS/cm)	16,709	16,601	16,534	16613			
Total Dissolved Solids (mg/L)	3403	3455	3562.5	3598.1			
pH	6.43	6.35	6.30	6.40			
ORP(MV)	172.3	181.2	186.9	191.3			
Turbidity (NTUs)	>40.0	>1100	864	777			

Actual Purge Volume: 2.75 galllons Bailed Dry? YES Time 1145 DTSPH ND DTW 19.35' BTOC
Odor: Strong odor Appearance: Turbid, Reddish-brown
Comments:

Date: 11-6-2019 Time: 0800 DTSPH: ND DTW: 17.58
Temp: 43°F Clear? (Cloudy?) Current Precip. light Est. Wind Speed: 1mph
Sampling Method: Bailer / Pump Sampling Sequence: VOCs, SVOCs, Metals, Inorganics
Sample Date: 11-6-2019 Sample Time: 0800

Sample ID	Container Type:	No. of Containers:	Preservatives:
SWMU 13-2-GW	40ml Voa	5	HCl
	250ml Amber	1	—
	1 liter Amber	1	—
	250ml plastic	1	HNO_3
	125ml plastic	1	HNO_3
	125ml plastic	1	H_2SO_4
	500ml plastic	1	—
	500ml plastic	1	NaOH

Odor: Faint Appearance: Turbid
Comments: Nitrate- Nitrite-
Duplicate collected: Yes / (No) Purge water disposal method: None (All Water used for samples)
Dup ID: _____ Field Blank ID: _____ Equip. Blank ID: _____
Internal Temperature of Shipping Container: _____ ( )
Sampling completed by: James Ras Signature:

WELL SAMPLING WORKSHEET

Well Identification: SWMU 13-3 Date: 11-5-2019 Time: 12:30
Client / Location: Marathon Petroleum Co., LP - Gallup Refinery
Temperature: 65°F (Clear?) Cloudy? 0
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: Slight (Moderate) Strong Very Strong
Top of Casing 3 feet above ground level _____ feet below ground level
Depth to SPH: ND ☐ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: 12.53 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 19.16 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Fluid column length: 6.63 (feet)
One well volume = Fluid column length x 0.17 gal/ft = 1.13 gals: 3 vols = 3.4 gals
(2" = 0.17 gal/ft) 4" = 0.66 gal/ft 6" = 1.5 gal/ft 8" = 2.60 gal/ft

Parameter	Readings						
Purge Volume	0	1	2	3	4	5	6
Temperature (°F)	60.1	58.8	57.9	57.2	57.4	57.6	
Dissolved Oxygen (mg/L)	4.35	4.36	4.58	4.05	2.50	3.76	
Conductivity (uS/cm)	16,360	16038	15,851	8949	15,620	15,635	
Total Dissolved Solids (mg/L)	2889.5	2844.0	2876.5	7345	2850.5	2785.0	
pH	6.4	6.39	6.30	6.36	6.47	6.54	
ORP(MV)	194.9	195.9	197.7	201.2	203.1	201.7	
Turbidity (NTUs)	2.83	66.2	78.3	100	346	901	

Actual Purge Volume: 6.5 galllons Bailed Dry? YES Time 13:10 DTSPH ND DTW 18.65
Odor: Strong Appearance: Clear
Comments:

Date: 11-6-2019 Time: 0910 DTSPH: ND DTW: 12.52
Temp: _____ Clear? Cloudy? Current Precip. _____ Est. Wind Speed: _____
Sampling Method: (Bailer) Pump Sampling Sequence: VOCs, SVOCs, Metals, Inorganics
Sample Date: 11-6-2019 Sample Time: 0910

Sample ID	Container Type:	No. of Containers:	Preservatives:
SWMU13-4-GW	40ml Vog	5	HCl
	250ml Amber	1	—
	1 liter Amber	3	—
	250ml plastic	1	HNO_3
	125ml plastic	1	HNO_3
	125ml plastic	1	H_2SO_4
	500ml plastic	1	—
	500 ml plastic	1	NaOH
		*	

Odor: Strong Appearance: Clear
Comments: Nitrate - 0.0 Nitrite - 0.0
Duplicate collected: (Yes) No Purge water disposal method: Facility disposal area
Dup ID: SWMU13-DUP01 Field Blank ID: _____ Equip. Blank ID: _____
Internal Temperature of Shipping Container: _____ ( )
Sampling completed by: James Reis Signature: [signature]

WELL SAMPLING WORKSHEET

Well Identification: SWMU 13-4 Date: 11-5-2019 Time: 1340
Client / Location: Marathon Petroleum Co. LP - Gallup Refinery
Temperature: 65°F (Clear?) Cloudy?
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: (Slight) Moderate Strong Very Strong
Top of Casing 3 feet above ground level _____ feet below ground level
Depth to SPH: ND ☐ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: 12.77 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 19.61 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Fluid column length: 6.84 (feet)
One well volume = Fluid column length x 0.17 gal/ft = 1.2 gals: 3 vols = 3.5 gals
(2" = 0.17 gal/ft) 4" = 0.66 gal/ft 6" = 1.5 gal/ft 8" = 2.60 gal/ft

Parameter	Readings						
Purge Volume	0	1	2	3	4	5	6
Temperature (°F)	59.6	58.0	57.3				
Dissolved Oxygen (mg/L)	4.30	4.45	4.41				
Conductivity (uS/cm)	15,579	15,431	15,356				
Total Dissolved Solids (mg/L)	2421.5	2499.5	2603.5				
pH	6.45	6.58	6.52				
ORP(MV)	224.2	223.7	236.2				
Turbidity (NTUs)	34.9	>1100	130				

Actual Purge Volume: 3.0 galllons Bailed Dry? YES Time 1405 DTSPH ND DTW 19.39
Odor: Yes, faint Appearance: Turbid
Comments:

Date: 11-6-2019 Time: 11:30 DTSPH: _____ DTW: 12.85
Temp: 48 Clear? (Cloudy?) Current Precip. None Est. Wind Speed: 11mph
Sampling Method: (Bailer) Pump Sampling Sequence: VOCs, SVOCs, Metals, Inorganics
Sample Date: 11-6-2019 Sample Time: 11:30

Sample ID	Container Type:	No. of Containers:	Preservatives:
SWMU 13-4-GW	40ml Voa	5	HCl
	250ml Amber	1	—
	1 liter Amber	3	—
	250ml plastic	1	HNO3
	125ml plastic	1	HNO3
	125ml plastic	1	H2SO4
	500ml plastic	1	—
	500ml plastic	1	NaOH

Odor: None Appearance: Clear
Comments: Nitrate - 2.0 Nitrite 0.04
Duplicate collected: Yes / No Purge water disposal method: _____
Dup ID: _____ Field Blank ID: _____ Equip. Blank ID: _____
Internal Temperature of Shipping Container: _____ ( )
Sampling completed by: James Reis Signature: [signature]

WELL SAMPLING WORKSHEET

Well Identification: SWMU 13-5 Date: 11-6-2019 Time: 14:30
Client / Location: Marathon Petroleum Co. LP - Gallup Refinery
Temperature: 49°F Clear? (Cloudy?)
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: (Slight) Moderate Strong Very Strong
Top of Casing 3 feet above ground level _____ feet below ground level
Depth to SPH: ND ☐ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: 12.96 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 19.15 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Fluid column length: 6.19 (feet)
One well volume = Fluid column length x 0.17 gal/ft = 1.1 gals: 3 vols = 3.3 gals
(2" = 0.17 gal/ft) 4" = 0.66 gal/ft 6" = 1.5 gal/ft 8" = 2.60 gal/ft

Parameter	Readings						
Purge Volume	0	1	2	3	4	5	6
Temperature (°F)	58.1	58.0	58.0	57.1	56.5		
Dissolved Oxygen (mg/L)	4.75	3.77	3.77	3.05	2.02		
Conductivity (uS/cm)	16,675	16,687	16628	16,512	16470		
Total Dissolved Solids (mg/L)	3565.5	3578.5	3669.5	3617.5	3695.5		
pH	5.92	5.93	6.36	6.42	6.61		
ORP(MV)	293.4	291.7	292.1	292.0	288.8		
Turbidity (NTUs)	17.5	1040	>1100	1040	>1100		

Actual Purge Volume: 6.3 galllons Bailed Dry? YES Time 1515 DTSPH ND DTW 1865
Odor: Strong odor Appearance: Silty / Turbid
Comments: Nitrate - Nitrite -

Date: 11-7-2019 Time: 0800 DTSPH: ND DTW: 13.06
Temp: 38°F Clear? (Cloudy?) Current Precip. NONE Est. Wind Speed: 3mph
Sampling Method: (Bailer) / Pump Sampling Sequence: VOCs, SVOCs, Metals, Inorganics
Sample Date: 11-7-2019 Sample Time: 0815

Sample ID	Container Type:	No. of Containers:	Preservatives:
SWMU 13-5-GW	40ml Voa	5	HCl
	1 liter Amber	3	—
	250ml plastic	1	HNO3
	125ml plastic	1	HNO3
	125ml plastic	1	H2SO4
	500ml plastic	1	—
	500ml plastic	1	NaOH
	250ml Amber	1	—

Odor: Strong (Hydrocarbon?) Appearance: Opaque
Comments:
Duplicate collected: Yes (NO) Purge water disposal method: Facility Waste Water (Bundle Slab)
Dup ID: _____ Field Blank ID: _____ Equip. Blank ID: _____
Internal Temperature of Shipping Container: _____ ( )
Sampling completed by: James Reis Signature: [signature]

WELL SAMPLING WORKSHEET

Well Identification: SWMU 13-6 Date: 11-6-2019 Time: 15:45
Client / Location: Marathon Petroleum Co. LP - Gallup Refinery
Temperature: 49°F Clear? (Cloudy?) g
Current Precipitation: (None) Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: Slight (Moderate) Strong Very Strong
Top of Casing 2 feet above ground level _____ feet below ground level
Depth to SPH: ND ☐ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: 13.96 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 19.85 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Fluid column length: 5.89 (feet)
One well volume = Fluid column length x 0.17 gal/ft = 1.0 gals: 3 vols = 3.0 gals
(2" = 0.17 gal/ft) 4" = 0.66 gal/ft 6" = 1.5 gal/ft 8" = 2.60 gal/ft

Parameter	Readings						
Purge Volume	0	1	2	3	4	5	6
Temperature (°F)	58.1						
Dissolved Oxygen (mg/L)	2.93						
Conductivity (uS/cm)	11377						
Total Dissolved Solids (mg/L)	9256						
pH	6.86						
ORP(MV)	272.0						
Turbidity (NTUs)	>40.0						

Actual Purge Volume: 0.75 galllons Bailed Dry? YES Time 1550 DTSPH ND DTW 19.18
Odor: NO Appearance: Clear / ~~ob~~ opaque
Comments: Nitrate - Nitrite -
Date: ~~11-6-~~ 11-7-2019 Time: 0920 DTSPH: ND DTW: 14.05
Temp: 39°F Clear? ~~Cloudy?~~ Current Precip. NONE Est. Wind Speed: 3mph
Sampling Method: ~~Bailer~~ / Pump Sampling Sequence: VOCs, SVOCs, Metals, Inorganics
Sample Date: 11-7-2019 Sample Time: 0930

Sample ID	Container Type:	No. of Containers:	Preservatives:
SWMU 13-6-GW	40ml Voa	5	HCl
	250ml Amber	1	–
	1L Amber	3	–
	250ml plastic	1	HNO3
	125ml plastic	1	HNO3
	125ml plastic	1	H2SO4
	500ml plastic	1	–
	500ml plastic	1	NaOH

Odor: NONE Appearance: Clear to Opaque
Comments:
Duplicate collected: Yes (No) Purge water disposal method: Facility Waste Water (Bundle Slab)
Dup ID: _____ Field Blank ID: _____ Equip. Blank ID: _____
Internal Temperature of Shipping Container: _____ ( )
Sampling completed by: James Reis Signature:

WELL SAMPLING WORKSHEET

Well Identification: SWMU 13-7 Date: 11-6-2019 Time: ~~15:50~~ 16:15
Client / Location: Marathon Petroleum Co. LP - Gallup Refinery
Temperature: 48°F Clear? Cloudy?
Current Precipitation: ~~None~~ Drizzle Light Moderate Heavy Continuous? Intermittent?
Estimated Wind Speed: Slight Moderate Strong Very Strong
Top of Casing 3 feet above ground level _____ feet below ground level
Depth to SPH: ND ☐ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Depth to GW: 15.40 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Total Depth: 20.45 ☑ BTOC ☐ BGL ☑ Interface probe ☐ Water level meter
Fluid column length: 5.05 (feet)
One well volume = Fluid column length x 0.17 gal/ft = 0.86 gals: 3 vols = ~~2.58~~ 2.58 gals
2" = 0.17 gal/ft 4" = 0.66 gal/ft 6" = 1.5 gal/ft 8" = 2.60 gal/ft

Parameter	Readings						
Purge Volume	0	1	2	3	4	5	6
Temperature (°F)	56.9	57.0					
Dissolved Oxygen (mg/L)	3.51	4.13					
Conductivity (uS/cm)	16,672	17055					
Total Dissolved Solids (mg/L)	3637.5	4092					
pH	6.89	6.83					
ORP(MV)	270.6	249.1					
Turbidity (NTUs)	14.4	890					

Actual Purge Volume: 1.5 galllons Bailed Dry? YES Time 1622 DTSPH ND DTW 20.01
Odor: Hydrocarbon Appearance: Clear
Comments: Nitrate- Nitrite-
Date: 11-7-2019 Time: 10:10 DTSPH: ND DTW: 15.42
Temp: 40°F Clear? Cloudy? Current Precip. NONE Est. Wind Speed: 3mph
Sampling Method: Bailer / Pump Sampling Sequence: VOCs, SVOCs, Metals, Inorganics
Sample Date: 11-7-2019 Sample Time: 10:20

Sample ID	Container Type:	No. of Containers:	Preservatives:
SWMU 13-7-GW	40ml Voa	5	HCl
	250ml Amber	1	—
	1L Amber	3	—
	250ml plastic	1	HNO3
	125ml plastic	1	HNO3
	125ml plastic	1	H2SO4
	500ml plastic	1	—
	500ml plastic	1	NaOH

Odor: Hydrocarbon? Strong Appearance: Opaque
Comments:
Duplicate collected: Yes / No Purge water disposal method: Facility Waste Water (Bundle Slab)
Dup ID: _____ Field Blank ID: _____ Equip. Blank ID: _____
Internal Temperature of Shipping Container: _____ ( )
Sampling completed by: James Reis Signature:

Appendix F

Soil Boring/Well Logs

DiSorbo
Environmental Consulting Firm

Marathon Petroleum Company LP
Gallup Refinery - SWMU 13
WEST19038-02

Geologist	: Tracy Payne
Drilling Company	: Terracon
Driller	: Cothron
Drilling Rig	: CME 55 Track Rig
Drilling Method	: Hollow-Stem Augers 8"
Sampling Method	: 2' Split Spoon
Total Depth	: 16'
Saturation Depth	: 10'
Start Date/Time	: 10/22/19 - 09:20
Finish Date/Time	: 10/22/19 - 10:40

BORING NO. SWMU 13-1

(Sheet 1 of 1)

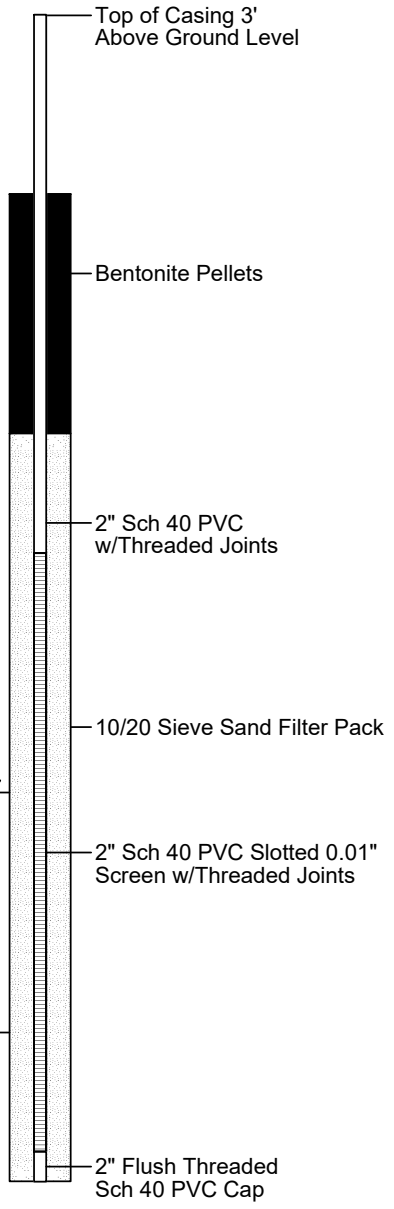
Northing	: 1635283.76
Easting	: 2544450.28
Ground Elevation	: 6884.38 ft. MSL
Comments	: Elev. 2.54' above bottom of ditch. Hand augered to 5'.

Saturation
▼ Saturation

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	1.4			ML	100		SILT/CLAYEY SILT - very fine, low, soft, damp, brown, no odor.
1	1.1						
2	1.2			CL	100		SILTY CLAY - low, firm, damp, brown, no odor.
3	1.1						
4	1.2						
5	89.7			CH	90		CLAY - high, firm, damp, brown, no odor.
6				CH	50		CLAY - Similar to above (STA), no odor, becomes sandy at base (clayey sand).
7	4.3						
8				SC/SP	100		CLAYEY SAND/SAND - fine, loose, damp, brown, no odor.
9	4.7						
10		▼		SC/SP	100		CLAYEY SAND/SAND - STA, very moist to saturated, no odor.
11	2.4						
12				SC/SP	60		CLAYEY SAND/SAND - STA, moist to saturated at base, no odor.
13	2.7						
14				CH	100		CLAY - high, stiff, damp, brown, no odor.
15	2.8						
16							
17							

Completion Results

Temporary Well SWMU 13-1



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DiSorbo
Environmental Consulting Firm

Marathon Petroleum Company LP
Gallup Refinery - SWMU 13
WEST19038-02

Geologist	: Tracy Payne
Drilling Company	: Terracon
Driller	: Cothron
Drilling Rig	: CME 55 Track Rig
Drilling Method	: Hollow-Stem Augers 8"
Sampling Method	: 2' Split Spoon
Total Depth	: 16'
Saturation Depth	: ~12'
Start Date/Time	: 10/22/19 - 12:35
Finish Date/Time	: 10/22/19 - 13:25

BORING NO. SWMU 13-2

(Sheet 1 of 1)

Northing	: 1635255.51
Easting	: 2544452.89
Ground Elevation	: 6884.22 ft. MSL
Comments	: Elev. 2.38' above bottom of ditch. Hand augered to 5'.

Saturation
▼ Saturation

Completion Results

Temporary Well SWMU 13-2

Depth (ft.)	PID (ppm)	USCS	Recovery (%)	DESCRIPTION
0	6.3	ML	100	SILT/CLAYEY SLIT - very fine, low, soft, damp, brown, no odor.
1	4.8			
2	2.3			
3	2.9	CL	100	SILTY CLAY - low, firm, damp, brown, no odor - high plasticity at base.
4				
5	3.1			
	1.5	CH	100	CLAY - high, stiff, damp, brown, no odor.
6		CH	50	CLAY - Similar to above (STA), no odor.
7	2.7	CL	50	SILTY CLAY - low, firm/crumbly, damp, brown, no odor, trace sand at base.
8				
9	1.3	SC/CL	80	CLAYEY SAND/SANDY CLAY - fine compact, damp to moist at base, brown, no odor.
10	2.1	SP	90	SAND - fine to medium, loose, brown, damp to moist, no odor.
11	1.8	CH	90	CLAY - high, very soft, damp to moist, brown, no odor
12		CH	90	CLAY - STA, moist to saturated in very soft lense, no odor
13	1.2			
14		CH	90	CLAY - high, stiff, damp, brown, no odor.
15	1.1	CH	90	CLAY - STA, no odor
16		CL	90	SILTY CLAY - low, firm, damp, brown, no odor.
17				

Top of Casing 3' Above Ground Level
Bentonite Pellets
2" Sch 40 PVC w/Threaded Joints
10/20 Sieve Sand Filter Pack
2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints
2" Flush Threaded Sch 40 PVC Cap

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DiSorbo
Environmental Consulting Firm

Marathon Petroleum Company LP
Gallup Refinery - SWMU 13
WEST19038-02

Geologist	: Tracy Payne
Drilling Company	: Terracon
Driller	: Cothron
Drilling Rig	: CME 55 Track Rig
Drilling Method	: Hollow-Stem Augers 8"
Sampling Method	: 2' Split Spoon
Total Depth	: 16'
Saturation Depth	: 10' & 15.25'
Start Date/Time	: 10/22/19 - 14:40
Finish Date/Time	: 10/22/19 - 16:35

BORING NO. SWMU 13-3

(Sheet 1 of 1)

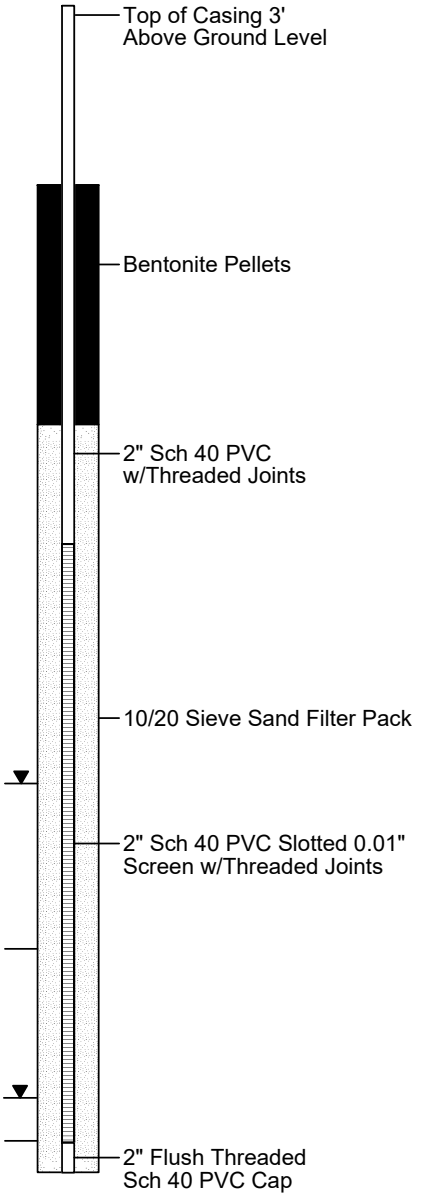
Northing	: 1635235.05
Easting	: 2544528.80
Ground Elevation	: 6883.78 ft. MSL
Comments	: Elev. 1.64' above bottom of ditch. Hand augered to 5'.

Saturation
▼ Saturation

Completion Results

Temporary Well SWMU 13-3

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	0.8			ML	100		SILT/CLAYEY SLIT - very fine, low, soft/loose, damp, brown, no odor.
1	0.8						
2	1.4			CH	100		SILTY CLAY - high, firm, damp, brown, no odor.
3	1.3						
4	1.3						
5	3.0			CH	100		CLAY - Similar to above (STA), no odor, stiff.
6				CH	50		CLAY - STA, no odor.
7	4.0			CL	50		SILTY CLAY - low, firm/crumbly, damp, brown, no odor.
8				CL	50		SILTY CLAY - low, very soft, moist, brown, no odor.
9	1.3						
10		▼					
11	2.1			CL	90		SANDY CLAY - low, very soft, saturated in fine grain sand lenses throughout, brown, no odor.
12	1.8			CL	90		SANDY CLAY - STA, saturated, no odor.
13	1.8			CH	90		CLAY - high, stiff, damp, brown, no odor.
14	0.9			CH	90		CLAY - STA, no odor.
15		▼					
16	2.1			SC	90		CLAYEY SAND - fine, compact to loose, saturated, brown, no odor.
17							



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Environmental Consulting Firm

Marathon Petroleum Company LP
Gallup Refinery - SWMU 13
WEST19038-02

Geologist	: Tracy Payne
Drilling Company	: Terracon
Driller	: Cothron
Drilling Rig	: CME 55 Track Rig
Drilling Method	: Hollow-Stem Augers 8"
Sampling Method	: 2' Split Spoon
Total Depth	: 16'
Saturation Depth	: 10' & 15.25'
Start Date/Time	: 10/23/19 - 08:40
Finish Date/Time	: 10/23/19 - 10:15

BORING NO. SWMU 13-4

(Sheet 1 of 1)

Northing	: 1635221.64
Easting	: 2544608.45
Ground Elevation	: 6884.65 ft. MSL
Comments	: Elev. 1.93' above bottom of ditch. Hand augered to 5'.

Saturation
▼ Saturation

Completion Results

Temporary Well SWMU 13-4

Depth (ft.)	PID (ppm)	USCS	Recovery (%)	DESCRIPTION
0	1.9	ML	100	SILT/CLAYEY SILT - very fine, low, soft, damp, brown, no odor.
1	1.5			
2	1.6	CH	100	CLAY - high, firm to stiff, damp, brown, no odor.
3	2.3			
4	2.3			
5	4.7	CH	100	CLAY - Similar to above (STA), no odor.
6		CH	100	CLAY - STA, very stiff, no odor, calcareous.
7	11.0			
8	13.4	CH	70	CLAY - STA, no odor.
9	10.4	CL	70	SILTY CLAY - low, very soft, damp, brown, no odor.
10		SC	70	CLAYEY SAND - fine, compact, saturated, brown, no odor.
11	-			
12		SC	70	CLAYEY SAND - STA, saturated, no odor.
13	-			
14		CH	100	CLAY - moderate to high, firm, damp, brown, no odor.
		CH	100	
15	10.1	CL	100	CLAY - STA, no odor.
16	-	SP	100	SILTY CLAY - low, soft, damp, brown, no odor.
17				SAND - fine to medium, loose, brown, saturated, no odor.

Top of Casing 3' Above Ground Level
Bentonite Pellets
2" Sch 40 PVC w/Threaded Joints
10/20 Sieve Sand Filter Pack
2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints
2" Flush Threaded Sch 40 PVC Cap

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DiSorbo
Environmental Consulting Firm

Marathon Petroleum Company LP
Gallup Refinery - SWMU 13
WEST19038-02

Geologist	: Tracy Payne
Drilling Company	: Terracon
Driller	: Cothron
Drilling Rig	: CME 55 Track Rig
Drilling Method	: Hollow-Stem Augers 8"
Sampling Method	: 2' Split Spoon
Total Depth	: 16'
Saturation Depth	: 10.5'
Start Date/Time	: 10/23/19 - 12:15
Finish Date/Time	: 10/23/19 - 13:45

BORING NO. SWMU 13-5

(Sheet 1 of 1)

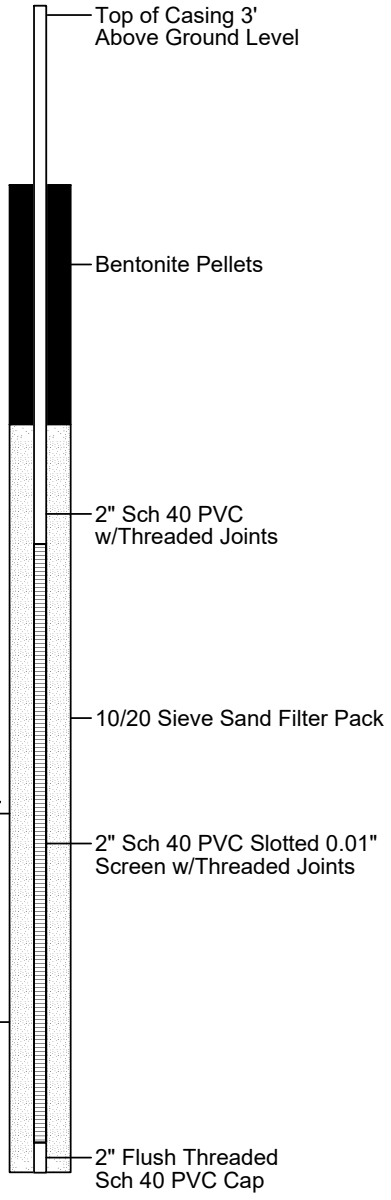
Northing	: 1635207.59
Easting	: 2544674.13
Ground Elevation	: 6885.36 ft. MSL
Comments	: Elev. 2.76' above bottom of ditch. Hand augered to 5'.

Saturation
▼ Saturation

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	5.0			ML	100		SILT - very fine, loose, dry to damp, brown, no odor.
1	5.9						
2	7.2			CL	100		SILTY CLAY - low to moderate, firm, damp, brown, calcareous, no odor.
3	7.7						
4	4.5						
5	15.6			CH	100		CLAY - high, stiff, damp, brown, no odor.
6				CH	90		CLAY - Similar to above (STA), no odor.
7	11.9						
8				CH	60		CLAY - STA, no odor, increase silt at base.
9	15.6						
10	13.1	▼		CH			CLAY - STA.
11	-			SC/SP	50		CLAYEY SAND/SAND - fine, compact to loose, saturated, brown, no odor
12							
13	-			SM/ML	100		SILTY SAND/SANDY SILT - very fine grain, loose, saturated, brown, no odor
14							
15	11.4			CH	90		CLAY - high, stiff, damp, brown, no odor.
16							
17							

Completion Results

Temporary Well SWMU 13-5



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Environmental Consulting Firm

Marathon Petroleum Company LP
Gallup Refinery - SWMU 13
WEST19038-02

Geologist	: Tracy Payne
Drilling Company	: Terracon
Driller	: Cothron
Drilling Rig	: CME 55 Track Rig
Drilling Method	: Hollow-Stem Augers 8"
Sampling Method	: 2' Split Spoon
Total Depth	: 18'
Saturation Depth(s)	: 3' & 11'
Start Date/Time	: 10/23/19 - 15:10
Finish Date/Time	: 10/24/19 - 08:20

BORING NO. SWMU 13-6

(Sheet 1 of 1)

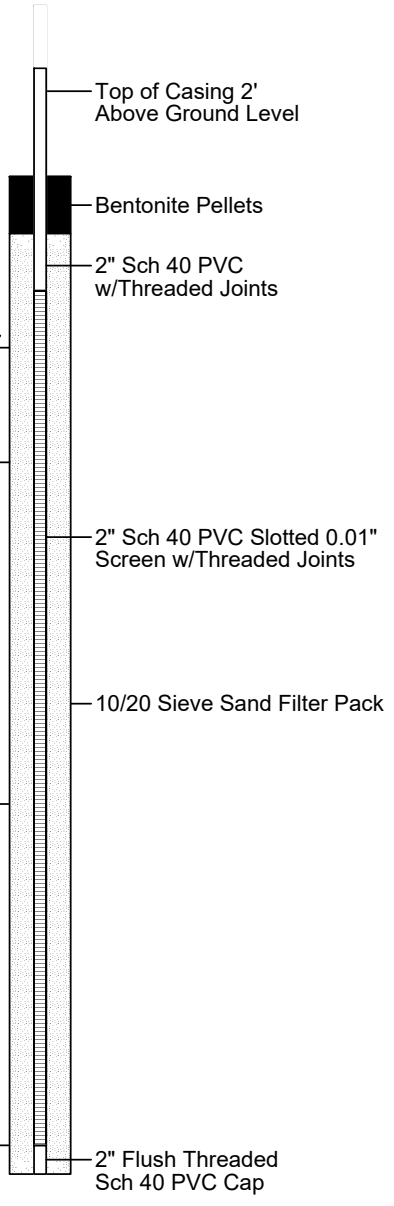
Northing	: 1635168.07
Easting	: 2544762.81
Ground Elevation	: 6887.13 ft. MSL
Comments	: Elev. 2.31' above bottom of retention pond. Hand augered to 5'

Saturation
▼ Saturation

Completion Results

Temporary Well SWMU 13-6

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	5.1			CL	100		SILTLY CLAY - low, soft, damp, brown, no odor.
1	9.2						
2	15.6						
	15.7	▼		CL	100		SILTY CLAY - Similar to above (STA), more moisture than above.
3	-			CL/ML	100		CLAYEY SILT/SILTY CLAY - low, very soft/creamy, saturated, hydrocarbon odor.
4	-						
5	10.1			CL	100		CLAY - moderate to low, soft, damp, brown, faint odor
6	11.3			CH	70		CLAY - high, stiff, damp, brown, hydrocarbon odor.
7							
8	7.5			CH	100		CLAY - STA, no odor.
9							
10	4.7	▼		CH	100		CLAY - STA, no odor.
11	-			SC	100		CLAYEY SAND - fine, compact, saturated, brown, no odor.
12	-			SP/SM	70		SAND/SILTY SAND - fine to medium, loose, saturated, brown, gravelly at base
13							
14	-			SM	80		SILTY SAND - fine, compact, damp, brown, saturated, no odor, CH CLAY at base.
15							
16	-			SM	80		SILTY SAND - STA, saturated, no odor.
17	1.2			CH	80		CLAY - high, stiff, damp, brown, no odor.
18							



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Gallup Refinery - SWMU 13
WEST19038-02

Geologist	: Tracy Payne
Drilling Company	: Terracon
Driller	: Cothron
Drilling Rig	: CME 55 Track Rig
Drilling Method	: Hollow-Stem Augers 8"
Sampling Method	: 2' Split Spoon
Total Depth	: 18'
Saturation Depth(s)	: 2', 3', & 12'
Start Date/Time	: 10/24/19 - 11:15
Finish Date/Time	: 10/24/19 - 12:35

BORING NO. SWMU 13-7

(Sheet 1 of 1)

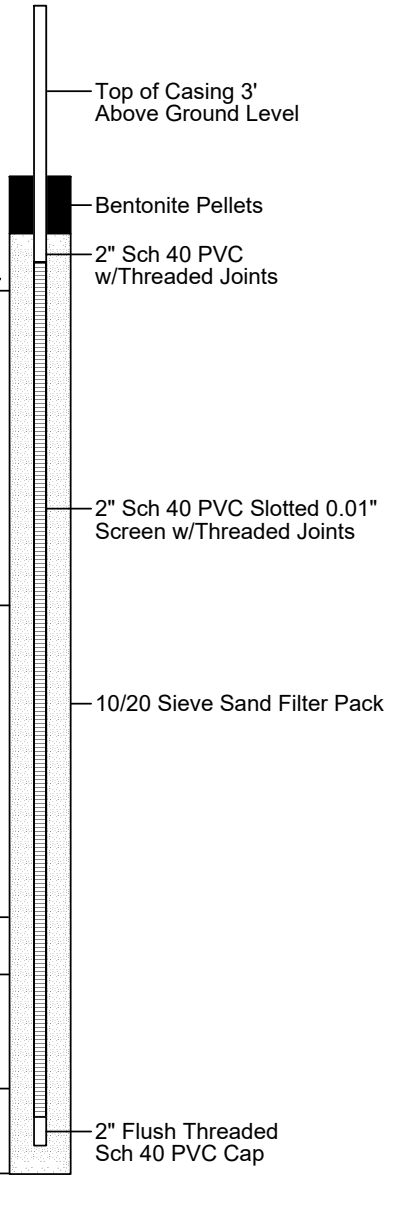
Northing	: 1635126.04
Easting	: 2544777.26
Ground Elevation	: 6888.17 ft. MSL
Comments	: Elev. 3.0' above bottom of retention pond. Hand augered to 3'.

Saturation
▼ Saturation

Completion Results

Temporary Well SWMU 13-7

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	0.9			CL	100		SILTLY CLAY - low, soft, damp, brown, no odor.
1	1.3						
2	2.3	▼					
2	-			ML	100		CLAYEY SILT - low, very soft, saturated, hydrocarbon odor.
3	38.4			SP	5		Poor recovery - black sand in shoe - hydrocarbon/biological odor.
4	-			SP	90		SAND - medium, soft/loose, saturated, black, biological/organic odor, clay (CL) at base.
6	-			SP	90		SAND - Similar to above (STA), saturated, black.
7	9			CH	90		CLAY - high, firm, damp, brown, no odor.
8	14.6			CH	100		CLAY - STA.
10	10.6			CH	90		CLAY - STA.
12	8.0			CL	60		SILTY CLAY - low, soft, damp, brown.
13	-	▼		SM	60		SILTY SAND - very fine, loose to compact, saturated, brown, no odor.
14	7.3			CH	5		Poor recovery - CLAY
16	-	▼		SM	80		SILTY SAND - very fine, loose to compact, saturated, no odor
18	6.6			CH	80		CLAY - high, firm, damp, brown, no odor.



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Gallup Refinery - SWMU 13
WEST19038-02

Geologist	: Tracy Payne
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Total Depth	: 3'
Saturation Depth	: Not encountered
Start Date/Time	: 10/24/19 - 14:35
Finish Date/Time	: 10/24/19 - 14:50

BORING NO. SWMU 13-8

(Sheet 1 of 1)

Northing	: 1635270.92
Easting	: 2544442.83
Ground Elevation	: 6881.84 ft. MSL
Comments	:

Saturation
▼ Saturation

Completion Results

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	2.1			CL	100		SILTY CLAY - low, firm, damp, brown, no odor.
1	2.0						
	3.5			CH	100		CLAY - high, firm to stiff, damp, brown, no odor.
2	2.6						
3							
4							
5							
6							
7							
8							

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Geologist	: Tracy Payne
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Total Depth	: 3'
Saturation Depth	: Not encountered
Start Date/Time	: 10/24/19 - 15:35
Finish Date/Time	: 10/24/19 - 15:55

BORING NO. SWMU 13-9

(Sheet 1 of 1)

Northing	: 1635258.03
Easting	: 2544506.40
Ground Elevation	: 6882.14 ft. MSL
Comments	:

Saturation
▼ Saturation

Completion Results

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	3.3			CL	100		SILTY CLAY - low, firm, damp, hydrocarbon odor, stained black and grayish green.
1	3.6						
	3.7			CH	100		CLAY - high, firm to stiff, damp, brown, odor.
2	6.7						
3							
4							
5							
6							
7							
8							

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Gallup Refinery - SWMU 13
WEST19038-02

Geologist	: Tracy Payne
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Total Depth	: 3'
Saturation Depth	: Not encountered
Start Date/Time	: 10/25/19 - 10:00
Finish Date/Time	: 10/25/19 - 10:30

BORING NO. SWMU 13-10

(Sheet 1 of 1)

Northing	: 1635239.56
Easting	: 2544583.37
Ground Elevation	: 6882.72 ft. MSL
Comments	:

Saturation
▼ Saturation

Completion Results

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	1.3			CL	100		SILTY CLAY - low, firm, damp, faint odor, stained black and greenish gray.
1	1.1						CLAY - high, firm, damp, brown, odor, sticky.
	1.7			CH	100		
2	1.7						
3							
4							
5							
6							
7							
8							

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Geologist	: Tracy Payne
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Total Depth	: 3'
Saturation Depth	: Not encountered
Start Date/Time	: 10/25/19 - 11:30
Finish Date/Time	: 10/25/19 - 12:00

BORING NO. SWMU 13-11

(Sheet 1 of 1)

Northing	: 1635226.59
Easting	: 2544648.37
Ground Elevation	: 6882.60 ft. MSL
Comments	:

Saturation
▼ Saturation

Completion Results

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	2.6			SC	100		CLAYEY SILT/SAND - low, fine, compact, damp, odor, stained back and greenish gray.
1	4.8						
	5.1			CH	100		CLAY - high, firm, damp, brown, odor.
2	5.1						
3							
4							
5							
6							
7							
8							

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Geologist	: Tracy Payne
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Total Depth	: 3'
Saturation Depth	: Not encountered
Start Date/Time	: 10/25/19 - 12:55
Finish Date/Time	: 10/25/19 - 13:55

BORING NO. SWMU 13-12

(Sheet 1 of 1)

Northing	: 1635209.89
Easting	: 2544718.62
Ground Elevation	: 6874.45 ft. MSL
Comments	:

Saturation
▼ Saturation

Completion Results

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	2.9			ML	100		CLAYEY SILT - low, soft, damp, dark brown, no odor.
1	16.3			SC	100		CLAYEY SAND - fine grain, light yellowish gray, faint odor, damp, crumbly.
2	5.3			CL	100		SILTY CLAY - low to moderate, firm, damp, no odor.
	7.1						
3							
4							
5							
6							
7							
8							

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WEST19038-02

Geologist	: Tracy Payne
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Total Depth	: 3'
Saturation Depth	: Not encountered
Start Date/Time	: 10/25/19 - 14:55
Finish Date/Time	: 10/25/19 - 15:20

BORING NO. SWMU 13-13

(Sheet 1 of 1)

Northing	: 1635171.39
Easting	: 2544739.77
Ground Elevation	: 6884.82 ft. MSL
Comments	:

Saturation
▼ Saturation

Completion Results

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	13.7			-	100		SILT/SAND - shrinkage cracks present, fine grain, dry to damp, odor, becomes stained, black/green/orange, soft at base.
1	181			CH	100		CLAY/SILTY CLAY - moderate to high, very soft, hydrocarbon odor, damp to moist, black.
2	204						
	45			SC/CL	100		CLAYEY SAND/SANDY CLAY - soft, low, moist to saturated, brown, hydrocarbon odor.
3							
4							
5							
6							
7							
8							

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Gallup Refinery - SWMU 13
WEST19038-02

Geologist	: Tracy Payne
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Total Depth	: 3'
Saturation Depth	: 0.5'
Start Date/Time	: 10/25/19 - 16:20
Finish Date/Time	: 10/25/19 - 16:40

BORING NO. SWMU 13-14

(Sheet 1 of 1)

Northing	: 1635136.50
Easting	: 2544756.75
Ground Elevation	: 6885.16 ft. MSL
Comments	:

Saturation
▼ Saturation

Completion Results

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	6.3	▼		CL	100		SANDY CLAY - low, soft, damp to very moist, odor, brown/yellowish brown, trace black discoloration.
1	4.5						CLAYEY SAND - very fine, soft, saturated, brown, faint odor.
2	18.7			SC	100		
	13.3						
3							
4							
5							
6							
7							
8							

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Appendix G

Photographs of Soil Cores

(Included on CD)

Appendix H
Analytical Data Reports

(Included on CD)

Appendix I

Quality Assurance/Quality Control Review

DATA VALIDATION INTRODUCTION

This summary presents data verification results for soil and groundwater samples collected from soil boring and monitoring wells installed at the Solid Waste Management Unit (SWMU) No. 13 – Drainage Ditch Between API Evaporation Ponds and Neutralization Tank Evaporation Ponds at the Gallup Refinery. The data review was performed in accordance with Provision IV.J.3.b (Review of Field and Laboratory QA/QC Data) of the RCRA Permit issued by NMED in October 2013, USEPA Functional Guidelines for Organic and Inorganic Data Review, and quality assurance and control parameters set by the project laboratory Hall Environmental Analysis Laboratory, Inc.

A total of 58 soil samples and six groundwater samples (excluding QA samples) were collected from October 22, 2019 through November 7, 2019 in accordance with the *Investigation Work Plan SWMU No. 13 – Drainage Ditch Between API Evaporation Ponds and Neutralization Tank Evaporation Ponds* (DiSorbo, 2019). Soil and groundwater samples were submitted to Hall Environmental Analysis Laboratory for the following parameters in accordance with the approved Work Plan:

- volatile organic compounds (VOCs) by USEPA Method 8260B;
- semi-volatile organic compounds (SVOCs) by USEPA Method 8270;
- Gasoline, diesel, and motor oil range organics by SW-846 Method 8015B;
- Total recoverable and dissolved metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, nickel, selenium, silver, vanadium, and zinc) by EPA Method 200.7;
- Cyanide by SW-846 method 9012; and
- Mercury by EPA Method 7470.

The groundwater samples were analyzed for water quality parameters including, sulfate, chloride, nitrate, nitrite, and fluoride by EPA Method 300.

Additionally, 22 quality assurance samples consisting of trip blanks, methanol blanks, equipment rinsate blanks, and field duplicates were collected and analyzed as part of the investigation activities. Table A-1 presents a summary of the field sample identifications, laboratory sample identifications, and sample collection dates.

QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level II data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody;
- Sample Preservation and Temperature Upon Laboratory Receipt
- Holding Times;
- Blank Contamination (method blanks, trip blanks, methanol blanks, and equipment rinsate blanks);
- Surrogate Recovery (for organic parameters);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD;
- Duplicates (field duplicate, laboratory duplicate); and
- Other Applicable QC Parameters.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

J+	The analyte was positively identified; however, the result should be considered an estimated value with a potential high bias.
J-	The analyte was positively identified; however, the result should be considered an estimated value with a potential low bias.
UJ	The reporting limit for a constituent that was not detected is considered an estimated value.
R	Quality control indicates that the data is not usable.

Results qualified as "J+", "J-", or "UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines. Results for the performance monitoring events that required qualification based on the data verification are summarized in Table A-2.

CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received preserved and intact by Hall Environmental Laboratories, Inc. Samples were received by the laboratory at a temperature of 6.0 degrees Celsius or lower.

HOLDING TIMES

All samples were extracted and analyzed within method-specified holding time limits.

BLANK CONTAMINATION

Method Blank

Method blanks were analyzed at the appropriate frequency. Target compounds were not detected in the method blanks, with the exception of the following:

- Methylene chloride was detected at 0.01 part per million (ppm) in batch S64028 in lab report 1910D16 and 1910D68. It was detected at mostly lower concentrations and below the quantitation limits in associated field samples SWMU 13-1 (14-16'), SWMU 13-2 (8-10'), SWMU 13-3 (14-15.25'), DUP02, SWMU 13-5 (1.5-2'), SWMU 13-5 (14-16'), and SWMU 13-6 (2-3'). The samples are J-flagged in the lab reports due to being at concentrations below the reporting limit and are shown as J+ in Table A-2

- Di-n-butyl phthalate was detected at 0.16 ppm in batch 48455 in lab report 1910D16. It was detected at similar concentrations in associated field samples SWMU 13-3 (15.25-16'), SWMU 13-4 (1.5-2'), SWMU 13-4 (14-15.5'), SWMU 13-4 (8-10'), SWMU 13-5 (10-10.5'), SWMU 13-5 (14-16'), SWMU 13-6 (1.5-2'), and SWMU 13-6 (17-18'). The samples are J-flagged in the lab reports due to being at concentrations below the reporting limit and are shown as J+ in Table A-2.

- Benzyl alcohol, bis(2-ethylhexyl)phthalate, di-n-butyl phthalate were detected in batch # 48439, lab report 1910D16 at concentrations of 0.85 ug/l, 4.1 ug/l, and 3.1 ug/l, respectively. The only associated sample is EB102219 and all of the related results were non-detect; no data qualification required.

- Vanadium was detected at a concentration of 0.0012 mg/l in batch 48486, lab report 1910D68. The only associated sample is EB102219 and the related sample result was non-detect; no data qualification required.

- Cadmium, chromium, manganese, and zinc were detected in batch # 48433, lab report 1910D68 at concentrations of 0.025J ppm, 0.12J ppm, 0.079J ppm, and 0.92J ppm, respectively. Cadmium was non-detect in the associated samples and no qualification is required. Chromium, manganese and zinc were detected in all related samples with concentrations much higher than the reported results in the method blank and none of the associated samples are qualified.

- Cadmium, iron, manganese, and zinc were detected in batch # 48519, lab report 1910D68 at concentrations of 0.033J ppm, 1.7J ppm, 0.021J ppm, and 0.40J ppm, respectively. Cadmium was non-detect in the associated samples and no qualification is required. Chromium, iron and zinc were detected in all related samples with concentrations much higher than the reported results in the method blank and none of the associated samples are qualified.

- Cadmium, chromium, manganese, and silver were detected in batch # 48651, lab report 1910D68 at concentrations of 0.045 ppm, 0.086J ppm, 0.049J ppm, and 0.044J ppm, respectively. Cadmium and silver were non-detect in the associated sample and no qualification is required. Chromium and manganese were detected in the related sample with concentrations much higher than the reported results in the method blank and none of the associated samples are qualified.

- Lead and Vanadium were detected in batch #48486, lab report 1910D68 at concentrations of 0.0043J ppm and 0.0012J ppm, respectively. Vanadium was non-detect in the associated sample (EB102319), while lead was detected at 0.0069 ppm. The lead result is qualified as J+ in Table A-2.

- Di-n-butyl phthalate was detected at 0.25J ppm in batch 48494 in lab report 1910E04. It was not detected in a number of associated samples, which are not qualified. However, it was detected at similar concentrations in associated field samples SWMU 13-11 (2-3'), SWMU 13-7 (1.5-2'), SWMU 13-7 (10-12'), SWMU 13-8 (1.5-2'), SWMU 13-8 (2-3'), SWMU 13-9 (2-3') and DUP04. The samples are J-flagged in the lab reports due to being at concentrations below the reporting limit and are shown as J+ in Table A-2.

- Acenaphthene, benzyl alcohol, bis(2-ethylhexyl)phthalate, di-n-butyl phthalate, diethyl phthalate, dimethyl phthalate, N-nitrosodiphenylamine, 3-nitroaniline, and pyrene was detected at low concentrations batch 48455 in lab report 1910E04. However, there were only detections for bis (2-ethylhexyl)phthalate and di-n-butyl phthalate. The associated samples are qualified as J+ in Table A-2.

- Azobene, benzyl alcohol, bis(2-ethylhexyl)phthalate, di-n-butyl phthalate, diethyl phthalate, 3-nitroaniline, and phenol were detected at low concentrations in batch #48536, lab report 1910E04. Only phenol, bis(2-ethylhexyl)phthalate and di-n-butyl phthalate are qualified as J+ in Table A-2 as the other constituents were non-detect.

- Cadmium, chromium, manganese, and zinc were detected in batch # 48433, lab report 1910E04 at concentrations of 0.025 ppm, 0.12J ppm, 0.079J ppm, and 0.92J ppm, respectively. Cadmium was non-detect in the associated samples and no qualification is required. Chromium, manganese, and zinc were detected in the related sample with concentrations much higher than the reported results in the method blank and none of the associated samples are qualified.

- Cadmium, iron, lead, manganese, and nickel were detected in batch # 48604, lab report 1910E04 at concentrations of 0.05J ppm, 2.1J ppm, 0.25J ppm, 0.05J ppm and 0.25J ppm, respectively. Cadmium was non-detect in the associated samples and no qualification is required. Iron, lead, manganese, and nickel were detected in the related samples with concentrations either non-detect (one sample for nickel) or at much higher concentrations than the reported results in the method blank and none of the associated samples are qualified.

- 2-Butanone was detected in batch 48453, lab report 1910E49 at 0.086J ppm, but was not detected in the related samples and therefore none of the associated sample results are qualified.

- Azobene, benzyl alcohol, bis(2-ethylhexyl)phthalate, di-n-butyl phthalate, diethyl phthalate, 3-nitroaniline, and phenol were detected at low concentrations in batch #48536, lab report 1910E49. Only di-n-butyl phthalate was detected in the associated samples and it is qualified as J+ in Table A-2.

- Cadmium, iron, manganese, and zinc were detected in batch # 48519, lab report 1910E49 at concentrations of 0.033J ppm, 1.7J ppm, 0.021J ppm, and 0.40J ppm, respectively. Cadmium was non-detect in the associated samples and no qualification is required. Iron, manganese, and zinc were detected in the related sample with concentrations much higher than the reported results in the method blank and none of the associated samples are qualified.

Trip Blank

Trip blanks were analyzed at the appropriate frequency as specified in the Permit. Target compounds were not detected in the trip blanks.

Equipment Rinsate Blank

Equipment rinsate blanks were collected as specified in the SWMU No. 13 Investigation Work Plan and the Permit. The following constituents were detected in equipment rinsate blanks.

- In sample EB102219 (1910D16-017) mercury was detected at 0.00019J mg/l and it was also detected at 0.00018J mg/l in the associated method blank. The sample result is qualified as J+ in table A-2.
- In sample EB102319 (1910D38-018) mercury was detected at 0.00017J mg/l and it was also detected at 0.00018J mg/l in the associated method blank. The sample result is qualified as J+ in table A-2. Manganese (0.00093J mg/L) was also detected in the equipment blank, but is not qualified other than being an estimate concentration. Benzyl alcohol was also detected at a low concentration (2.5 ug/l), but was detected in the associated method blank and thus it is qualified in Table A-2 as j+.
- In sample EB102419, mercury was detected at 0.00011J mg/l, but was also detected in the associated method blank at 0.00012J mg/l resulting in a j+ flag in Table A-2. Manganese was also detected at a low estimated concentration, but is otherwise not qualified.
- In sample EB102519, mercury was detected at 0.00013J mg/l, but was also detected in the associated method blank at 0.00012J mg/l resulting in a j+ flag in Table A-2. Iron was also detected at a low estimated concentration, but is otherwise not qualified.
- Sample EB01 had detections of chloride, dissolved manganese and dissolved sodium all at low estimated concentrations that are not otherwise qualified. Total manganese was detected at 0.00048J mg/l and also detected at 0.00015J mg/l in the associated method blank. The total manganese result is qualified as J+ in Table A-2. Benzene and toluene were detected at 0.17J ug/l and 0.42J ug/l, respectively and are not otherwise qualified.
- Sodium was detected at 0.59J mg/l and is not otherwise qualified. Manganese and nickel were detected at 0.00027J mg/l and 0.0016J mg/l in the dissolved analyses. Both constituents were also detected in the associated method blank at 0.000089J mg/l and 0.0023J mg/l and are qualified as J+ in Table A-2.

Common Laboratory Contaminants

Per USEPA guidelines, common laboratory contaminants for VOC analysis are acetone, 2-butanone (MEK), cyclohexane, chloromethane, and methylene chloride. Common laboratory contaminants for SVOC analysis include phthalates. Data qualification was required for samples with methylene chloride and phthalates since there were detection in blanks and field analytical results were

detected at concentrations less than 10 times the blank concentration in field samples. See Table A-2 for qualified data.

Methanol Blanks

Methanol Blanks provided by the laboratory were analyzed for VOCs. There were no analytes detected in the methanol blanks above the respective laboratory reporting limits.

SURROGATE RECOVERY

Surrogate recoveries for the organic and inorganic analyses were performed at the required frequency and were within laboratory acceptance limits, with the following exceptions:

Lab Report 1910D68

- Surrogate recovery for gasoline range organics was above the acceptance limit for field sample SWMU 13-6 (10-11'); however, the result was non-detect and is not qualified.
- Surrogate recovery for diesel range organics was low for the laboratory control samples (LCS) in batch # 48457; however, the recovery for the same surrogate was within range for the associated method blank, matrix spike (MS) and matrix spike duplicate (MSD) analyses and all of the associated field samples. The results are not qualified.

Lab Report 1910E04

- One of the six surrogates for the semi-volatile analysis of sample SWMU 13-7 (0-0.5') was above the acceptance limit, but as the others were all within range the results are not qualified.
- Two of the six surrogates for the semi-volatile analysis of sample SWMU 13-8 (0-0.5') were above the acceptance limits, but as the others were all within range the results are not qualified.
- Surrogate recovery for gasoline range organics was above the acceptance limit for field sample SWMU 13-9 (2-3'); however, the result was non-detect and is not qualified.

Lab Report 1910E49

- Surrogate recovery for gasoline range organics was above the acceptance limit for field samples SWMU 13-13 (0-0.5'), SWMU 13-13 (1.5-2'), and SWMU 13-13 (2-3'); however, the results were non-detect and are not qualified.

- Two of the six surrogates for the semi-volatile analysis of sample SWMU 13-14 (0-0.5') were below the acceptance limits, but as the others were all within range the results are not qualified.

Lab Report 1911232

- The surrogate recovery for gasoline range organics was significantly above the acceptance limit (2710 vs. 143) for field sample SWMU 13-2-GW and the associated result is qualified in Table A-2 as J+.
- The surrogate recovery for gasoline range organics was significantly above the acceptance limit (2830 vs. 143) for field sample SWMU 13-3-GW and the associated result is qualified in Table A-2 as J+.
- The surrogate recovery for gasoline range organics was significantly above the acceptance limit (748 vs. 143) for field sample SWMU 13-4-GW and the associated result is qualified in Table A-2 as J+.

Lab Report 1911310

- The surrogate recovery for gasoline range organics was significantly above the acceptance limit (1610 vs. 143) for field sample SWMU 13-5-GW and the associated result is qualified in Table A-2 as J+.
- The surrogate recovery for gasoline range organics was significantly above the acceptance limit (363 vs. 143) for field sample SWMU 13-6-GW and the associated result is qualified in Table A-2 as J+.
- The surrogate recovery for gasoline range organics was significantly above the acceptance limit (2410 vs. 143) for field sample SWMU 13-7-GW and the associated result is qualified in Table A-2 as J+.

LCS RECOVERY AND RELATIVE PERCENT DIFFERENCE

Laboratory control samples (LCS)/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J+" to account for a potential high bias.
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J-" for detected results) to account for a potential low bias.

LCS/LCSD percent recoveries and relative percent differences (RPDs) were within acceptance limits and no qualification was required, except as noted below:

Lab Report 1910E49

- LCS recovery RPDs for two semivolatiles (2-chlorophenol and n-nitrosodi-n-propylamine) in batch 48505 was above the acceptance limit. The actual recovery percentages in both the LCS and LCSD were within range and the related samples are not qualified.

MS/MSD RECOVERY AND RELATIVE PERCENT DIFFERENCE

Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.
- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified "J+" to account for a potential high bias.
- Low MS/MSD recoveries for organic or inorganic parameters result in sample qualification of the associated analytical batch with a "J-".
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

MS/MSD percent recoveries and RPDs were within acceptance limits except for the following:

Lab Report 1910D16

- The MS and MSD RPD exceeded the limit for 1,4-dichlorobenzene in batch 48455; however, both the MS and MDS recoveries met acceptance criteria and all related samples were non-detect. None of the data are qualified.

Lab Report 1910E04

- The MS and MSD recoveries for antimony, barium, chromium, manganese, silver, and zinc were outside the limits in batch 48433. Barium recoveries exceeded the limits and the associated results are qualified as J+ and the other constituents except manganese recovered low and are flagged as J- if detected and UJ if not detected in Table A-2. Manganese had a low recovery in the MDS and exceeded limits in the MS, therefore the associated results are flagged as "J."

- Laboratory batch #48519 for metals analyses had two runs. The MS and MSD recoveries for run #64624 were all within limits and most related samples are reported for this run. The MS and/or MSD recoveries were out of range for antimony, barium, manganese, selenium, and silver for run #64655. The detected sample results are qualified J- and non-detects as UJ in Table A-2 as the recoveries were low.

- For laboratory batch #48434, the MS and MSD recoveries were low for barium and silver, while the MS was high for manganese, but the MSD was low for manganese. The barium and silver results are flagged as J- and manganese is flagged as J in Table A-2.

Lab Report 1910E49

- The MS and MSD recoveries both exceed the limit for mercury in batch #48648 and the associated results are flagged as J+ in Table A-2.

Lab Report 1911232

- The MS and MSD recoveries were both below the limit for mercury in batch #48912 and the associated detected result is flagged as J- and the non-detect results are flagged as UJ in Table A-2.

Lab Report 1605999

- The MS and/or MSD recoveries for several metals (antimony, barium, cobalt, lead, nickel, and zinc) were below acceptance limits for batch 25681. This affects only samples DUP-01 and DUP-02. However, the reference values are significant in comparison to the spike

values, thus the low recoveries are not reflective of a laboratory problem and the associated results are not qualified.

DUPLICATES

Field Duplicates

Field duplicates were collected at a rate as stated in the approved Investigation Work Plan. The RPDs between the field duplicate and its associated sample were calculated and are presented in Table A-3. The field duplicates were evaluated by the following criteria:

- If an analyte was detected at a concentration greater than five times the method reporting limit, the RPD should be less than 35 percent for soil and 25 percent for ground water samples.
- If an analyte was detected at a concentration that is less than five times the method reporting limit, then the difference between the sample and the field duplicate should not exceed the method reporting limit.
- Duplicate RPDs are calculated by dividing the difference of the concentrations by the average of the concentrations.

Field duplicate RPDs were within acceptance limits with the exception of several metals analyses (dissolved cobalt, iron, lead, nickel; and total iron and nickel) and gasoline range organics in groundwater duplicate DUP01. See Table 3A for a field duplicate summary.

COMPLETENESS SUMMARY

The following equation was used to calculate the technical completeness:

$$\% \text{ Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}}\right) \times 100$$

The technical completeness attained for Investigation activities was 100 percent. The completeness results are provided in Table A-4. The analytical results for the required analytes per the approved Work Plan were considered usable for the intended purposes and the project DQOs have been met.

Table A-1
Sample Identification
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Sample ID	Lab ID	Date Collected	Sample Type
SWMU 13-1 (0-0.5')	1910d16-001	10/22/2019	SO
SWMU13-1 (1.5-2')	1910d16-002	10/22/2019	SO
SWMU13-1 (5-6')	1910d16-003	10/22/2019	SO
SWMU 13-1 (8-10')	1910D16-004	10/22/2019	SO
SWMU 13-1 (14-16')	1910d16-005	10/22/2019	SO
SWMU 13-2 (0-0.5')	1910d16-006	10/22/2019	SO
SWMU 13-2 (1.5-2')	1910d16-007	10/22/2019	SO
SWMU 13-2 (8-10')	1910d16-008	10/22/2019	SO
SWMU 13-2 (14-16')	1910d16-009	10/22/2019	SO
SWMU 13-3 (0-0.5')	1910d16-010	10/22/2019	SO
SWMU 13-3 (1.5-2')	1910D16-011	10/22/2019	SO
SMWU 13-3 (8-10')	1910D16-012	10/22/2019	SO
SWMU 13-3 (14-15.25')	1910d16-013	10/22/2019	SO
SWMU 13-3 (15.25-16')	1910D16-014	10/22/2019	SO
DUP01	1910d16-015	10/22/2019	FD
MeOH Blank	1910d16-016	10/22/2019	MB
EB102219	1910d16-017	10/22/2019	EB
SWMU 13-4 (0-0.5')	1910d68-001	10/23/2019	SO
SWMU 13-4 (1.5-2')	1910d68-002	10/23/2019	SO
SWMU 13-4 (8-10')	1910d68-003	10/23/2019	SO
SWMU 13-4 (14-15.5')	1910d68-004	10/23/2019	SO
SWMU 13-4 (15.5-16')	1910D68-005	10/23/2019	SO
SWMU 13-5 (0-0.5')	1910d68-006	10/23/2019	SO
SWMU 13-5 (1.5-2')	1910D68-007	10/23/2019	SO
SWMU 13-5 (8-10')	1910d68-008	10/23/2019	SO
SWMU 13-5 (10-10.5')	1910D68-009	10/23/2019	SO
SWMU 13-5 (14-16')	1910D68-010	10/23/2019	SO
SWMU 13-6 (0-0.5')	1910d68-011	10/23/2019	SO
SWMU 13-6 (1.5-2')	1910d68-012	10/23/2019	SO
SWMU 13-6 (2-3')	1910d68-013	10/23/2019	SO
SWMU 13-6 (6-8')	1910d68-014	10/23/2019	SO
SWMU 13-6 (10-11')	1910d68-015	10/23/2019	SO
DUP02	1910d68-016	10/23/2019	FD
MeOH Blank	1910d68-017	10/23/2019	MB
EB102319	1910d68-018	10/23/2019	EB
SWMU 13-6 (17-18')	1910e04-001	10/24/2019	SO
SWMU 13-7 (0-0.5')	1910e04-002	10/24/2019	SO
SWMU 13-7 (1.5-2')	1910E04-003	10/24/2019	SO
MeOH Blank	1910E04-004	10/24/2019	MB
SWMU 13-7 (4-6')	1910e04-005	10/24/2019	SO
SWMU 13-7 (10-12')	1910E04-006	10/24/2019	SO
SWMU 13-7 (12-13")	1910e04-007	10/24/2019	SO
SWMU 13-7 (17.5-18')	1910e04-008	10/24/2019	SO
SWMU 13-8 (0-0.5')	1910e04-009	10/24/2019	SO
SWMU 13-8 (1.5-2')	1910E04-010	10/24/2019	SO
SWMU 13-8 (2-3')	1910e04-011	10/24/2019	SO
SWMU 13-9 (0-0.5')	1910e04-012	10/24/2019	SO
SWMU 13-9 (1.5-2')	1910e04-013	10/24/2019	SO
SWMU 13-9 (2-3')	1910e04-014	10/24/2019	SO
DUP03	1910e04-015	10/24/2019	FD
DUP04	1910E04-016	10/24/2019	FD
MeOH Blank	1910E04-017	10/24/2019	MB
EB102419	1910E04-018	10/24/2019	EB

Table A-1
Sample Identification
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Sample ID	Lab ID	Date Collected	Sample Type
SWMU 13-10 (0-0.5')	1910e04-019	10/25/2019	SO
SWMU 13-10 (1.5-2')	1910e04-020	10/25/2019	SO
SWMU 13-10 (2-3')	1910e04-021	10/25/2019	SO
SWMU 13-11 (0-0.5')	1910e04-022	10/25/2019	SO
SWMU 13-11 (1.5-2')	1910e04-023	10/25/2019	SO
SWMU 13-11 (2-3')	1910e04-024	10/25/2019	SO
SWMU 13-12 (0-0.5')	1910e04-025	10/25/2019	SO
SWMU 13-12 (0.5-1.5')	1910e04-026	10/25/2019	SO
SWMU 13-12 (1.5-2')	1910E04-027	10/25/2019	SO
SWMU 13-12 (2-3')	1910e04-028	10/25/2019	SO
DUP05	1910E04-029	10/25/2019	FD
MeOH Blank	1910E04-030	10/25/2019	MB
SWMU 13-13 (0-0.5')	1910e49-001	10/25/2019	SO
SWMU 13-13 (1.5-2')	1910E49-002	10/25/2019	SO
SWMU 13-13 (2-3')	1910e49-003	10/25/2019	SO
SWMU 13-14 (0-0.5')	1910e49-004	10/25/2019	SO
SWMU 13-14 (1.5-2')	1910e49-005	10/25/2019	SO
SWMU 13-14 (2-3')	1910e49-006	10/25/2019	SO
EB102519	1910e49-007	10/25/2019	EB
SWMU 13-2-GW	1911232-001	11/6/2019	GW
SWMU 13-3-GW	1911232-002	11/6/2019	GW
SWMU 13-4-GW	1911232-003	11/6/2019	GW
DUP01	1911232-004	11/6/2019	FD
EB01	1911232-005	11/6/2019	EB
Trip Blank-1	1911232-006	11/6/2019	TB
Trip Blank-2	1911232-007	11/6/2019	TB
Trip Blank-3	1911232-008	11/6/2019	TB
SWMU 13-5-GW	1911310-001	11/7/2019	GW
SWMU 13-6-GW	1911310-002	11/7/2019	GW
SWMU 13-7-GW	1911310-003	11/7/2019	GW
EB02	1911310-004	11/7/2019	EB
Trip Blank-1	1911310-005	11/7/2019	TB
Trip Blank-2	1911310-006	11/7/2019	TB

SO = Soil Sample
FD = Field Duplicate
MB = Methanol Blank
TB = Trip Blank
EB = Equipment Blank
GW = Groundwater

Table A-2
Qualified Data
SWMU13 Investigation Report
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Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 13-1 (14-16')	10/22/2019	Methylene Chloride	0.0056	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.01 ppm in associated method blank
SWMU 13-2 (8-10')	10/22/2019	Methylene Chloride	0.0052	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.01 ppm in associated method blank
SWMU 13-3 (14-15.25')	10/22/2019	Methylene Chloride	0.0043	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.01 ppm in associated method blank
DUP02	10/23/2019	Methylene Chloride	0.013	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.01 ppm in associated method blank
SWMU 13-5 (1.5-2')	10/23/2019	Methylene Chloride	0.011	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.01 ppm in associated method blank
SWMU 13-5 (14-16')	10/23/2019	Methylene Chloride	0.0077	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.01 ppm in associated method blank
SWMU 13-6 (2-3')	10/23/2019	Methylene Chloride	0.005	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.01 ppm in associated method blank
SWMU 13-3 (15.25-16')	10/22/2019	Di-n-butyl phthalate	0.15	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.16 ppm in associated method blank
SWMU 13-4 (1.5-2')	10/23/2019	Di-n-butyl phthalate	0.26	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.16 ppm in associated method blank
SWMU 13-4 (14-15.5')	10/23/2019	Di-n-butyl phthalate	0.16	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.16 ppm in associated method blank
SWMU 13-4 (8-10')	10/23/2019	Di-n-butyl phthalate	0.18	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.16 ppm in associated method blank
SWMU 13-5 (10-10.5')	10/23/2019	Di-n-butyl phthalate	0.17	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.16 ppm in associated method blank
SWMU 13-5 (14-16')	10/23/2019	Di-n-butyl phthalate	0.19	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.16 ppm in associated method blank
SWMU 13-6 (1.5-2')	10/23/2019	Di-n-butyl phthalate	0.15	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.16 ppm in associated method blank
SWMU 13-6 (17-18')	10/24/2019	Di-n-butyl phthalate	0.16	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.16 ppm in associated method blank
EB102319	10/23/2019	lead	0.0069	mg/l	Water	j+	qualifed as potentially biased high due to detection at 0.0043 mg/l in associated method blank
SWMU 13-11 (2-3')	10/25/2019	Di-n-butyl phthalate	0.2	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.25 ppm in associated method blank
SWMU 13-7 (1.5-2')	10/24/2019	Di-n-butyl phthalate	0.15	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.25 ppm in associated method blank
SWMU 13-7 (10-12')	10/24/2019	Di-n-butyl phthalate	0.19	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.25 ppm in associated method blank
SWMU 13-8 (1.5-2')	10/24/2019	Di-n-butyl phthalate	0.2	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.25 ppm in associated method blank
SWMU 13-8 (2-3')	10/24/2019	Di-n-butyl phthalate	0.26	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.25 ppm in associated method blank
SWMU 13-9 (2-3')	10/24/2019	Di-n-butyl phthalate	0.23	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.25 ppm in associated method blank
DUP04	10/24/2019	Di-n-butyl phthalate	0.21	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.25 ppm in associated method blank
SWMU 13-8 (2-3')	10/24/2019	Bis(2-ethylhexyl)phthalate	0.14	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.14 ppm in associated method blank
DUP04	10/24/2019	Bis(2-ethylhexyl)phthalate	0.18	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.14 ppm in associated method blank
SWMU 13-9 (2-3')	10/24/2019	Phenol	0.14	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.015 ppm in associated method blank
SWMU 13-13 (2-3')	10/25/2019	Di-n-butyl phthalate	0.17	mg/kg	soil	j+	qualifed as potentially biased high due to detection at 0.20 ppm in associated method blank
EB102219	10/22/2019	mercury	0.00017	mg/l	Water	j+	qualifed as potentially biased high due to detection at 0.00018 mg/l in associated method blank
EB102319	10/23/2019	benzyl alcohol	0.0025	mg/l	Water	j+	qualifed as potentially biased high due to detection at 0.00085 mg/l in associated method blank
EB102419	10/24/2019	mercury	0.00011	mg/l	Water	j+	qualifed as potentially biased high due to detection at 0.00012 mg/l in associated method blank
EB102519	10/25/2019	mercury	0.00011	mg/l	Water	j+	qualifed as potentially biased high due to detection at 0.00012 mg/l in associated method blank
EB01	11/6/2019	manganese	0.00049	mg/l	Water	j+	qualifed as potentially biased high due to detection at 0.00015 mg/l in associated method blank
EB02	11/7/2019	manganese	0.00027	mg/l	Water	j+	qualifed as potentially biased high due to detection at 0.000089 mg/l in associated method blank
EB02	11/7/2019	nickel	0.0016	mg/l	Water	j+	qualifed as potentially biased high due to detection at 0.0023 mg/l in associated method blank
SWMU 13-2-GW	11/6/2019	gasoline range organics	0.35	mg/l	Water	j+	qualifed as an estimated concentration with a high bias as the surrogate recovery was 2710% vs. the upper range limit of 143% recovery
SWMU 13-3-GW	11/6/2019	gasoline range organics	0.45	mg/l	Water	j+	qualifed as an estimated concentration with a high bias as the surrogate recovery was 2830% vs. the upper range limit of 143% recovery
SWMU 13-4-GW	11/6/2019	gasoline range organics	0.1	mg/l	Water	j+	qualifed as an estimated concentration with a high bias as the surrogate recovery was 748% vs. the upper range limit of 143% recovery
SWMU 13-5-GW	11/7/2019	gasoline range organics	0.33	mg/l	Water	j+	qualifed as an estimated concentration with a high bias as the surrogate recovery was 1610% vs. the upper range limit of 143% recovery

Table A-2
Qualified Data
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Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 13-6-GW	11/7/2019	gasoline range organics	0.042	mg/l	Water	j+	qualifed as an estimated concentration with a high bias as the surrogate recovery was 363% vs. the upper range limit of 143% recovery
SWMU 13-7-GW	11/7/2019	gasoline range organics	0.73	mg/l	Water	j+	qualifed as an estimated concentration with a high bias as the surrogate recovery was 2410% vs. the upper range limit of 143% recovery
DUP02	10/23/2019	Antimony	< 0.7491	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-4 (0-0.5')	10/23/2019	Antimony	< 0.7241	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-4 (1.5-2')	10/23/2019	Antimony	< 0.7321	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-4 (14-15.5')	10/23/2019	Antimony	< 0.7508	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-5 (0-0.5')	10/23/2019	Antimony	< 0.7064	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-5 (1.5-2')	10/23/2019	Antimony	< 0.7292	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-5 (14-16')	10/23/2019	Antimony	< 0.7159	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-5 (8-10')	10/23/2019	Antimony	< 0.7667	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-6 (0-0.5')	10/23/2019	Antimony	< 0.7463	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-6 (1.5-2')	10/23/2019	Antimony	< 0.7506	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-6 (10-11')	10/23/2019	Antimony	< 0.7475	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-6 (2-3')	10/23/2019	Antimony	< 0.7122	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-6 (6-8')	10/23/2019	Antimony	< 0.7564	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-7 (0-0.5')	10/24/2019	Antimony	< 0.7464	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-7 (1.5-2')	10/24/2019	Antimony	< 0.7139	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-7 (10-12')	10/24/2019	Antimony	< 0.7431	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-7 (4-6')	10/24/2019	Antimony	< 0.721	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-8 (0-0.5')	10/24/2019	Antimony	< 0.7368	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-8 (1.5-2')	10/24/2019	Antimony	< 0.7216	mg/kg	soil	UJ	MS and MSD recoveries are below limits
DUP02	10/23/2019	Barium	280	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-4 (0-0.5')	10/23/2019	Barium	300	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-4 (1.5-2')	10/23/2019	Barium	270	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-4 (14-15.5')	10/23/2019	Barium	240	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-5 (0-0.5')	10/23/2019	Barium	270	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-5 (1.5-2')	10/23/2019	Barium	250	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-5 (14-16')	10/23/2019	Barium	180	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-5 (8-10')	10/23/2019	Barium	220	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-6 (0-0.5')	10/23/2019	Barium	390	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-6 (1.5-2')	10/23/2019	Barium	410	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-6 (10-11')	10/23/2019	Barium	280	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-6 (2-3')	10/23/2019	Barium	310	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-6 (6-8')	10/23/2019	Barium	290	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-7 (0-0.5')	10/24/2019	Barium	210	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-7 (1.5-2')	10/24/2019	Barium	740	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-7 (10-12')	10/24/2019	Barium	250	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-7 (4-6')	10/24/2019	Barium	290	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-8 (0-0.5')	10/24/2019	Barium	280	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-8 (1.5-2')	10/24/2019	Barium	170	mg/kg	soil	J+	MS and MSD recoveries are above limits
DUP02	10/23/2019	Chromium	57	mg/kg	soil	J-	MS and MSD recoveries are below limits

Table A-2
Qualified Data
SWMU13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 13-4 (0-0.5')	10/23/2019	Chromium	110	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-4 (1.5-2')	10/23/2019	Chromium	14	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-4 (14-15.5')	10/23/2019	Chromium	12	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-5 (0-0.5')	10/23/2019	Chromium	62	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-5 (1.5-2')	10/23/2019	Chromium	8.8	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-5 (14-16')	10/23/2019	Chromium	13	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-5 (8-10')	10/23/2019	Chromium	14	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-6 (0-0.5')	10/23/2019	Chromium	12	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-6 (1.5-2')	10/23/2019	Chromium	9.3	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-6 (10-11')	10/23/2019	Chromium	12	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-6 (2-3')	10/23/2019	Chromium	7.6	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-6 (6-8')	10/23/2019	Chromium	12	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-7 (0-0.5')	10/24/2019	Chromium	11	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-7 (1.5-2')	10/24/2019	Chromium	8.9	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-7 (10-12')	10/24/2019	Chromium	14	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-7 (4-6')	10/24/2019	Chromium	11	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-8 (0-0.5')	10/24/2019	Chromium	32	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-8 (1.5-2')	10/24/2019	Chromium	13	mg/kg	soil	J-	MS and MSD recoveries are below limits
DUP02	10/23/2019	Manganese	340	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-4 (0-0.5')	10/23/2019	Manganese	440	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-4 (1.5-2')	10/23/2019	Manganese	380	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-4 (14-15.5')	10/23/2019	Manganese	260	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-5 (0-0.5')	10/23/2019	Manganese	320	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-5 (1.5-2')	10/23/2019	Manganese	630	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-5 (14-16')	10/23/2019	Manganese	230	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-5 (8-10')	10/23/2019	Manganese	330	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-6 (0-0.5')	10/23/2019	Manganese	360	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-6 (1.5-2')	10/23/2019	Manganese	350	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-6 (10-11')	10/23/2019	Manganese	330	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-6 (2-3')	10/23/2019	Manganese	410	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-6 (6-8')	10/23/2019	Manganese	320	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-7 (0-0.5')	10/24/2019	Manganese	320	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-7 (1.5-2')	10/24/2019	Manganese	380	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-7 (10-12')	10/24/2019	Manganese	310	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-7 (4-6')	10/24/2019	Manganese	360	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-8 (0-0.5')	10/24/2019	Manganese	450	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
SWMU 13-8 (1.5-2')	10/24/2019	Manganese	300	mg/kg	soil	J	MS recovery exceeded the limit and MSD was below the limit
DUP02	10/23/2019	Silver	< 0.0653	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-4 (0-0.5')	10/23/2019	Silver	< 0.0631	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-4 (1.5-2')	10/23/2019	Silver	< 0.0638	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-4 (14-15.5')	10/23/2019	Silver	< 0.0654	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-5 (0-0.5')	10/23/2019	Silver	< 0.0615	mg/kg	soil	UJ	MS and MSD recoveries are below limits

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Marathon Petroleum Company - Gallup Refinery

Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 13-5 (1.5-2')	10/23/2019	Silver	< 0.0635	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-5 (14-16')	10/23/2019	Silver	< 0.0624	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-5 (8-10')	10/23/2019	Silver	< 0.0668	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-6 (0-0.5')	10/23/2019	Silver	< 0.065	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-6 (1.5-2')	10/23/2019	Silver	< 0.0654	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-6 (10-11')	10/23/2019	Silver	< 0.0651	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-6 (2-3')	10/23/2019	Silver	< 0.062	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-6 (6-8')	10/23/2019	Silver	< 0.0659	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-7 (0-0.5')	10/24/2019	Silver	< 0.065	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-7 (1.5-2')	10/24/2019	Silver	< 0.0622	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-7 (10-12')	10/24/2019	Silver	< 0.0647	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-7 (4-6')	10/24/2019	Silver	< 0.0628	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-8 (0-0.5')	10/24/2019	Silver	< 0.0642	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-8 (1.5-2')	10/24/2019	Silver	< 0.0629	mg/kg	soil	UJ	MS and MSD recoveries are below limits
DUP02	10/23/2019	Zinc	59	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-4 (0-0.5')	10/23/2019	Zinc	120	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-4 (1.5-2')	10/23/2019	Zinc	20	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-4 (14-15.5')	10/23/2019	Zinc	17	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-5 (0-0.5')	10/23/2019	Zinc	65	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-5 (1.5-2')	10/23/2019	Zinc	15	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-5 (14-16')	10/23/2019	Zinc	18	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-5 (8-10')	10/23/2019	Zinc	19	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-6 (0-0.5')	10/23/2019	Zinc	18	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-6 (1.5-2')	10/23/2019	Zinc	16	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-6 (10-11')	10/23/2019	Zinc	18	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-6 (2-3')	10/23/2019	Zinc	13	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-6 (6-8')	10/23/2019	Zinc	17	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-7 (0-0.5')	10/24/2019	Zinc	20	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-7 (1.5-2')	10/24/2019	Zinc	14	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-7 (10-12')	10/24/2019	Zinc	19	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-7 (4-6')	10/24/2019	Zinc	15	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-8 (0-0.5')	10/24/2019	Zinc	66	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-8 (1.5-2')	10/24/2019	Zinc	18	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-12 (0-0.5')	10/25/2019	Antimony	< 0.7403	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-12 (0-0.5')	10/25/2019	Barium	340	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-12 (0-0.5')	10/25/2019	Manganese	520	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-12 (0-0.5')	10/25/2019	Selenium	< 2.5259	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-12 (0-0.5')	10/25/2019	Silver	< 0.0645	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-8 (2-3')	10/24/2019	Barium	270	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-8 (2-3')	10/24/2019	Manganese	290	mg/kg	soil	J-	MS and MSD recoveries are below limits
SWMU 13-8 (2-3')	10/24/2019	Silver	< 0.0651	mg/kg	soil	UJ	MS and MSD recoveries are below limits
SWMU 13-13 (0-0.5')	10/25/2019	Mercury	0.25	mg/kg	soil	J+	MS and MSD recoveries are above limits

Table A-2
Qualified Data
SWMU13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 13-13 (1.5-2')	10/25/2019	Mercury	0.0056	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-13 (2-3')	10/25/2019	Mercury	0.047	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-14 (0-0.5')	10/25/2019	Mercury	0.07	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-14 (1.5-2')	10/25/2019	Mercury	0.017	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-14 (2-3')	10/25/2019	Mercury	0.0086	mg/kg	soil	J+	MS and MSD recoveries are above limits
SWMU 13-2-GW	11/6/2019	Mercury	0.06	mg/l	water	J-	MS and MSD recoveries are below limits
SWMU 13-3-GW	11/6/2019	Mercury	<0.04	mg/l	water	UJ	MS and MSD recoveries are below limits
SWMU 13-3-GW	11/6/2019	Mercury	<0.19	mg/l	water	UJ	MS and MSD recoveries are below limits
SWMU 13-4-GW	11/6/2019	Mercury	<0.04	mg/l	water	UJ	MS and MSD recoveries are below limits
DUP01	11/6/2019	Mercury	<0.04	mg/l	water	UJ	MS and MSD recoveries are below limits
SWMU 13-5-GW	11/7/2019	Mercury	<0.04	mg/l	water	UJ	MS and MSD recoveries are below limits
SWMU 13-6-GW	11/7/2019	Mercury	<0.04	mg/l	water	UJ	MS and MSD recoveries are below limits
SWMU 13-7-GW	11/7/2019	Mercury	<0.04	mg/l	water	UJ	MS and MSD recoveries are below limits

Notes:

UJ	Estimated reporting limit
J-	Low bias
J+	High bias

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-3 (0-0.5')		DUP01		RPD
	Sample Result		Duplicate Result		(%)
Metals (mg/kg)					
Antimony	< 0.7358	u	< 0.739	u	NC
Arsenic	< 2.854	u	< 2.8666	u	NC
Barium	260.00	v	290	v	2.7
Beryllium	1.40	v	1.4	v	0.0
Cadmium	< 0.0485	u	< 0.0488	u	NC
Chromium (Total)	30.00	v	40	v	7.1
Cobalt	6.10	v	6.6	v	2.0
Cyanide	0.52	v	0.59	v	3.2
Iron	19000.00	v	22000	v	3.7
Lead	0.87	v	1	v	3.5
Manganese	280.00	v	400	v	8.8
Mercury (elemental)	0.07	v	0.14	v	15.4
Nickel	13.00	v	14	v	1.9
Selenium	< 2.5105	u	< 2.5215	u	NC
Silver	< 0.0641	u	< 0.0644	u	NC
Vanadium	26.00	v	30.00000	v	3.6
Zinc	41.00	v	45.00000	v	2.3
Volatiles (mg/kg)					
1,1,1,2-Tetrachloroethane	< 0.002	u	< 0.0027	u	NC
1,1,1-Trichloroethane	< 0.0027	u	< 0.0036	u	NC
1,1,2,2-Tetrachloroethane	< 0.003	u	< 0.004	u	NC
1,1,2-Trichloroethane	< 0.0021	u	< 0.0028	u	NC
1,1-Dichloroethane	< 0.0019	u	< 0.0025	u	NC
1,1-Dichloroethene	< 0.0118	u	< 0.0159	u	NC
1,1-Dichloropropene	< 0.0027	u	< 0.0036	u	NC
Trichlorobenzene, 1,2,3-	< 0.0026	u	< 0.0035	u	NC
1,2,3-Trichloropropane	< 0.0048	u	< 0.0064	u	NC
1,2,4-Trichlorobenzene	< 0.003	u	< 0.004	u	NC
Trimethylbenzene, 1,2,4-	< 0.0027	u	< 0.0036	u	NC
1,2-Dibromo-3-chloropropane	< 0.003	u	< 0.0041	u	NC
1,2-Dibromoethane (Ethylene dibromide)	< 0.0027	u	< 0.0036	u	NC
1,2-Dichlorobenzene	< 0.0024	u	< 0.0033	u	NC
1,2-Dichloroethane	< 0.003	u	< 0.004	u	NC
1,2-Dichloropropane	< 0.0022	u	< 0.0029	u	NC
Trimethylbenzene, 1,3,5-	< 0.0029	u	< 0.0038	u	NC
1,3-Dichlorobenzene	< 0.0026	u	< 0.0034	u	NC
Dichloropropane, 1,3-	< 0.0032	u	< 0.0043	u	NC
1,4-Dichlorobenzene	< 0.0025	u	< 0.0033	u	NC
1-Methylnaphthalene	< 0.017	u	< 0.0228	u	NC
2,2-Dichloropropane	< 0.0096	u	< 0.0129	u	NC
2-Butanone (Methyl ethyl ketone, MEK)	0.06	J	0.05400	J	2.2
o-Chlorotoluene	< 0.0026	u	< 0.0035	u	NC
Hexanone, 2-	< 0.0049	u	< 0.0066	u	NC
2-Methylnaphthalene	< 0.0129	u	< 0.0173	u	NC
Chlorotoluene, p-	< 0.0024	u	< 0.0032	u	NC
4-Isopropyltoluene	< 0.0024	u	< 0.0033	u	NC
Methyl isobutyl ketone	< 0.0056	u	< 0.0075	u	NC
Acetone	< 0.0245	u	< 0.0329	u	NC
Benzene	< 0.0024	u	< 0.0032	u	NC
Bromobenzene	< 0.0028	u	< 0.0038	u	NC
Bromodichloromethane	< 0.0027	u	< 0.0036	u	NC
Tribromomethane (Bromoform)	< 0.0027	u	< 0.0036	u	NC
Bromomethane	< 0.0071	u	< 0.0096	u	NC
Carbon disulfide	< 0.0098	u	< 0.0131	u	NC
Carbon tetrachloride	< 0.0028	u	< 0.0038	u	NC
Chlorobenzene (Monochlorobenzene)	< 0.0038	u	< 0.0051	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-3 (0-0.5')		DUP01		RPD
	Sample Result		Duplicate Result		(%)
Ethyl chloride	< 0.0044	u	< 0.0058	u	NC
Chloroform	< 0.0024	u	< 0.0032	u	NC
Chloromethane	< 0.0028	u	< 0.0038	u	NC
cis-1,2-Dichloroethene	< 0.004	u	< 0.0054	u	NC
cis-1,3-Dichloropropene	< 0.0025	u	< 0.0033	u	NC
Dibromochloromethane	< 0.0021	u	< 0.0028	u	NC
Dibromomethane (Methylene Bromide)	< 0.0032	u	< 0.0043	u	NC
Dichlorodifluoromethane	< 0.0069	u	< 0.0092	u	NC
Ethylbenzene	< 0.0017	u	< 0.0023	u	NC
Hexachloro-1,3-butadiene	< 0.003	u	< 0.004	u	NC
Cumene (isopropylbenzene)	< 0.0021	u	< 0.0029	u	NC
tert-Butyl methyl ether (MTBE)	< 0.007	u	< 0.0094	u	NC
Methylene chloride (Dichloromethane)	< 0.0052	u	< 0.007	u	NC
Naphthalene	< 0.0059	u	< 0.0079	u	NC
Butylbenzene, n-	< 0.0028	u	< 0.0037	u	NC
Propyl benzene	< 0.0024	u	< 0.0032	u	NC
Butylbenzene, sec-	< 0.0033	u	< 0.0045	u	NC
Styrene	< 0.0023	u	< 0.0031	u	NC
Butylbenzene, tert-	< 0.0028	u	< 0.0037	u	NC
Tetrachloroethene	< 0.0024	u	< 0.0032	u	NC
Toluene	< 0.0028	u	< 0.0038	u	NC
trans-1,2-Dichloroethene	< 0.0027	u	< 0.0036	u	NC
trans-1,3-Dichloropropene	< 0.0031	u	< 0.0042	u	NC
Trichloroethylene	< 0.0034	u	< 0.0046	u	NC
Trichlorofluoromethane	< 0.01	u	< 0.0135	u	NC
Vinyl chloride	< 0.0019	u	< 0.0026	u	NC
Xylenes	< 0.0075	u	< 0.01	u	NC
Semi-volatiles (mg/kg)					
1,2,4-Trichlorobenzene	< 0.7637	u	< 0.7743	u	NC
1,2-Dichlorobenzene	< 0.5903	u	< 0.5985	u	NC
1,3-Dichlorobenzene	< 0.5174	u	< 0.5246	u	NC
1,4-Dichlorobenzene	< 0.5234	u	< 0.5307	u	NC
1-Methylnaphthalene	< 0.7355	u	< 0.7458	u	NC
2,4,5-Trichlorophenol	< 0.637	u	< 0.6459	u	NC
2,4,6-Trichlorophenol	< 0.5165	u	< 0.5237	u	NC
2,4-Dichlorophenol	< 0.5715	u	< 0.5795	u	NC
2,4-Dimethylphenol	< 0.5416	u	< 0.5491	u	NC
2,4-Dinitrophenol	< 0.357	u	< 0.362	u	NC
2,4-Dinitrotoluene	< 0.5792	u	< 0.5873	u	NC
2,6-Dintitrotoluene	< 0.6467	u	< 0.6557	u	NC
b-Chloronaphthalene	< 0.6132	u	< 0.6217	u	NC
2-Chlorophenol	< 0.6113	u	< 0.6198	u	NC
2-Methylnaphthalene	< 0.7159	u	< 0.7259	u	NC
Cresol, o-	< 0.5828	u	< 0.5909	u	NC
Nitroaniline, 2-	< 0.7018	u	< 0.7116	u	NC
2-Nitrophenol	< 0.671	u	< 0.6803	u	NC
3,3-Dichlorobenzidine	< 0.4368	u	< 0.4429	u	NC
3+4-Methylphenol	< 0.6031	u	< 0.6115	u	NC
3-Nitroaniline	< 0.678	u	< 0.6875	u	NC
4,6-Dinitro-o-cresol	< 0.4539	u	< 0.4602	u	NC
4-Bromophenyl phenyl ether	< 0.5776	u	< 0.5857	u	NC
4-Chloro-3-methylphenol	< 0.7539	u	< 0.7644	u	NC
Chloroaniline, p-	< 0.6961	u	< 0.7058	u	NC
4-Chlorophenyl phenyl ether	< 0.5356	u	< 0.543	u	NC
Nitroaniline, 4-	< 0.6274	u	< 0.6362	u	NC
4-Nitrophenol	< 0.6664	u	< 0.6757	u	NC
Acenaphthene	< 0.5895	u	< 0.5977	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-3 (0-0.5')		DUP01		RPD
	Sample Result		Duplicate Result		(%)
Acenaphthylene	< 0.5386	u	< 0.5461	u	NC
Aniline	< 0.6318	u	< 0.6407	u	NC
Anthracene	< 0.5254	u	< 0.5327	u	NC
Azobenzene	< 0.6879	u	< 0.6975	u	NC
Benzo(a)anthracene	< 0.4734	u	< 0.4801	u	NC
Benzo(a)pyrene	< 0.4367	u	< 0.4428	u	NC
Benzo(b)fluoranthene	< 0.4346	u	< 0.4407	u	NC
Benzo(g,h,i)perylene	< 0.4215	u	< 0.4274	u	NC
Benzo(k)fluoranthene	< 0.4466	u	< 0.4528	u	NC
Benzoic acid	< 0.5075	u	< 0.5146	u	NC
Benzyl alcohol	< 0.6096	u	< 0.6181	u	NC
Bis(2-chloroethoxy)methane	< 0.7264	u	< 0.7365	u	NC
Bis(2-chloroethyl) ether	< 0.5989	u	< 0.6072	u	NC
Bis(2-chloroisopropyl) ether	< 0.5594	u	< 0.5672	u	NC
Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate, DEHP]	< 0.7059	u	< 0.7158	u	NC
Butyl Benzyl Phthalate	< 0.5023	u	< 0.5093	u	NC
Carbazole	< 0.5762	u	< 0.5843	u	NC
Chrysene	< 0.4333	u	< 0.4394	u	NC
Dibenz(a,h)anthracene	< 0.4467	u	< 0.453	u	NC
Dibenzofuran	< 0.6439	u	< 0.6529	u	NC
Diethyl phthalate	< 0.7012	u	< 0.711	u	NC
Dimethyl phthalate (DMP, Phthalic Acid)	< 0.6553	u	< 0.6644	u	NC
Di-n-butyl phthalate (Dibutyl phthalate)	< 0.7334	u	< 0.7437	u	NC
Di-n-octyl phthalate	< 0.5014	u	< 0.5084	u	NC
Fluoranthene	< 0.5503	u	< 0.558	u	NC
Fluorene	< 0.56	u	< 0.5678	u	NC
Hexachlorobenzene	< 0.6083	u	< 0.6168	u	NC
Hexachloro-1,3-butadiene	< 0.6851	u	< 0.6947	u	NC
Hexachlorocyclopentadiene	< 0.5617	u	< 0.5696	u	NC
Hexachloroethane	< 0.5474	u	< 0.5551	u	NC
Indeno(1,2,3-c,d)pyrene	< 0.4892	u	< 0.496	u	NC
Isophorone	< 0.7236	u	< 0.7337	u	NC
Naphthalene	< 0.7431	u	< 0.7535	u	NC
Nitrobenzene	< 0.6795	u	< 0.689	u	NC
Nitroso-di-N-propylamine, N-	< 0.7016	u	< 0.7113	u	NC
N-Nitrosodiphenylamine	< 0.5166	u	< 0.5238	u	NC
Pentachlorophenol	< 0.5064	u	< 0.5135	u	NC
Phenanthrene	< 0.5318	u	< 0.5393	u	NC
Phenol	< 0.6113	u	< 0.6198	u	NC
Pyrene	< 0.4616	u	< 0.4681	u	NC
Pyridine	< 0.5918	u	< 0.6	u	NC
Total Petroleum Hydrocarbons (mg/kg)					
Gasoline Range Organics (GRO)	< 0.8949	u	< 1.2	u	NC
Diesel Range Organics (DRO)	110.00	v	100	v	2.4
Motor Oil Range Organics (MRO)	160.00	v	160	v	0.0

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
bold value = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-5 (0-0.5')		DUP02		RPD
	Sample Result		Duplicate Result		(%)
Metals (mg/kg)					
Antimony	< 0.7064	u	< 0.7491	u	NC
Arsenic	< 2.7401	u	< 2.9057	u	NC
Barium	270.00	v	280	v	0.9
Beryllium	1.50	v	1.5	v	0.0
Cadmium	< 0.0466	u	< 0.0494	u	NC
Chromium (Total)	62.00	v	57	v	2.1
Cobalt	7.10	v	7.1	v	0.0
Cyanide	< 0.25	u	1.1	v	NC
Iron	24000.00	v	23000	v	1.1
Lead	1.20	v	1.3	v	2.0
Manganese	320.00	v	340	v	1.5
Mercury (elemental)	0.15	v	0.16	v	1.6
Nickel	15.00	v	15	v	0.0
Selenium	< 2.4103	u	3.3	J	NC
Silver	< 0.0615	u	< 0.0653	u	NC
Vanadium	33.00	v	35.00000	v	1.5
Zinc	65.00	v	59.00000	v	2.4
Volatiles (mg/kg)					
1,1,1,2-Tetrachloroethane	< 0.0027	u	< 0.0029	u	NC
1,1,1-Trichloroethane	< 0.0035	u	< 0.0039	u	NC
1,1,2,2-Tetrachloroethane	< 0.004	u	< 0.0044	u	NC
1,1,2-Trichloroethane	< 0.0028	u	< 0.0031	u	NC
1,1-Dichloroethane	< 0.0025	u	< 0.0028	u	NC
1,1-Dichloroethene	< 0.0157	u	< 0.0173	u	NC
1,1-Dichloropropene	< 0.0036	u	< 0.0039	u	NC
Trichlorobenzene, 1,2,3-	< 0.0034	u	< 0.0038	u	NC
1,2,3-Trichloropropane	< 0.0064	u	< 0.007	u	NC
1,2,4-Trichlorobenzene	< 0.004	u	< 0.0044	u	NC
Trimethylbenzene, 1,2,4-	< 0.0036	u	< 0.004	u	NC
1,2-Dibromo-3-chloropropane	< 0.004	u	< 0.0044	u	NC
1,2-Dibromoethane (Ethylene dibromide)	< 0.0036	u	< 0.004	u	NC
1,2-Dichlorobenzene	< 0.0032	u	< 0.0036	u	NC
1,2-Dichloroethane	< 0.004	u	< 0.0044	u	NC
1,2-Dichloropropane	< 0.0029	u	< 0.0032	u	NC
Trimethylbenzene, 1,3,5-	< 0.0038	u	< 0.0042	u	NC
1,3-Dichlorobenzene	< 0.0034	u	< 0.0038	u	NC
Dichloropropane, 1,3-	< 0.0042	u	< 0.0047	u	NC
1,4-Dichlorobenzene	< 0.0033	u	< 0.0036	u	NC
1-Methylnaphthalene	< 0.0226	u	< 0.0249	u	NC
2,2-Dichloropropane	< 0.0128	u	< 0.0141	u	NC
2-Butanone (Methyl ethyl ketone, MEK)	< 0.0454	u	< 0.0502	u	NC
o-Chlorotoluene	< 0.0034	u	< 0.0038	u	NC
Hexanone, 2-	< 0.0065	u	< 0.0072	u	NC
2-Methylnaphthalene	< 0.0172	u	< 0.0189	u	NC
Chlorotoluene, p-	< 0.0032	u	< 0.0036	u	NC
4-Isopropyltoluene	< 0.0033	u	< 0.0036	u	NC
Methyl isobutyl ketone	< 0.0074	u	< 0.0082	u	NC
Acetone	< 0.0326	u	< 0.0359	u	NC
Benzene	< 0.0032	u	< 0.0035	u	NC
Bromobenzene	< 0.0038	u	< 0.0042	u	NC
Bromodichloromethane	< 0.0036	u	< 0.004	u	NC
Tribromomethane (Bromoform)	< 0.0035	u	< 0.0039	u	NC
Bromomethane	< 0.0095	u	< 0.0105	u	NC
Carbon disulfide	< 0.013	u	< 0.0143	u	NC
Carbon tetrachloride	< 0.0037	u	< 0.0041	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-5 (0-0.5')		DUP02		RPD
	Sample Result		Duplicate Result		(%)
Chlorobenzene (Monochlorobenzene)	< 0.005	u	< 0.0056	u	NC
Ethyl chloride	< 0.0058	u	< 0.0064	u	NC
Chloroform	< 0.0032	u	< 0.0035	u	NC
Chloromethane	< 0.0038	u	< 0.0041	u	NC
cis-1,2-Dichloroethene	< 0.0054	u	< 0.0059	u	NC
cis-1,3-Dichloropropene	< 0.0033	u	< 0.0037	u	NC
Dibromochloromethane	< 0.0028	u	< 0.0031	u	NC
Dibromomethane (Methylene Bromide)	< 0.0042	u	< 0.0047	u	NC
Dichlorodifluoromethane	< 0.0091	u	< 0.0101	u	NC
Ethylbenzene	< 0.0023	u	< 0.0025	u	NC
Hexachloro-1,3-butadiene	< 0.004	u	< 0.0044	u	NC
Cumene (isopropylbenzene)	< 0.0028	u	< 0.0031	u	NC
tert-Butyl methyl ether (MTBE)	< 0.0093	u	< 0.0103	u	NC
Methylene chloride (Dichloromethane)	< 0.0069	u	0.01300	J	NC
Naphthalene	< 0.0079	u	< 0.0087	u	NC
Butylbenzene, n-	< 0.0037	u	< 0.004	u	NC
Propyl benzene	< 0.0031	u	< 0.0035	u	NC
Butylbenzene, sec-	< 0.0044	u	< 0.0049	u	NC
Styrene	< 0.0031	u	< 0.0034	u	NC
Butylbenzene, tert-	< 0.0037	u	< 0.0041	u	NC
Tetrachloroethene	< 0.0031	u	< 0.0035	u	NC
Toluene	< 0.0038	u	< 0.0041	u	NC
trans-1,2-Dichloroethene	< 0.0036	u	< 0.004	u	NC
trans-1,3-Dichloropropene	< 0.0042	u	< 0.0046	u	NC
Trichloroethylene	< 0.0045	u	< 0.005	u	NC
Trichlorofluoromethane	< 0.0133	u	< 0.0147	u	NC
Vinyl chloride	< 0.0026	u	< 0.0028	u	NC
Xylenes	< 0.0099	u	< 0.0109	u	NC
Semi-volatiles (mg/kg)					
1,2,4-Trichlorobenzene	< 1.5543	u	< 1.56	u	NC
1,2-Dichlorobenzene	< 1.2014	u	< 1.2058	u	NC
1,3-Dichlorobenzene	< 1.053	u	< 1.0569	u	NC
1,4-Dichlorobenzene	< 1.0653	u	< 1.0692	u	NC
1-Methylnaphthalene	< 1.497	u	< 1.5025	u	NC
2,4,5-Trichlorophenol	< 1.2965	u	< 1.3013	u	NC
2,4,6-Trichlorophenol	< 1.0513	u	< 1.0552	u	NC
2,4-Dichlorophenol	< 1.1632	u	< 1.1675	u	NC
2,4-Dimethylphenol	< 1.1023	u	< 1.1063	u	NC
2,4-Dinitrophenol	< 0.7266	u	< 0.7293	u	NC
2,4-Dinitrotoluene	< 1.1788	u	< 1.1832	u	NC
2,6-Dintitrotoluene	< 1.3163	u	< 1.3212	u	NC
b-Chloronaphthalene	< 1.248	u	< 1.2526	u	NC
2-Chlorophenol	< 1.2442	u	< 1.2488	u	NC
2-Methylnaphthalene	< 1.4571	u	< 1.4625	u	NC
Cresol, o-	< 1.1862	u	< 1.1905	u	NC
Nitroaniline, 2-	< 1.4284	u	< 1.4337	u	NC
2-Nitrophenol	< 1.3657	u	< 1.3707	u	NC
3,3-Dichlorobenzidine	< 0.889	u	< 0.8923	u	NC
3+4-Methylphenol	< 1.2275	u	< 1.2321	u	NC
3-Nitroaniline	< 1.38	u	< 1.3851	u	NC
4,6-Dinitro-o-cresol	< 0.9238	u	< 0.9272	u	NC
4-Bromophenyl phenyl ether	< 1.1757	u	< 1.18	u	NC
4-Chloro-3-methylphenol	< 1.5345	u	< 1.5401	u	NC
Chloroaniline, p-	< 1.4168	u	< 1.422	u	NC
4-Chlorophenyl phenyl ether	< 1.0901	u	< 1.0941	u	NC
Nitroaniline, 4-	< 1.2771	u	< 1.2818	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-5 (0-0.5')		DUP02		RPD
	Sample Result		Duplicate Result		(%)
4-Nitrophenol	< 1.3563	u	< 1.3613	u	NC
Acenaphthene	< 1.1998	u	< 1.2042	u	NC
Acenaphthylene	< 1.0962	u	< 1.1002	u	NC
Aniline	< 1.286	u	< 1.2908	u	NC
Anthracene	< 1.0694	u	< 1.0733	u	NC
Azobenzene	< 1.4001	u	< 1.4053	u	NC
Benzo(a)anthracene	< 0.9636	u	< 0.9672	u	NC
Benzo(a)pyrene	< 0.8889	u	< 0.8921	u	NC
Benzo(b)fluoranthene	< 0.8845	u	< 0.8878	u	NC
Benzo(g,h,i)perylene	< 0.8579	u	< 0.861	u	NC
Benzo(k)fluoranthene	< 0.909	u	< 0.9123	u	NC
Benzoic acid	< 1.033	u	< 1.0368	u	NC
Benzyl alcohol	< 1.2408	u	< 1.2454	u	NC
Bis(2-chloroethoxy)methane	< 1.4784	u	< 1.4839	u	NC
Bis(2-chloroethyl) ether	< 1.2189	u	< 1.2234	u	NC
Bis(2-chloroisopropyl) ether	< 1.1386	u	< 1.1428	u	NC
Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate, DEHP]	< 1.4368	u	< 1.4421	u	NC
Butyl Benzyl Phthalate	< 1.0223	u	< 1.0261	u	NC
Carbazole	< 1.1729	u	< 1.1772	u	NC
Chrysene	< 0.882	u	< 0.8852	u	NC
Dibenz(a,h)anthracene	< 0.9093	u	< 0.9126	u	NC
Dibenzofuran	< 1.3106	u	< 1.3154	u	NC
Diethyl phthalate	< 1.4272	u	< 1.4325	u	NC
Dimethyl phthalate (DMP, Phthalic Acid)	< 1.3337	u	< 1.3386	u	NC
Di-n-butyl phthalate (Dibutyl phthalate)	< 1.4928	u	< 1.4983	u	NC
Di-n-octyl phthalate	< 1.0205	u	< 1.0243	u	NC
Fluoranthene	< 1.1201	u	< 1.1242	u	NC
Fluorene	< 1.1398	u	< 1.144	u	NC
Hexachlorobenzene	< 1.2381	u	< 1.2426	u	NC
Hexachloro-1,3-butadiene	< 1.3944	u	< 1.3995	u	NC
Hexachlorocyclopentadiene	< 1.1433	u	< 1.1476	u	NC
Hexachloroethane	< 1.1142	u	< 1.1183	u	NC
Indeno(1,2,3-c,d)pyrene	< 0.9956	u	< 0.9993	u	NC
Isophorone	< 1.4727	u	< 1.4782	u	NC
Naphthalene	< 1.5125	u	< 1.518	u	NC
Nitrobenzene	< 1.3831	u	< 1.3882	u	NC
Nitroso-di-N-propylamine, N-	< 1.4279	u	< 1.4332	u	NC
N-Nitrosodiphenylamine	< 1.0514	u	< 1.0552	u	NC
Pentachlorophenol	< 1.0308	u	< 1.0346	u	NC
Phenanthrene	< 1.0825	u	< 1.0865	u	NC
Phenol	< 1.2442	u	< 1.2488	u	NC
Pyrene	< 0.9396	u	< 0.9431	u	NC
Pyridine	< 1.2044	u	< 1.2089	u	NC
Total Petroleum Hydrocarbons (mg/kg)					
Gasoline Range Organics (GRO)	< 1.1887	u	< 1.3124	u	NC
Diesel Range Organics (DRO)	87.00	v	120	v	8.0
Motor Oil Range Organics (MRO)	120.00	v	130	v	2.0

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
bold value = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-7 (0-0.5')		DUP03		RPD
	Sample Result		Duplicate Result		(%)
Metals (mg/kg)					
Antimony	< 0.7464	u	< 0.7421	u	NC
Arsenic	< 2.8951	u	< 2.8785	u	NC
Barium	210.00	v	260	v	5.3
Beryllium	1.10	v	1	v	2.4
Cadmium	< 0.0492	u	< 0.049	u	NC
Chromium (Total)	11.00	v	8.9	v	5.3
Cobalt	4.80	v	4.4	v	2.2
Cyanide	< 0.25	u	< 0.25	u	NC
Iron	17000.00	v	15000	v	3.1
Lead	1.80	v	3	v	12.5
Manganese	320.00	v	370	v	3.6
Mercury (elemental)	0.00	J	0.007	J	10.3
Nickel	9.80	v	8.9	v	2.4
Selenium	< 2.5466	u	< 2.532	u	NC
Silver	< 0.065	u	< 0.0647	u	NC
Vanadium	20.00	v	17.00000	v	4.1
Zinc	20.00	v	16.00000	v	5.6
Volatiles (mg/kg)					
1,1,1,2-Tetrachloroethane	< 0.002	u	< 0.002	u	NC
1,1,1-Trichloroethane	< 0.0027	u	< 0.0027	u	NC
1,1,2,2-Tetrachloroethane	< 0.003	u	< 0.003	u	NC
1,1,2-Trichloroethane	< 0.0021	u	< 0.0021	u	NC
1,1-Dichloroethane	< 0.0019	u	< 0.0019	u	NC
1,1-Dichloroethene	< 0.0118	u	< 0.0118	u	NC
1,1-Dichloropropene	< 0.0027	u	< 0.0027	u	NC
Trichlorobenzene, 1,2,3-	< 0.0026	u	< 0.0026	u	NC
1,2,3-Trichloropropane	< 0.0048	u	< 0.0048	u	NC
1,2,4-Trichlorobenzene	< 0.003	u	< 0.003	u	NC
Trimethylbenzene, 1,2,4-	< 0.0027	u	< 0.0027	u	NC
1,2-Dibromo-3-chloropropane	< 0.003	u	< 0.003	u	NC
1,2-Dibromoethane (Ethylene dibromide)	< 0.0027	u	< 0.0027	u	NC
1,2-Dichlorobenzene	< 0.0024	u	< 0.0024	u	NC
1,2-Dichloroethane	< 0.003	u	< 0.003	u	NC
1,2-Dichloropropane	< 0.0021	u	< 0.0022	u	NC
Trimethylbenzene, 1,3,5-	< 0.0029	u	< 0.0029	u	NC
1,3-Dichlorobenzene	< 0.0026	u	< 0.0026	u	NC
Dichloropropane, 1,3-	< 0.0032	u	< 0.0032	u	NC
1,4-Dichlorobenzene	< 0.0025	u	< 0.0025	u	NC
1-Methylnaphthalene	< 0.0169	u	< 0.017	u	NC
2,2-Dichloropropane	< 0.0096	u	< 0.0096	u	NC
2-Butanone (Methyl ethyl ketone, MEK)	< 0.0341	u	< 0.0341	u	NC
o-Chlorotoluene	< 0.0026	u	< 0.0026	u	NC
Hexanone, 2-	< 0.0049	u	< 0.0049	u	NC
2-Methylnaphthalene	< 0.0129	u	< 0.0129	u	NC
Chlorotoluene, p-	< 0.0024	u	< 0.0024	u	NC
4-Isopropyltoluene	< 0.0024	u	< 0.0024	u	NC
Methyl isobutyl ketone	< 0.0056	u	< 0.0056	u	NC
Acetone	< 0.0244	u	< 0.0245	u	NC
Benzene	< 0.0024	u	< 0.0024	u	NC
Bromobenzene	< 0.0028	u	< 0.0028	u	NC
Bromodichloromethane	< 0.0027	u	< 0.0027	u	NC
Tribromomethane (Bromoform)	< 0.0027	u	< 0.0027	u	NC
Bromomethane	< 0.0071	u	< 0.0071	u	NC
Carbon disulfide	< 0.0097	u	< 0.0097	u	NC
Carbon tetrachloride	< 0.0028	u	< 0.0028	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-7 (0-0.5')		DUP03		RPD
	Sample Result		Duplicate Result		(%)
Chlorobenzene (Monochlorobenzene)	< 0.0038	u	< 0.0038	u	NC
Ethyl chloride	< 0.0043	u	< 0.0043	u	NC
Chloroform	< 0.0024	u	< 0.0024	u	NC
Chloromethane	< 0.0028	u	< 0.0028	u	NC
cis-1,2-Dichloroethene	< 0.004	u	< 0.004	u	NC
cis-1,3-Dichloropropene	< 0.0025	u	< 0.0025	u	NC
Dibromochloromethane	< 0.0021	u	< 0.0021	u	NC
Dibromomethane (Methylene Bromide)	< 0.0032	u	< 0.0032	u	NC
Dichlorodifluoromethane	< 0.0068	u	< 0.0069	u	NC
Ethylbenzene	< 0.0017	u	< 0.0017	u	NC
Hexachloro-1,3-butadiene	< 0.003	u	< 0.003	u	NC
Cumene (isopropylbenzene)	< 0.0021	u	< 0.0021	u	NC
tert-Butyl methyl ether (MTBE)	< 0.007	u	< 0.007	u	NC
Methylene chloride (Dichloromethane)	< 0.0052	u	< 0.0052	u	NC
Naphthalene	< 0.0059	u	< 0.0059	u	NC
Butylbenzene, n-	< 0.0027	u	< 0.0028	u	NC
Propyl benzene	< 0.0023	u	< 0.0024	u	NC
Butylbenzene, sec-	< 0.0033	u	< 0.0033	u	NC
Styrene	< 0.0023	u	< 0.0023	u	NC
Butylbenzene, tert-	< 0.0028	u	< 0.0028	u	NC
Tetrachloroethene	< 0.0024	u	< 0.0024	u	NC
Toluene	< 0.0028	u	< 0.0028	u	NC
trans-1,2-Dichloroethene	< 0.0027	u	< 0.0027	u	NC
trans-1,3-Dichloropropene	< 0.0031	u	< 0.0031	u	NC
Trichloroethylene	< 0.0034	u	< 0.0034	u	NC
Trichlorofluoromethane	< 0.01	u	< 0.01	u	NC
Vinyl chloride	< 0.0019	u	< 0.0019	u	NC
Xylenes	< 0.0074	u	< 0.0074	u	NC
Semi-volatiles (mg/kg)					
1,2,4-Trichlorobenzene	< 0.3139	u	< 0.3145	u	NC
1,2-Dichlorobenzene	< 0.2426	u	< 0.2431	u	NC
1,3-Dichlorobenzene	< 0.2127	u	< 0.2131	u	NC
1,4-Dichlorobenzene	< 0.2151	u	< 0.2156	u	NC
1-Methylnaphthalene	< 0.3023	u	< 0.3029	u	NC
2,4,5-Trichlorophenol	< 0.2618	u	< 0.2624	u	NC
2,4,6-Trichlorophenol	< 0.2123	u	< 0.2127	u	NC
2,4-Dichlorophenol	< 0.2349	u	< 0.2354	u	NC
2,4-Dimethylphenol	< 0.2226	u	< 0.2231	u	NC
2,4-Dinitrophenol	< 0.1467	u	< 0.147	u	NC
2,4-Dinitrotoluene	< 0.2381	u	< 0.2385	u	NC
2,6-Dintitrotoluene	< 0.2658	u	< 0.2664	u	NC
b-Chloronaphthalene	< 0.252	u	< 0.2526	u	NC
2-Chlorophenol	< 0.2513	u	< 0.2518	u	NC
2-Methylnaphthalene	< 0.2943	u	< 0.2949	u	NC
Cresol, o-	< 0.2395	u	< 0.24	u	NC
Nitroaniline, 2-	< 0.2885	u	< 0.2891	u	NC
2-Nitrophenol	< 0.2758	u	< 0.2764	u	NC
3,3-Dichlorobenzidine	< 0.1795	u	< 0.1799	u	NC
3+4-Methylphenol	< 0.2479	u	< 0.2484	u	NC
3-Nitroaniline	< 0.2787	u	< 0.2793	u	NC
4,6-Dinitro-o-cresol	< 0.1866	u	< 0.1869	u	NC
4-Bromophenyl phenyl ether	< 0.2374	u	< 0.2379	u	NC
4-Chloro-3-methylphenol	< 0.3099	u	< 0.3105	u	NC
Chloroaniline, p-	< 0.2861	u	< 0.2867	u	NC
4-Chlorophenyl phenyl ether	< 0.2201	u	< 0.2206	u	NC
Nitroaniline, 4-	< 0.2579	u	< 0.2584	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-7 (0-0.5')		DUP03		RPD
	Sample Result		Duplicate Result		(%)
4-Nitrophenol	< 0.2739	u	< 0.2745	u	NC
Acenaphthene	< 0.2423	u	< 0.2428	u	NC
Acenaphthylene	< 0.2214	u	< 0.2218	u	NC
Aniline	< 0.2597	u	< 0.2602	u	NC
Anthracene	< 0.216	u	< 0.2164	u	NC
Azobenzene	< 0.2828	u	< 0.2833	u	NC
Benzo(a)anthracene	< 0.1946	u	< 0.195	u	NC
Benzo(a)pyrene	< 0.1795	u	< 0.1799	u	NC
Benzo(b)fluoranthene	< 0.1786	u	< 0.179	u	NC
Benzo(g,h,i)perylene	< 0.1733	u	< 0.1736	u	NC
Benzo(k)fluoranthene	< 0.1836	u	< 0.1839	u	NC
Benzoic acid	< 0.2086	u	< 0.209	u	NC
Benzyl alcohol	< 0.2506	u	< 0.2511	u	NC
Bis(2-chloroethoxy)methane	< 0.2986	u	< 0.2992	u	NC
Bis(2-chloroethyl) ether	< 0.2462	u	< 0.2467	u	NC
Bis(2-chloroisopropyl) ether	< 0.2299	u	< 0.2304	u	NC
Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate, DEHP]	< 0.2902	u	< 0.2908	u	NC
Butyl Benzyl Phthalate	< 0.2065	u	< 0.2069	u	NC
Carbazole	< 0.2369	u	< 0.2373	u	NC
Chrysene	< 0.1781	u	< 0.1785	u	NC
Dibenz(a,h)anthracene	< 0.1836	u	< 0.184	u	NC
Dibenzofuran	< 0.2647	u	< 0.2652	u	NC
Diethyl phthalate	< 0.2882	u	< 0.2888	u	NC
Dimethyl phthalate (DMP, Phthalic Acid)	< 0.2693	u	< 0.2699	u	NC
Di-n-butyl phthalate (Dibutyl phthalate)	< 0.3015	u	< 0.3021	u	NC
Di-n-octyl phthalate	< 0.2061	u	< 0.2065	u	NC
Fluoranthene	< 0.2262	u	< 0.2267	u	NC
Fluorene	< 0.2302	u	< 0.2307	u	NC
Hexachlorobenzene	< 0.25	u	< 0.2505	u	NC
Hexachloro-1,3-butadiene	< 0.2816	u	< 0.2822	u	NC
Hexachlorocyclopentadiene	< 0.2309	u	< 0.2314	u	NC
Hexachloroethane	< 0.225	u	< 0.2255	u	NC
Indeno(1,2,3-c,d)pyrene	< 0.2011	u	< 0.2015	u	NC
Isophorone	< 0.2974	u	< 0.298	u	NC
Naphthalene	< 0.3054	u	< 0.3061	u	NC
Nitrobenzene	< 0.2793	u	< 0.2799	u	NC
Nitroso-di-N-propylamine, N-	< 0.2884	u	< 0.289	u	NC
N-Nitrosodiphenylamine	< 0.2123	u	< 0.2128	u	NC
Pentachlorophenol	< 0.2082	u	< 0.2086	u	NC
Phenanthrene	< 0.2186	u	< 0.2191	u	NC
Phenol	< 0.2513	u	< 0.2518	u	NC
Pyrene	< 0.1898	u	< 0.1901	u	NC
Pyridine	< 0.2432	u	< 0.2437	u	NC
Total Petroleum Hydrocarbons (mg/kg)					
Gasoline Range Organics (GRO)	< 0.8912	u	< 0.8933	u	NC
Diesel Range Organics (DRO)	< 1.759	u	3.2	J	NC
Motor Oil Range Organics (MRO)	< 43.9754	u	< 39.4322	u	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
bold value = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-9 (1.5-2')		DUP04		RPD
	Sample Result		Duplicate Result		(%)
Metals (mg/kg)					
Antimony	< 0.7201	u	< 0.7471	u	NC
Arsenic	< 2.7932	u	< 2.8981	u	NC
Barium	210.00	v	240	v	3.3
Beryllium	1.40	v	1.4	v	0.0
Cadmium	< 0.0475	u	< 0.0493	u	NC
Chromium (Total)	18.00	v	18	v	0.0
Cobalt	6.00	v	6.7	v	2.8
Cyanide	< 0.25	u	< 0.25	u	NC
Iron	19000.00	v	20000	v	1.3
Lead	1.60	v	1.8	v	2.9
Manganese	270.00	v	310	v	3.4
Mercury (elemental)	0.00	J	0.0047	J	1.1
Nickel	13.00	v	14	v	1.9
Selenium	< 2.4569	u	< 2.5492	u	NC
Silver	< 0.0627	u	< 0.0651	u	NC
Vanadium	24.00	v	25.00000	v	1.0
Zinc	22.00	v	22.00000	v	0.0
Volatiles (mg/kg)					
1,1,1,2-Tetrachloroethane	< 0.0018	u	< 0.0017	u	NC
1,1,1-Trichloroethane	< 0.0025	u	< 0.0023	u	NC
1,1,2,2-Tetrachloroethane	< 0.0028	u	< 0.0026	u	NC
1,1,2-Trichloroethane	< 0.0019	u	< 0.0018	u	NC
1,1-Dichloroethane	< 0.0017	u	< 0.0016	u	NC
1,1-Dichloroethene	< 0.0109	u	< 0.0101	u	NC
1,1-Dichloropropene	< 0.0025	u	< 0.0023	u	NC
Trichlorobenzene, 1,2,3-	< 0.0024	u	< 0.0022	u	NC
1,2,3-Trichloropropane	< 0.0044	u	< 0.0041	u	NC
1,2,4-Trichlorobenzene	< 0.0028	u	< 0.0025	u	NC
Trimethylbenzene, 1,2,4-	< 0.0025	u	< 0.0023	u	NC
1,2-Dibromo-3-chloropropane	< 0.0028	u	< 0.0026	u	NC
1,2-Dibromoethane (Ethylene dibromide)	< 0.0025	u	< 0.0023	u	NC
1,2-Dichlorobenzene	< 0.0022	u	< 0.0021	u	NC
1,2-Dichloroethane	< 0.0028	u	< 0.0026	u	NC
1,2-Dichloropropane	< 0.002	u	< 0.0018	u	NC
Trimethylbenzene, 1,3,5-	< 0.0026	u	< 0.0024	u	NC
1,3-Dichlorobenzene	< 0.0024	u	< 0.0022	u	NC
Dichloropropane, 1,3-	< 0.003	u	< 0.0027	u	NC
1,4-Dichlorobenzene	< 0.0023	u	< 0.0021	u	NC
1-Methylnaphthalene	< 0.0157	u	< 0.0145	u	NC
2,2-Dichloropropane	< 0.0089	u	< 0.0082	u	NC
2-Butanone (Methyl ethyl ketone, MEK)	< 0.0317	u	< 0.0292	u	NC
o-Chlorotoluene	< 0.0024	u	< 0.0022	u	NC
Hexanone, 2-	< 0.0045	u	< 0.0042	u	NC
2-Methylnaphthalene	< 0.012	u	< 0.011	u	NC
Chlorotoluene, p-	< 0.0022	u	< 0.0021	u	NC
4-Isopropyltoluene	< 0.0023	u	< 0.0021	u	NC
Methyl isobutyl ketone	< 0.0052	u	< 0.0048	u	NC
Acetone	< 0.0227	u	< 0.0209	u	NC
Benzene	< 0.0022	u	< 0.0021	u	NC
Bromobenzene	< 0.0026	u	< 0.0024	u	NC
Bromodichloromethane	< 0.0025	u	< 0.0023	u	NC
Tribromomethane (Bromoform)	< 0.0025	u	< 0.0023	u	NC
Bromomethane	< 0.0066	u	< 0.0061	u	NC
Carbon disulfide	< 0.009	u	< 0.0083	u	NC
Carbon tetrachloride	< 0.0026	u	< 0.0024	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-9 (1.5-2')		DUP04		RPD
	Sample Result		Duplicate Result		(%)
Chlorobenzene (Monochlorobenzene)	< 0.0035	u	< 0.0032	u	NC
Ethyl chloride	< 0.004	u	< 0.0037	u	NC
Chloroform	< 0.0022	u	< 0.002	u	NC
Chloromethane	< 0.0026	u	< 0.0024	u	NC
cis-1,2-Dichloroethene	< 0.0037	u	< 0.0034	u	NC
cis-1,3-Dichloropropene	< 0.0023	u	< 0.0021	u	NC
Dibromochloromethane	< 0.0019	u	< 0.0018	u	NC
Dibromomethane (Methylene Bromide)	< 0.0029	u	< 0.0027	u	NC
Dichlorodifluoromethane	< 0.0064	u	< 0.0058	u	NC
Ethylbenzene	< 0.0016	u	< 0.0015	u	NC
Hexachloro-1,3-butadiene	< 0.0028	u	< 0.0026	u	NC
Cumene (isopropylbenzene)	< 0.002	u	< 0.0018	u	NC
tert-Butyl methyl ether (MTBE)	< 0.0065	u	< 0.006	u	NC
Methylene chloride (Dichloromethane)	< 0.0048	u	< 0.0045	u	NC
Naphthalene	< 0.0055	u	< 0.005	u	NC
Butylbenzene, n-	< 0.0026	u	< 0.0024	u	NC
Propyl benzene	< 0.0022	u	< 0.002	u	NC
Butylbenzene, sec-	< 0.0031	u	< 0.0028	u	NC
Styrene	< 0.0021	u	< 0.002	u	NC
Butylbenzene, tert-	< 0.0026	u	< 0.0024	u	NC
Tetrachloroethene	< 0.0022	u	< 0.002	u	NC
Toluene	< 0.0026	u	< 0.0024	u	NC
trans-1,2-Dichloroethene	< 0.0025	u	< 0.0023	u	NC
trans-1,3-Dichloropropene	< 0.0029	u	< 0.0027	u	NC
Trichloroethylene	< 0.0032	u	< 0.0029	u	NC
Trichlorofluoromethane	< 0.0093	u	< 0.0086	u	NC
Vinyl chloride	< 0.0018	u	< 0.0016	u	NC
Xylenes	< 0.0069	u	< 0.0064	u	NC
Semi-volatiles (mg/kg)					
1,2,4-Trichlorobenzene	< 0.3209	u	< 0.1526	u	NC
1,2-Dichlorobenzene	< 0.2481	u	< 0.1179	u	NC
1,3-Dichlorobenzene	< 0.2174	u	< 0.1034	u	NC
1,4-Dichlorobenzene	< 0.22	u	< 0.1046	u	NC
1-Methylnaphthalene	< 0.3091	u	< 0.147	u	NC
2,4,5-Trichlorophenol	< 0.2677	u	< 0.1273	u	NC
2,4,6-Trichlorophenol	< 0.2171	u	< 0.1032	u	NC
2,4-Dichlorophenol	< 0.2402	u	< 0.1142	u	NC
2,4-Dimethylphenol	< 0.2276	u	< 0.1082	u	NC
2,4-Dinitrophenol	< 0.15	u	< 0.0713	u	NC
2,4-Dinitrotoluene	< 0.2434	u	< 0.1157	u	NC
2,6-Dintitrotoluene	< 0.2718	u	< 0.1292	u	NC
b-Chloronaphthalene	< 0.2577	u	< 0.1225	u	NC
2-Chlorophenol	< 0.2569	u	< 0.1221	u	NC
2-Methylnaphthalene	< 0.3009	u	< 0.143	u	NC
Cresol, o-	< 0.2449	u	< 0.1164	u	NC
Nitroaniline, 2-	< 0.2949	u	< 0.1402	u	NC
2-Nitrophenol	< 0.282	u	< 0.1341	u	NC
3,3-Dichlorobenzidine	< 0.1836	u	< 0.0873	u	NC
3+4-Methylphenol	< 0.2535	u	< 0.1205	u	NC
3-Nitroaniline	< 0.2849	u	< 0.1355	u	NC
4,6-Dinitro-o-cresol	< 0.1907	u	< 0.0907	u	NC
4-Bromophenyl phenyl ether	< 0.2428	u	< 0.1154	u	NC
4-Chloro-3-methylphenol	< 0.3168	u	< 0.1506	u	NC
Chloroaniline, p-	< 0.2925	u	< 0.1391	u	NC
4-Chlorophenyl phenyl ether	< 0.2251	u	< 0.107	u	NC
Nitroaniline, 4-	< 0.2637	u	< 0.1254	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-9 (1.5-2')		DUP04		RPD
	Sample Result		Duplicate Result		(%)
4-Nitrophenol	< 0.28	u	< 0.1331	u	NC
Acenaphthene	< 0.2477	u	< 0.1178	u	NC
Acenaphthylene	< 0.2263	u	< 0.1076	u	NC
Aniline	< 0.2655	u	< 0.1262	u	NC
Anthracene	< 0.2208	u	< 0.105	u	NC
Azobenzene	< 0.2891	u	< 0.1374	u	NC
Benzo(a)anthracene	< 0.199	u	< 0.0946	u	NC
Benzo(a)pyrene	< 0.1835	u	< 0.0873	u	NC
Benzo(b)fluoranthene	< 0.1826	u	< 0.0868	u	NC
Benzo(g,h,i)perylene	< 0.1771	u	< 0.0842	u	NC
Benzo(k)fluoranthene	< 0.1877	u	< 0.0892	u	NC
Benzoic acid	< 0.2133	u	< 0.1014	u	NC
Benzyl alcohol	< 0.2562	u	< 0.1218	u	NC
Bis(2-chloroethoxy)methane	< 0.3053	u	< 0.1451	u	NC
Bis(2-chloroethyl) ether	< 0.2517	u	< 0.1197	u	NC
Bis(2-chloroisopropyl) ether	< 0.2351	u	< 0.1118	u	NC
Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate, DEHP]	< 0.2967	u	0.18000	J	NC
Butyl Benzyl Phthalate	< 0.2111	u	< 0.1004	u	NC
Carbazole	< 0.2422	u	< 0.1151	u	NC
Chrysene	< 0.1821	u	< 0.0866	u	NC
Dibenz(a,h)anthracene	< 0.1877	u	< 0.0893	u	NC
Dibenzofuran	< 0.2706	u	< 0.1287	u	NC
Diethyl phthalate	< 0.2947	u	< 0.1401	u	NC
Dimethyl phthalate (DMP, Phthalic Acid)	< 0.2754	u	< 0.1309	u	NC
Di-n-butyl phthalate (Dibutyl phthalate)	< 0.3082	u	0.21000	J	NC
Di-n-octyl phthalate	< 0.2107	u	< 0.1002	u	NC
Fluoranthene	< 0.2313	u	< 0.11	u	NC
Fluorene	< 0.2353	u	< 0.1119	u	NC
Hexachlorobenzene	< 0.2556	u	< 0.1215	u	NC
Hexachloro-1,3-butadiene	< 0.2879	u	< 0.1369	u	NC
Hexachlorocyclopentadiene	< 0.2361	u	< 0.1122	u	NC
Hexachloroethane	< 0.2301	u	< 0.1094	u	NC
Indeno(1,2,3-c,d)pyrene	< 0.2056	u	< 0.0977	u	NC
Isophorone	< 0.3041	u	< 0.1446	u	NC
Naphthalene	< 0.3123	u	< 0.1485	u	NC
Nitrobenzene	< 0.2856	u	< 0.1358	u	NC
Nitroso-di-N-propylamine, N-	< 0.2948	u	< 0.1402	u	NC
N-Nitrosodiphenylamine	< 0.2171	u	< 0.1032	u	NC
Pentachlorophenol	< 0.2128	u	< 0.1012	u	NC
Phenanthrene	< 0.2235	u	< 0.1063	u	NC
Phenol	< 0.2569	u	< 0.1221	u	NC
Pyrene	< 0.194	u	< 0.0922	u	NC
Pyridine	< 0.2487	u	< 0.1182	u	NC
Total Petroleum Hydrocarbons (mg/kg)					
Gasoline Range Organics (GRO)	< 0.8282	u	< 0.7627	u	NC
Diesel Range Organics (DRO)	20.00	v	6.5	J	25.5
Motor Oil Range Organics (MRO)	< 43.3276	u	< 47.1254	u	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
bold value = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-12 (0.5-1.5')		DUP05		RPD
	Sample Result		Duplicate Result		(%)
Metals (mg/kg)					
Antimony	< 0.7356	u	< 0.7376	u	NC
Arsenic	< 2.8535	u	< 2.8609	u	NC
Barium	260.00	v	320	v	5.2
Beryllium	1.20	v	1.1	v	2.2
Cadmium	< 0.0485	u	< 0.0487	u	NC
Chromium (Total)	27.00	v	26	v	0.9
Cobalt	5.40	v	5.3	v	0.5
Cyanide	0.44	v	0.39	v	NC
Iron	18000.00	v	14000	v	6.3
Lead	< 0.4855	u	< 0.4867	u	NC
Manganese	270.00	v	270	v	0.0
Mercury (elemental)	0.25	v	0.33	v	6.9
Nickel	12.00	v	11	v	2.2
Selenium	< 2.51	u	< 2.5165	u	NC
Silver	< 0.0641	u	< 0.0643	u	NC
Vanadium	30.00	v	28.00000	v	1.7
Zinc	66.00	v	77.00000	v	3.8
Volatiles (mg/kg)					
1,1,1,2-Tetrachloroethane	< 0.0023	u	< 0.0019	u	NC
1,1,1-Trichloroethane	< 0.003	u	< 0.0026	u	NC
1,1,2,2-Tetrachloroethane	< 0.0034	u	< 0.0029	u	NC
1,1,2-Trichloroethane	< 0.0024	u	< 0.002	u	NC
1,1-Dichloroethane	< 0.0021	u	< 0.0018	u	NC
1,1-Dichloroethene	< 0.0134	u	< 0.0114	u	NC
1,1-Dichloropropene	< 0.0031	u	< 0.0026	u	NC
Trichlorobenzene, 1,2,3-	< 0.0029	u	< 0.0025	u	NC
1,2,3-Trichloropropane	< 0.0054	u	< 0.0046	u	NC
1,2,4-Trichlorobenzene	< 0.0034	u	< 0.0029	u	NC
Trimethylbenzene, 1,2,4-	< 0.0031	u	< 0.0026	u	NC
1,2-Dibromo-3-chloropropane	< 0.0034	u	< 0.0029	u	NC
1,2-Dibromoethane (Ethylene dibromide)	< 0.0031	u	< 0.0026	u	NC
1,2-Dichlorobenzene	< 0.0027	u	< 0.0023	u	NC
1,2-Dichloroethane	< 0.0034	u	< 0.0029	u	NC
1,2-Dichloropropane	< 0.0024	u	< 0.0021	u	NC
Trimethylbenzene, 1,3,5-	< 0.0032	u	< 0.0028	u	NC
1,3-Dichlorobenzene	< 0.0029	u	< 0.0025	u	NC
Dichloropropane, 1,3-	< 0.0036	u	< 0.0031	u	NC
1,4-Dichlorobenzene	< 0.0028	u	< 0.0024	u	NC
1-Methylnaphthalene	< 0.0193	u	< 0.0164	u	NC
2,2-Dichloropropane	< 0.0109	u	< 0.0093	u	NC
2-Butanone (Methyl ethyl ketone, MEK)	< 0.0388	u	< 0.033	u	NC
o-Chlorotoluene	< 0.0029	u	< 0.0025	u	NC
Hexanone, 2-	< 0.0056	u	< 0.0047	u	NC
2-Methylnaphthalene	< 0.0147	u	< 0.0125	u	NC
Chlorotoluene, p-	< 0.0027	u	< 0.0023	u	NC
4-Isopropyltoluene	< 0.0028	u	< 0.0024	u	NC
Methyl isobutyl ketone	< 0.0063	u	< 0.0054	u	NC
Acetone	< 0.0278	u	< 0.0237	u	NC
Benzene	< 0.0027	u	< 0.0023	u	NC
Bromobenzene	< 0.0032	u	< 0.0027	u	NC
Bromodichloromethane	< 0.0031	u	< 0.0026	u	NC
Tribromomethane (Bromoform)	< 0.003	u	< 0.0026	u	NC
Bromomethane	< 0.0081	u	< 0.0069	u	NC
Carbon disulfide	< 0.0111	u	< 0.0094	u	NC
Carbon tetrachloride	< 0.0032	u	< 0.0027	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-12 (0.5-1.5')		DUP05		RPD
	Sample Result		Duplicate Result		(%)
Chlorobenzene (Monochlorobenzene)	< 0.0043	u	< 0.0037	u	NC
Ethyl chloride	< 0.0049	u	< 0.0042	u	NC
Chloroform	< 0.0027	u	< 0.0023	u	NC
Chloromethane	< 0.0032	u	< 0.0027	u	NC
cis-1,2-Dichloroethene	< 0.0046	u	< 0.0039	u	NC
cis-1,3-Dichloropropene	< 0.0028	u	< 0.0024	u	NC
Dibromochloromethane	< 0.0024	u	< 0.002	u	NC
Dibromomethane (Methylene Bromide)	< 0.0036	u	< 0.0031	u	NC
Dichlorodifluoromethane	< 0.0078	u	< 0.0066	u	NC
Ethylbenzene	< 0.0019	u	< 0.0017	u	NC
Hexachloro-1,3-butadiene	< 0.0034	u	< 0.0029	u	NC
Cumene (isopropylbenzene)	< 0.0024	u	< 0.0021	u	NC
tert-Butyl methyl ether (MTBE)	< 0.008	u	< 0.0068	u	NC
Methylene chloride (Dichloromethane)	0.01	J	< 0.005	u	NC
Naphthalene	< 0.0067	u	< 0.0057	u	NC
Butylbenzene, n-	< 0.0031	u	< 0.0027	u	NC
Propyl benzene	< 0.0027	u	< 0.0023	u	NC
Butylbenzene, sec-	< 0.0038	u	< 0.0032	u	NC
Styrene	< 0.0026	u	< 0.0022	u	NC
Butylbenzene, tert-	< 0.0032	u	< 0.0027	u	NC
Tetrachloroethene	< 0.0027	u	< 0.0023	u	NC
Toluene	< 0.0032	u	< 0.0027	u	NC
trans-1,2-Dichloroethene	< 0.0031	u	< 0.0026	u	NC
trans-1,3-Dichloropropene	< 0.0035	u	< 0.003	u	NC
Trichloroethylene	< 0.0039	u	< 0.0033	u	NC
Trichlorofluoromethane	< 0.0114	u	< 0.0097	u	NC
Vinyl chloride	< 0.0022	u	< 0.0019	u	NC
Xylenes	< 0.0085	u	< 0.0072	u	NC
Semi-volatiles (mg/kg)					
1,2,4-Trichlorobenzene	< 1.5273	u	< 1.453	u	NC
1,2-Dichlorobenzene	< 1.1805	u	< 1.1231	u	NC
1,3-Dichlorobenzene	< 1.0347	u	< 0.9844	u	NC
1,4-Dichlorobenzene	< 1.0468	u	< 0.9959	u	NC
1-Methylnaphthalene	< 1.471	u	< 1.3994	u	NC
2,4,5-Trichlorophenol	< 1.274	u	< 1.212	u	NC
2,4,6-Trichlorophenol	< 1.033	u	< 0.9828	u	NC
2,4-Dichlorophenol	< 1.143	u	< 1.0874	u	NC
2,4-Dimethylphenol	< 1.0831	u	< 1.0304	u	NC
2,4-Dinitrophenol	< 0.714	u	< 0.6793	u	NC
2,4-Dinitrotoluene	< 1.1583	u	< 1.102	u	NC
2,6-Dintitrotoluene	< 1.2934	u	< 1.2305	u	NC
b-Chloronaphthalene	< 1.2263	u	< 1.1667	u	NC
2-Chlorophenol	< 1.2226	u	< 1.1631	u	NC
2-Methylnaphthalene	< 1.4318	u	< 1.3622	u	NC
Cresol, o-	< 1.1656	u	< 1.1089	u	NC
Nitroaniline, 2-	< 1.4036	u	< 1.3353	u	NC
2-Nitrophenol	< 1.342	u	< 1.2767	u	NC
3,3-Dichlorobenzidine	< 0.8736	u	< 0.8311	u	NC
3+4-Methylphenol	< 1.2062	u	< 1.1475	u	NC
3-Nitroaniline	< 1.356	u	< 1.2901	u	NC
4,6-Dinitro-o-cresol	< 0.9078	u	< 0.8636	u	NC
4-Bromophenyl phenyl ether	< 1.1553	u	< 1.0991	u	NC
4-Chloro-3-methylphenol	< 1.5078	u	< 1.4345	u	NC
Chloroaniline, p-	< 1.3922	u	< 1.3245	u	NC
4-Chlorophenyl phenyl ether	< 1.0711	u	< 1.019	u	NC
Nitroaniline, 4-	< 1.2549	u	< 1.1938	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-12 (0.5-1.5')		DUP05		RPD
	Sample Result		Duplicate Result		(%)
4-Nitrophenol	< 1.3328	u	< 1.2679	u	NC
Acenaphthene	< 1.1789	u	< 1.1216	u	NC
Acenaphthylene	< 1.0772	u	< 1.0248	u	NC
Aniline	< 1.2637	u	< 1.2022	u	NC
Anthracene	< 1.0508	u	< 0.9997	u	NC
Azobenzene	< 1.3758	u	< 1.3089	u	NC
Benzo(a)anthracene	< 0.9469	u	< 0.9008	u	NC
Benzo(a)pyrene	< 0.8734	u	< 0.8309	u	NC
Benzo(b)fluoranthene	< 0.8692	u	< 0.8269	u	NC
Benzo(g,h,i)perylene	< 0.843	u	< 0.802	u	NC
Benzo(k)fluoranthene	< 0.8932	u	< 0.8498	u	NC
Benzoic acid	< 1.015	u	< 0.9657	u	NC
Benzyl alcohol	< 1.2193	u	< 1.16	u	NC
Bis(2-chloroethoxy)methane	< 1.4527	u	< 1.3821	u	NC
Bis(2-chloroethyl) ether	< 1.1977	u	< 1.1394	u	NC
Bis(2-chloroisopropyl) ether	< 1.1188	u	< 1.0644	u	NC
Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate, DEHP]	< 1.4119	u	< 1.3432	u	NC
Butyl Benzyl Phthalate	< 1.0046	u	< 0.9557	u	NC
Carbazole	< 1.1525	u	< 1.0964	u	NC
Chrysene	< 0.8667	u	< 0.8245	u	NC
Dibenz(a,h)anthracene	< 0.8935	u	< 0.85	u	NC
Dibenzofuran	< 1.2878	u	< 1.2252	u	NC
Diethyl phthalate	< 1.4024	u	< 1.3342	u	NC
Dimethyl phthalate (DMP, Phthalic Acid)	< 1.3105	u	< 1.2468	u	NC
Di-n-butyl phthalate (Dibutyl phthalate)	< 1.4668	u	< 1.3955	u	NC
Di-n-octyl phthalate	< 1.0028	u	< 0.954	u	NC
Fluoranthene	< 1.1007	u	< 1.0471	u	NC
Fluorene	< 1.12	u	< 1.0655	u	NC
Hexachlorobenzene	< 1.2166	u	< 1.1574	u	NC
Hexachloro-1,3-butadiene	< 1.3702	u	< 1.3035	u	NC
Hexachlorocyclopentadiene	< 1.1235	u	< 1.0688	u	NC
Hexachloroethane	< 1.0948	u	< 1.0416	u	NC
Indeno(1,2,3-c,d)pyrene	< 0.9783	u	< 0.9307	u	NC
Isophorone	< 1.4472	u	< 1.3768	u	NC
Naphthalene	< 1.4862	u	< 1.4139	u	NC
Nitrobenzene	< 1.3591	u	< 1.293	u	NC
Nitroso-di-N-propylamine, N-	< 1.4031	u	< 1.3349	u	NC
N-Nitrosodiphenylamine	< 1.0331	u	< 0.9829	u	NC
Pentachlorophenol	< 1.0129	u	< 0.9636	u	NC
Phenanthrene	< 1.0637	u	< 1.0119	u	NC
Phenol	< 1.2226	u	< 1.1631	u	NC
Pyrene	< 0.9233	u	< 0.8784	u	NC
Pyridine	< 1.1835	u	< 1.126	u	NC
Total Petroleum Hydrocarbons (mg/kg)					
Gasoline Range Organics (GRO)	< 1.0149	u	4.5	v	NC
Diesel Range Organics (DRO)	320.00	v	790	v	21.2
Motor Oil Range Organics (MRO)	250.00	v	530	v	17.9

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
bold value = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-4-GW		DUP01		RPD
	Sample Result		Duplicate Result		(%)
Metals (ug/l) TOTAL					
Antimony	<0.78	u	<0.78	u	NC
Arsenic	3.40	J	7	v	17.3
Barium	190.00	v	77	v	21.2
Beryllium	1.30	J	0.62	J	17.7
Cadmium	<0.74	u	<0.74	u	NC
Chromium	4.40	J	<1.2	u	NC
Cobalt	2.50	J	24	v	**40.6**
Cyanide	25.10	v	30.8	v	5.1
Iron	3300.00	Z	220	v	**43.8**
Lead	4.10	v	1.1	J	**28.8**
Manganese	8600.00	Z	24000	Z	23.6
Mercury	<0.04	u	<0.04	u	NC
Nickel	56.00	v	340	Z	**35.9**
Selenium	<2.39	u	<2.39	u	NC
Silver	23.00	v	17.00	v	7.5
Vanadium	16.00	J	7.50000	J	18.1
Zinc	<5.77	u	<5.77	u	NC
Chloride	5200000.00	Z	5700000.00000	Z	2.3
Fluoride	<144.91	u	<144.91	u	NC
Sulfate	1200000.00	Z	680000.00000	Z	13.8
Nitrogen, Nitrate (As N)	1600.00	v	800.00000	v	16.7
Nitrogen, Nitrite (As N)	<108	u	<108	u	NC
Metals (ug/l) DISSOLVED					
Antimony (D)	<1.95	u	< 0.002	u	NC
Arsenic (D)	2.70	J	5.50000	v	17.1
Barium (D)	59.00	v	71.00000	v	4.6
Beryllium (D)	0.34	J	0.35000	J	0.7
Cadmium (D)	<0.55	u	<0.55	u	NC
Calcium (D)	1600000.00	v	1200000.00000	v	7.1
Chromium (D)	<1.53	u	<1.53	u	NC
Cobalt (D)	<3.09	u	25.00000	v	NC
Iron (D)	11.00	J	100.00000	v	**40.1**
Lead (D)	<0.00013	u	1.10000	J	NC
Magnesium (D)	290000.00	v	210000.00000	v	8.0
Manganese (D)	12000.00	Z	26000.00000	Z	18.4
Nickel (D)	75.00	v	340.00000	Z	**31.9**
Potassium (D)	4000.00	v	3100.00000	v	6.3
Selenium (D)	<0.86	u	0.98000	J	NC
Sodium (D)	2400000.00	v	2700000.00000	v	2.9
Silver (D)	29.00	v	22.00000	v	6.9
Vanadium (D)	7.10	J	5.50000	J	6.3
Zinc (D)	7.00	J	8.70000	J	5.4
Volatiles (ug/l)					
1,1,1,2-Tetrachloroethane	<0.21	u	<1.03	u	NC
1,1,1-Trichloroethane	<0.17	u	<0.86	u	NC
1,1,2,2-Tetrachloroethane	<0.55	u	<2.74	u	NC
1,1,2-Trichloroethane	<0.22	u	<1.08	u	NC
1,1-Dichloroethane	<0.14	u	<0.7	u	NC
1,1-Dichloroethene	<0.21	u	<1.03	u	NC
1,1-Dichloropropene	<0.16	u	<0.81	u	NC
1,2,3-Trichlorobenzene	<0.3	u	<1.49	u	NC
1,2,4-Trichlorobenzene (V)	<0.2	u	<0.98	u	NC
1,2,4-Trimethylbenzene	<0.21	u	<1.07	u	NC
1,2-Dibromoethane (EDB)	<0.17	u	<0.83	u	NC
1,2-Dichlorobenzene (V)	<0.3	u	<1.49	u	NC
1,2-Dichloroethane (EDC)	<0.19	u	<0.97	u	NC
1,2-Dichloropropane	<0.21	u	<1.04	u	NC
1,3,5-Trimethylbenzene	<0.19	u	<0.94	u	NC
1,3-Dichlorobenzene (V)	<0.25	u	<1.24	u	NC
1,3-Dichloropropane	<0.2	u	<1	u	NC
1,4-Dichlorobenzene (V)	<0.29	u	<1.47	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-4-GW		DUP01		RPD
	Sample Result		Duplicate Result		(%)
1-Methylnaphthalene (V)	<0.31	u	<1.57	u	NC
2,2-Dichloropropane	<0.23	u	<1.17	u	NC
2-Butanone	<2.09	u	<10.45	u	NC
2-Chlorotoluene	<0.25	u	<1.23	u	NC
2-Hexanone	<1.55	u	<7.74	u	NC
2-Methylnaphthalene (V)	<0.35	u	<1.73	u	NC
4-Chlorotoluene	<0.23	u	<1.17	u	NC
4-Isopropyltoluene	<0.22	u	<1.09	u	NC
4-Methyl-2-pentanone	<0.71	u	<3.57	u	NC
Acetone	<1.2	u	<6	u	NC
Benzene	<0.17	u	<0.83	u	NC
Bromobenzene	<0.24	u	<1.22	u	NC
Bromodichloromethane	<0.13	u	<0.67	u	NC
Bromoform	<0.29	u	<1.44	u	NC
Bromomethane	<0.27	u	<1.37	u	NC
Carbon disulfide	<0.45	u	<2.26	u	NC
Carbon Tetrachloride	<0.14	u	<0.7	u	NC
Chlorobenzene	<0.19	u	<0.97	u	NC
Chloroethane	<0.18	u	<0.89	u	NC
Chloroform	<0.12	u	<0.61	u	NC
Chloromethane	<0.32	u	<1.6	u	NC
cis-1,2-DCE	<0.19	u	<0.95	u	NC
cis-1,3-Dichloropropene	<0.14	u	<0.69	u	NC
Dibromochloromethane	<0.24	u	<1.19	u	NC
Dibromomethane	<0.21	u	<1.05	u	NC
Dichlorodifluoromethane	<0.26	u	<1.3	u	NC
Ethylbenzene	<0.13	u	<0.66	u	NC
Hexachlorobutadiene (V)	< 0.31	u	<1.55	u	NC
Isopropylbenzene	<0.19	u	<0.96	u	NC
Methyl tert-butyl ether (MTBE)	15.00	v	22.00000	Z	9.5
Methylene Chloride	<0.15	u	<0.77	u	NC
Naphthalene (V)	<0.28	u	<1.38	u	NC
n-Butylbenzene	<0.23	u	<1.14	u	NC
n-Propylbenzene	<0.21	u	<1.07	u	NC
sec-Butylbenzene	<0.25	u	<1.24	u	NC
Styrene	<0.19	u	<0.96	u	NC
tert-Butylbenzene	<0.21	u	< 1.035	u	NC
Tetrachloroethene (PCE)	<0.15	u	<0.75	u	NC
Toluene	<0.35	u	<1.75	u	NC
trans-1,2-DCE	<0.18	u	<0.9	u	NC
trans-1,3-Dichloropropene	<0.17	u	<0.83	u	NC
Trichloroethene (TCE)	<0.17	u	<0.83	u	NC
Trichlorofluoromethane	<0.19	u	<0.95	u	NC
Vinyl chloride	<0.18	u	<0.9	u	NC
Xylenes, Total	<0.45	u	<2.27	u	NC
Semivolatiles (ug/l)					
1,2,4-Trichlorobenzene	<0.5	u	<0.5	u	NC
1,2-Dichlorobenzene	<0.5	u	<0.5	u	NC
1,3-Dichlorobenzene	<0.5	u	<0.5	u	NC
1,4-Dichlorobenzene	<0.5	u	<0.5	u	NC
1-Methylnaphthalene	<0.5	u	<0.5	u	NC
2,4,5-Trichlorophenol	<0.5	u	<0.5	u	NC
2,4,6-Trichlorophenol	<0.5	u	<0.5	u	NC
2,4-Dichlorophenol	<0.5	u	<0.5	u	NC
2,4-Dimethylphenol	<0.5	u	<0.5	u	NC
2,4-Dinitrophenol	<0.5	u	<0.5	u	NC
2,4-Dinitrotoluene	<0.5	u	<0.5	u	NC
2,6-Dinitrotoluene	<0.2	u	<0.2	u	NC
2-Chloronaphthalene	<0.5	u	<0.5	u	NC
2-Chlorophenol	<0.5	u	<0.5	u	NC
2-Methylnaphthalene	<0.5	u	<0.5	u	NC
2-Methylphenol	<0.5	u	<0.5	u	NC

Table A-3
Field Duplicate Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	SWMU 13-4-GW		DUP01		RPD
	Sample Result		Duplicate Result		(%)
2-Nitroaniline	<0.5	u	<0.5	u	NC
2-Nitrophenol	<0.5	u	<0.5	u	NC
3,3´-Dichlorobenzidine	<0.5	u	<0.5	u	NC
3+4-Methylphenol	<0.5	u	<0.5	u	NC
3-Nitroaniline	<0.5	u	<0.5	u	NC
4,6-Dinitro-2-methylphenol	<0.5	u	<0.5	u	NC
4-Bromophenyl phenyl ether	<0.5	u	<0.5	u	NC
4-Chloro-3-methylphenol	<0.5	u	<0.5	u	NC
4-Chlorophenyl phenyl ether	<0.5	u	<0.5	u	NC
4-Nitroaniline	<0.5	u	<0.5	u	NC
4-Nitrophenol	<0.5	u	<0.5	u	NC
Acenaphthene	<0.5	u	<0.5	u	NC
Acenaphthylene	<0.5	u	<0.5	u	NC
Aniline	<0.5	u	<0.5	u	NC
Anthracene	<0.5	u	<0.5	u	NC
Benz(a)anthracene	<0.1	u	<0.1	u	NC
Benzo(a)pyrene	<0.1	u	<0.1	u	NC
Benzo(b)fluoranthene	<0.1	u	<0.1	u	NC
Benzo(g,h,i)perylene	<0.5	u	<0.5	u	NC
Benzo(k)fluoranthene	<0.5	u	<0.5	u	NC
Benzoic acid	<1	u	<1	u	NC
Benzyl alcohol	<0.5	u	<0.5	u	NC
Bis(2-chloroethoxy)methane	<0.5	u	<0.5	u	NC
Bis(2-chloroisopropyl)ether	<0.5	u	<0.5	u	NC
Bis(2-ethylhexyl)phthalate	<0.5	u	<0.5	u	NC
Butyl benzyl phthalate	0.90	v	0.7	v	NC
Carbazole	<0.5	u	<0.5	u	NC
Chrysene	<0.5	u	<0.5	u	NC
Dibenz(a,h)anthracene	<0.03	u	<0.03	u	NC
Dibenzofuran	<0.5	u	<0.5	u	NC
Diethyl phthalate	<0.5	u	<0.5	u	NC
Dimethyl phthalate	<0.5	u	<0.5	u	NC
Di-n-butyl phthalate	<0.5	u	<0.5	u	NC
Di-n-octyl phthalate	<0.5	u	<0.5	u	NC
Fluoranthene	<0.5	u	<0.5	u	NC
Fluorene	<0.5	u	<0.5	u	NC
Hexachlorobenzene	<0.5	u	<0.5	u	NC
Hexachlorobutadiene	<0.5	u	<0.5	u	NC
Hexachlorocyclopentadiene	<0.5	u	<0.5	u	NC
Hexachloroethane	<0.5	u	<0.5	u	NC
Indeno(1,2,3-cd)pyrene	<0.2	u	<0.2	u	NC
Isophorone	<0.5	u	<0.5	u	NC
Naphthalene	<0.5	u	<0.5	u	NC
Nitrobenzene	<0.5	u	<0.5	u	NC
N-Nitrosodiphenylamine	<0.5	u	<0.5	u	NC
Phenanthrene	<0.5	u	<0.5	u	NC
Pentachlorophenol	<0.5	u	<0.5	u	NC
Phenol	<0.5	u	<0.5	u	NC
Pyrene	<0.5	u	<0.5	u	NC
Pyridine	<0.5	u	<0.5	u	NC
TPH (ug/l)					
Gasoline Range Organics (GRO)	100.00	v	450	v	**31.8**
Diesel Range Organics (DRO)	<132	u	370	J	NC
Motor Oil Range Organics (MRO)	<2500	u	<2500	u	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
bold value = Field Duplicate RPD Outlier

Table A-4
Completeness Summary
SWMU 13 Investigation Report
Marathon Petroleum Company - Gallup Refinery

	Parameter	Total Number of Results	Number of Usable Results	Percent Technical Compliance
TPH :	Diesel Range Organics (DRO)	75	75	100
	Gasoline Rang Organics (GRO)	75	75	100
	Motor Oil Range Organics (MRO)	75	75	100
VOCs:	All VOC Analytes	75	75	100
SVOCs:	All SVOC Analytes	75	75	100
Metals (total and dissolved):	All metals analytes	75	75	100

Notes:
Number of samples used in completeness calculations includes soil samples, groundwater samples, soil and groundwater field duplicates.
Percent Technial Compliance = (Number of usable results / Number of reported results) * 100

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

November 25, 2019

Brian Moore

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX:

RE: SWMU 13 OrderNo.: 1910D16

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 17 sample(s) on 10/24/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1910D16**
Date: **11/25/2019**

CLIENT: Marathon
Project: SWMU 13

Surrogates with an "S" flag are flagged due to sample dilution and/or matrix interference.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 10:45:00 AM
Lab ID: 1910D16-001
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	9.5	1.9	9.7	J	mg/Kg	1	10/30/2019 2:32:24 PM	48409
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/30/2019 2:32:24 PM	48409
Surr: DNOP	100	0	70-130		%Rec	1	10/30/2019 2:32:24 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.2	4.1		mg/Kg	1	10/27/2019 10:38:38 A	G63989
Surr: BFB	90.2	0	77.4-118		%Rec	1	10/27/2019 10:38:38 A	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.018	0.0017	0.031	J	mg/Kg	1	11/1/2019 11:54:09 AM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/7/2019 4:56:20 PM	48420
Arsenic	ND	2.9	5.0		mg/Kg	2	11/7/2019 4:56:20 PM	48420
Barium	310	0.046	0.20		mg/Kg	2	11/7/2019 4:56:20 PM	48420
Beryllium	1.1	0.018	0.30		mg/Kg	2	11/7/2019 4:56:20 PM	48420
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 4:56:20 PM	48420
Chromium	11	0.16	0.60		mg/Kg	2	11/7/2019 4:56:20 PM	48420
Cobalt	5.2	0.21	0.60		mg/Kg	2	11/7/2019 4:56:20 PM	48420
Iron	25000	730	2500		mg/Kg	1000	11/12/2019 1:01:01 PM	48420
Lead	2.8	0.49	0.50		mg/Kg	2	11/12/2019 3:03:37 PM	48420
Manganese	460	0.041	0.20		mg/Kg	2	11/7/2019 4:56:20 PM	48420
Nickel	11	0.30	1.0		mg/Kg	2	11/7/2019 4:56:20 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 11:48:13 A	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 4:56:20 PM	48420
Vanadium	21	0.13	5.0		mg/Kg	2	11/7/2019 4:56:20 PM	48420
Zinc	22	0.79	5.0		mg/Kg	2	11/7/2019 4:56:20 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	1.2	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Acenaphthylene	ND	1.1	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Aniline	ND	1.3	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Anthracene	ND	1.1	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Azobenzene	ND	1.4	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Benz(a)anthracene	ND	0.99	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Benzo(a)pyrene	ND	0.91	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Benzo(b)fluoranthene	ND	0.91	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Benzo(g,h,i)perylene	ND	0.88	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Benzo(k)fluoranthene	ND	0.93	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Benzoic acid	ND	1.1	5.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Benzyl alcohol	ND	1.3	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 10:45:00 AM
Lab ID: 1910D16-001
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	1.5	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Bis(2-chloroethyl)ether	ND	1.2	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Bis(2-chloroisopropyl)ether	ND	1.2	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Bis(2-ethylhexyl)phthalate	ND	1.5	5.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
4-Bromophenyl phenyl ether	ND	1.2	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Butyl benzyl phthalate	ND	1.0	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Carbazole	ND	1.2	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
4-Chloro-3-methylphenol	ND	1.6	5.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
4-Chloroaniline	ND	1.5	5.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2-Chloronaphthalene	ND	1.3	2.6	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2-Chlorophenol	ND	1.3	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
4-Chlorophenyl phenyl ether	ND	1.1	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Chrysene	ND	0.90	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Di-n-butyl phthalate	ND	1.5	4.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Di-n-octyl phthalate	ND	1.0	4.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Dibenz(a,h)anthracene	ND	0.93	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Dibenzofuran	ND	1.3	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
1,2-Dichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
1,3-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
1,4-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
3,3´-Dichlorobenzidine	ND	0.91	2.6	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Diethyl phthalate	ND	1.5	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Dimethyl phthalate	ND	1.4	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2,4-Dichlorophenol	ND	1.2	4.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2,4-Dimethylphenol	ND	1.1	3.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.95	4.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2,4-Dinitrophenol	ND	0.74	5.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2,4-Dinitrotoluene	ND	1.2	5.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2,6-Dinitrotoluene	ND	1.3	5.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Fluoranthene	ND	1.1	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Fluorene	ND	1.2	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Hexachlorobenzene	ND	1.3	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Hexachlorobutadiene	ND	1.4	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Hexachlorocyclopentadiene	ND	1.2	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Hexachloroethane	ND	1.1	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Indeno(1,2,3-cd)pyrene	ND	1.0	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Isophorone	ND	1.5	4.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
1-Methylnaphthalene	ND	1.5	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2-Methylnaphthalene	ND	1.5	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 10:45:00 AM
Lab ID: 1910D16-001
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	1.2	4.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
3+4-Methylphenol	ND	1.3	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
N-Nitrosodi-n-propylamine	ND	1.5	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
N-Nitrosodiphenylamine	ND	1.1	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Naphthalene	ND	1.5	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2-Nitroaniline	ND	1.5	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
3-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
4-Nitroaniline	ND	1.3	4.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Nitrobenzene	ND	1.4	4.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2-Nitrophenol	ND	1.4	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
4-Nitrophenol	ND	1.4	2.6	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Pentachlorophenol	ND	1.1	4.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Phenanthrene	ND	1.1	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Phenol	ND	1.3	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Pyrene	ND	0.96	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Pyridine	ND	1.2	4.1	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
1,2,4-Trichlorobenzene	ND	1.6	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2,4,5-Trichlorophenol	ND	1.3	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
2,4,6-Trichlorophenol	ND	1.1	2.0	D	mg/Kg	1	10/30/2019 1:14:25 PM	48424
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	1	10/30/2019 1:14:25 PM	48424
Surr: Phenol-d5	0		18.5-101	SD	%Rec	1	10/30/2019 1:14:25 PM	48424
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	1	10/30/2019 1:14:25 PM	48424
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	1	10/30/2019 1:14:25 PM	48424
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	1	10/30/2019 1:14:25 PM	48424
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	1	10/30/2019 1:14:25 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0034	0.021		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Toluene	ND	0.0039	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Ethylbenzene	ND	0.0024	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Methyl tert-butyl ether (MTBE)	ND	0.0098	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,2,4-Trimethylbenzene	ND	0.0038	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,3,5-Trimethylbenzene	ND	0.0040	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,2-Dichloroethane (EDC)	ND	0.0042	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,2-Dibromoethane (EDB)	ND	0.0038	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Naphthalene	ND	0.0082	0.082		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1-Methylnaphthalene	ND	0.024	0.16		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
2-Methylnaphthalene	ND	0.018	0.16		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Acetone	ND	0.034	0.62		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Bromobenzene	ND	0.0039	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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CLIENT: Marathon
Client Sample ID: SWMU 13-1 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 10:45:00 AM
Lab ID: 1910D16-001
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0038	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Bromoform	ND	0.0037	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Bromomethane	ND	0.0099	0.12		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
2-Butanone	0.069	0.048	0.41	J	mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Carbon disulfide	ND	0.014	0.41		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Carbon tetrachloride	ND	0.0039	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Chlorobenzene	ND	0.0053	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Chloroethane	ND	0.0061	0.082		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Chloroform	ND	0.0033	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Chloromethane	ND	0.0039	0.12		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
2-Chlorotoluene	ND	0.0036	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
4-Chlorotoluene	ND	0.0034	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
cis-1,2-DCE	ND	0.0056	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
cis-1,3-Dichloropropene	ND	0.0035	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,2-Dibromo-3-chloropropane	ND	0.0042	0.082		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Dibromochloromethane	ND	0.0029	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Dibromomethane	ND	0.0044	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,2-Dichlorobenzene	ND	0.0034	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,3-Dichlorobenzene	ND	0.0036	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,4-Dichlorobenzene	ND	0.0034	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Dichlorodifluoromethane	ND	0.0096	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,1-Dichloroethane	ND	0.0026	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,1-Dichloroethene	ND	0.016	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,2-Dichloropropane	ND	0.0030	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,3-Dichloropropane	ND	0.0045	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
2,2-Dichloropropane	ND	0.013	0.082		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,1-Dichloropropene	ND	0.0037	0.082		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Hexachlorobutadiene	ND	0.0042	0.082		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
2-Hexanone	ND	0.0068	0.41		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Isopropylbenzene	ND	0.0030	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
4-Isopropyltoluene	ND	0.0034	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
4-Methyl-2-pentanone	ND	0.0078	0.41		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Methylene chloride	ND	0.0073	0.12		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
n-Butylbenzene	ND	0.0038	0.12		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
n-Propylbenzene	ND	0.0033	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
sec-Butylbenzene	ND	0.0046	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Styrene	ND	0.0032	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
tert-Butylbenzene	ND	0.0039	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,1,1,2-Tetrachloroethane	ND	0.0028	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 10:45:00 AM
Lab ID: 1910D16-001
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0042	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Tetrachloroethene (PCE)	ND	0.0033	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
trans-1,2-DCE	ND	0.0038	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
trans-1,3-Dichloropropene	ND	0.0044	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,2,3-Trichlorobenzene	ND	0.0036	0.082		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,2,4-Trichlorobenzene	ND	0.0042	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,1,1-Trichloroethane	ND	0.0037	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,1,2-Trichloroethane	ND	0.0029	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Trichloroethene (TCE)	ND	0.0048	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Trichlorofluoromethane	ND	0.014	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
1,2,3-Trichloropropane	ND	0.0067	0.082		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Vinyl chloride	ND	0.0027	0.041		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Xylenes, Total	ND	0.010	0.082		mg/Kg	1	10/25/2019 7:31:22 PM	S63992
Surr: Dibromofluoromethane	105		70-130		%Rec	1	10/25/2019 7:31:22 PM	S63992
Surr: 1,2-Dichloroethane-d4	91.8		70-130		%Rec	1	10/25/2019 7:31:22 PM	S63992
Surr: Toluene-d8	100		70-130		%Rec	1	10/25/2019 7:31:22 PM	S63992
Surr: 4-Bromofluorobenzene	88.3		70-130		%Rec	1	10/25/2019 7:31:22 PM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU13-1 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 10:55:00 AM
Lab ID: 1910D16-002
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	2.6	1.8	9.2	J	mg/Kg	1	10/30/2019 3:20:18 PM	48409
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	10/30/2019 3:20:18 PM	48409
Surr: DNOP	88.3	0	70-130		%Rec	1	10/30/2019 3:20:18 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.98	3.2		mg/Kg	1	10/27/2019 11:01:35 A	G63989
Surr: BFB	89.4	0	77.4-118		%Rec	1	10/27/2019 11:01:35 A	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0089	0.0017	0.031	J	mg/Kg	1	11/1/2019 12:02:20 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.73	5.0		mg/Kg	2	11/7/2019 4:58:03 PM	48420
Arsenic	3.3	2.8	5.0	J	mg/Kg	2	11/7/2019 4:58:03 PM	48420
Barium	220	0.046	0.20		mg/Kg	2	11/7/2019 4:58:03 PM	48420
Beryllium	0.86	0.018	0.30		mg/Kg	2	11/7/2019 4:58:03 PM	48420
Cadmium	ND	0.048	0.20		mg/Kg	2	11/7/2019 4:58:03 PM	48420
Chromium	8.3	0.16	0.60		mg/Kg	2	11/7/2019 4:58:03 PM	48420
Cobalt	4.3	0.21	0.60		mg/Kg	2	11/7/2019 4:58:03 PM	48420
Iron	12000	72	250		mg/Kg	100	11/12/2019 12:51:44 P	48420
Lead	2.1	0.48	0.50		mg/Kg	2	11/12/2019 3:05:11 PM	48420
Manganese	710	2.1	10		mg/Kg	100	11/12/2019 12:51:44 P	48420
Nickel	8.6	0.30	1.0		mg/Kg	2	11/7/2019 4:58:03 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 11:49:56 A	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 4:58:03 PM	48420
Vanadium	17	0.13	5.0		mg/Kg	2	11/7/2019 4:58:03 PM	48420
Zinc	14	0.79	5.0		mg/Kg	2	11/7/2019 4:58:03 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.24	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Acenaphthylene	ND	0.22	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Aniline	ND	0.26	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Anthracene	ND	0.22	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Azobenzene	ND	0.29	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Benz(a)anthracene	ND	0.20	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Benzo(a)pyrene	ND	0.18	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Benzo(b)fluoranthene	ND	0.18	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Benzo(g,h,i)perylene	ND	0.18	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Benzo(k)fluoranthene	ND	0.19	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Benzoic acid	ND	0.21	1.0		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Benzyl alcohol	ND	0.25	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU13-1 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 10:55:00 AM
Lab ID: 1910D16-002
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.30	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Bis(2-chloroethyl)ether	ND	0.25	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.23	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Bis(2-ethylhexyl)phthalate	ND	0.29	1.0		mg/Kg	1	10/30/2019 1:43:23 PM	48424
4-Bromophenyl phenyl ether	ND	0.24	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Butyl benzyl phthalate	ND	0.21	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Carbazole	ND	0.24	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
4-Chloro-3-methylphenol	ND	0.31	1.0		mg/Kg	1	10/30/2019 1:43:23 PM	48424
4-Chloroaniline	ND	0.29	1.0		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2-Chloronaphthalene	ND	0.25	0.51		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2-Chlorophenol	ND	0.25	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
4-Chlorophenyl phenyl ether	ND	0.22	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Chrysene	ND	0.18	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Di-n-butyl phthalate	ND	0.30	0.82		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Di-n-octyl phthalate	ND	0.21	0.82		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Dibenz(a,h)anthracene	ND	0.19	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Dibenzofuran	ND	0.27	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
1,2-Dichlorobenzene	ND	0.25	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
1,3-Dichlorobenzene	ND	0.21	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
1,4-Dichlorobenzene	ND	0.22	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
3,3´-Dichlorobenzidine	ND	0.18	0.51		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Diethyl phthalate	ND	0.29	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Dimethyl phthalate	ND	0.27	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2,4-Dichlorophenol	ND	0.24	0.82		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2,4-Dimethylphenol	ND	0.22	0.61		mg/Kg	1	10/30/2019 1:43:23 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.19	0.82		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2,4-Dinitrophenol	ND	0.15	1.0		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2,4-Dinitrotoluene	ND	0.24	1.0		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2,6-Dinitrotoluene	ND	0.27	1.0		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Fluoranthene	ND	0.23	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Fluorene	ND	0.23	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Hexachlorobenzene	ND	0.25	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Hexachlorobutadiene	ND	0.28	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Hexachlorocyclopentadiene	ND	0.23	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Hexachloroethane	ND	0.23	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.20	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Isophorone	ND	0.30	0.82		mg/Kg	1	10/30/2019 1:43:23 PM	48424
1-Methylnaphthalene	ND	0.31	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2-Methylnaphthalene	ND	0.30	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU13-1 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 10:55:00 AM
Lab ID: 1910D16-002
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.24	0.82		mg/Kg	1	10/30/2019 1:43:23 PM	48424
3+4-Methylphenol	ND	0.25	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
N-Nitrosodi-n-propylamine	ND	0.29	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
N-Nitrosodiphenylamine	ND	0.21	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Naphthalene	ND	0.31	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2-Nitroaniline	ND	0.29	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
3-Nitroaniline	ND	0.28	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
4-Nitroaniline	ND	0.26	0.82		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Nitrobenzene	ND	0.28	0.82		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2-Nitrophenol	ND	0.28	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
4-Nitrophenol	ND	0.28	0.51		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Pentachlorophenol	ND	0.21	0.82		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Phenanthrene	ND	0.22	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Phenol	ND	0.25	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Pyrene	ND	0.19	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Pyridine	ND	0.25	0.82		mg/Kg	1	10/30/2019 1:43:23 PM	48424
1,2,4-Trichlorobenzene	ND	0.32	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2,4,5-Trichlorophenol	ND	0.26	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
2,4,6-Trichlorophenol	ND	0.21	0.41		mg/Kg	1	10/30/2019 1:43:23 PM	48424
Surr: 2-Fluorophenol	40.0		26.7-85.9		%Rec	1	10/30/2019 1:43:23 PM	48424
Surr: Phenol-d5	42.9		18.5-101		%Rec	1	10/30/2019 1:43:23 PM	48424
Surr: 2,4,6-Tribromophenol	53.3		35.8-85.6		%Rec	1	10/30/2019 1:43:23 PM	48424
Surr: Nitrobenzene-d5	44.7		40.8-95.2		%Rec	1	10/30/2019 1:43:23 PM	48424
Surr: 2-Fluorobiphenyl	46.7		34.7-85.2		%Rec	1	10/30/2019 1:43:23 PM	48424
Surr: 4-Terphenyl-d14	55.7		37.4-91.3		%Rec	1	10/30/2019 1:43:23 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0027	0.016		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Toluene	ND	0.0031	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Ethylbenzene	ND	0.0019	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Methyl tert-butyl ether (MTBE)	ND	0.0077	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,2,4-Trimethylbenzene	ND	0.0030	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,3,5-Trimethylbenzene	ND	0.0031	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,2-Dichloroethane (EDC)	ND	0.0033	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,2-Dibromoethane (EDB)	ND	0.0030	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Naphthalene	ND	0.0065	0.065		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1-Methylnaphthalene	ND	0.019	0.13		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
2-Methylnaphthalene	ND	0.014	0.13		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Acetone	ND	0.027	0.49		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Bromobenzene	ND	0.0031	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU13-1 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 10:55:00 AM
Lab ID: 1910D16-002
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0030	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Bromoform	ND	0.0029	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Bromomethane	ND	0.0078	0.097		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
2-Butanone	0.040	0.038	0.32	J	mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Carbon disulfide	ND	0.011	0.32		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Carbon tetrachloride	ND	0.0031	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Chlorobenzene	ND	0.0042	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Chloroethane	ND	0.0048	0.065		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Chloroform	ND	0.0026	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Chloromethane	ND	0.0031	0.097		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
2-Chlorotoluene	ND	0.0028	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
4-Chlorotoluene	ND	0.0027	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
cis-1,2-DCE	ND	0.0044	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
cis-1,3-Dichloropropene	ND	0.0027	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,2-Dibromo-3-chloropropane	ND	0.0033	0.065		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Dibromochloromethane	ND	0.0023	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Dibromomethane	ND	0.0035	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,2-Dichlorobenzene	ND	0.0027	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,3-Dichlorobenzene	ND	0.0028	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,4-Dichlorobenzene	ND	0.0027	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Dichlorodifluoromethane	ND	0.0075	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,1-Dichloroethane	ND	0.0021	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,1-Dichloroethene	ND	0.013	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,2-Dichloropropane	ND	0.0024	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,3-Dichloropropane	ND	0.0035	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
2,2-Dichloropropane	ND	0.011	0.065		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,1-Dichloropropene	ND	0.0030	0.065		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Hexachlorobutadiene	ND	0.0033	0.065		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
2-Hexanone	ND	0.0054	0.32		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Isopropylbenzene	ND	0.0023	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
4-Isopropyltoluene	ND	0.0027	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
4-Methyl-2-pentanone	ND	0.0061	0.32		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Methylene chloride	0.0067	0.0057	0.097	J	mg/Kg	1	10/25/2019 8:58:14 PM	S63992
n-Butylbenzene	ND	0.0030	0.097		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
n-Propylbenzene	ND	0.0026	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
sec-Butylbenzene	ND	0.0037	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Styrene	ND	0.0025	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
tert-Butylbenzene	ND	0.0031	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,1,1,2-Tetrachloroethane	ND	0.0022	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU13-1 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 10:55:00 AM
Lab ID: 1910D16-002
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0033	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Tetrachloroethene (PCE)	ND	0.0026	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
trans-1,2-DCE	ND	0.0030	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
trans-1,3-Dichloropropene	ND	0.0034	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,2,3-Trichlorobenzene	ND	0.0028	0.065		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,2,4-Trichlorobenzene	ND	0.0033	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,1,1-Trichloroethane	ND	0.0029	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,1,2-Trichloroethane	ND	0.0023	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Trichloroethene (TCE)	ND	0.0038	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Trichlorofluoromethane	ND	0.011	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
1,2,3-Trichloropropane	ND	0.0053	0.065		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Vinyl chloride	ND	0.0021	0.032		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Xylenes, Total	ND	0.0082	0.065		mg/Kg	1	10/25/2019 8:58:14 PM	S63992
Surr: Dibromofluoromethane	101		70-130		%Rec	1	10/25/2019 8:58:14 PM	S63992
Surr: 1,2-Dichloroethane-d4	92.4		70-130		%Rec	1	10/25/2019 8:58:14 PM	S63992
Surr: Toluene-d8	100		70-130		%Rec	1	10/25/2019 8:58:14 PM	S63992
Surr: 4-Bromofluorobenzene	99.0		70-130		%Rec	1	10/25/2019 8:58:14 PM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU13-1 (5-6')
Project: SWMU 13
Collection Date: 10/22/2019 11:00:00 AM
Lab ID: 1910D16-003
Matrix: SOIL
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	2.4	1.7	8.7	J	mg/Kg	1	10/29/2019 1:39:29 PM	48409
Motor Oil Range Organics (MRO)	ND	43	43		mg/Kg	1	10/29/2019 1:39:29 PM	48409
Surr: DNOP	110	0	70-130		%Rec	1	10/29/2019 1:39:29 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.5	5.0		mg/Kg	1	10/30/2019 11:27:05 A	48446
Surr: BFB	104	0	77.4-118		%Rec	1	10/30/2019 11:27:05 A	48446
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0050	0.0017	0.032	J	mg/Kg	1	11/1/2019 12:19:05 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.73	5.0		mg/Kg	2	11/7/2019 4:59:37 PM	48420
Arsenic	ND	2.8	5.0		mg/Kg	2	11/7/2019 4:59:37 PM	48420
Barium	180	0.046	0.20		mg/Kg	2	11/7/2019 4:59:37 PM	48420
Beryllium	1.3	0.018	0.30		mg/Kg	2	11/7/2019 4:59:37 PM	48420
Cadmium	ND	0.048	0.20		mg/Kg	2	11/7/2019 4:59:37 PM	48420
Chromium	12	0.16	0.60		mg/Kg	2	11/7/2019 4:59:37 PM	48420
Cobalt	5.5	0.21	0.60		mg/Kg	2	11/7/2019 4:59:37 PM	48420
Iron	18000	72	250		mg/Kg	100	11/12/2019 12:53:15 P	48420
Lead	3.9	0.48	0.50		mg/Kg	2	11/12/2019 3:06:45 PM	48420
Manganese	260	0.041	0.20		mg/Kg	2	11/7/2019 4:59:37 PM	48420
Nickel	13	0.30	1.0		mg/Kg	2	11/7/2019 4:59:37 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 11:51:35 A	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 4:59:37 PM	48420
Vanadium	18	0.13	5.0		mg/Kg	2	11/7/2019 4:59:37 PM	48420
Zinc	18	0.79	5.0		mg/Kg	2	11/7/2019 4:59:37 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Acenaphthylene	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Aniline	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Anthracene	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Azobenzene	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Benz(a)anthracene	ND	0.090	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Benzo(a)pyrene	ND	0.083	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Benzo(b)fluoranthene	ND	0.082	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Benzo(g,h,i)perylene	ND	0.080	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Benzo(k)fluoranthene	ND	0.085	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Benzoic acid	ND	0.096	0.47		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU13-1 (5-6')
Project: SWMU 13
Collection Date: 10/22/2019 11:00:00 AM
Lab ID: 1910D16-003
Matrix: SOIL
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Bis(2-chloroethyl)ether	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Bis(2-ethylhexyl)phthalate	ND	0.13	0.47		mg/Kg	1	10/30/2019 2:12:18 PM	48424
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Butyl benzyl phthalate	ND	0.095	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Carbazole	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
4-Chloro-3-methylphenol	ND	0.14	0.47		mg/Kg	1	10/30/2019 2:12:18 PM	48424
4-Chloroaniline	ND	0.13	0.47		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2-Chloronaphthalene	ND	0.12	0.23		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
4-Chlorophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Chrysene	ND	0.082	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Di-n-butyl phthalate	ND	0.14	0.37		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Di-n-octyl phthalate	ND	0.095	0.37		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Dibenz(a,h)anthracene	ND	0.085	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Dibenzofuran	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
1,2-Dichlorobenzene	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
1,3-Dichlorobenzene	ND	0.098	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
1,4-Dichlorobenzene	ND	0.099	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
3,3´-Dichlorobenzidine	ND	0.083	0.23		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Diethyl phthalate	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Dimethyl phthalate	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2,4-Dichlorophenol	ND	0.11	0.37		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2,4-Dimethylphenol	ND	0.10	0.28		mg/Kg	1	10/30/2019 2:12:18 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.086	0.37		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2,4-Dinitrophenol	ND	0.068	0.47		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2,4-Dinitrotoluene	ND	0.11	0.47		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2,6-Dinitrotoluene	ND	0.12	0.47		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Fluoranthene	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Fluorene	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Hexachlorobutadiene	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Hexachloroethane	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.093	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Isophorone	ND	0.14	0.37		mg/Kg	1	10/30/2019 2:12:18 PM	48424
1-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU13-1 (5-6')
Project: SWMU 13
Collection Date: 10/22/2019 11:00:00 AM
Lab ID: 1910D16-003
Matrix: SOIL
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.11	0.37		mg/Kg	1	10/30/2019 2:12:18 PM	48424
3+4-Methylphenol	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
N-Nitrosodi-n-propylamine	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
N-Nitrosodiphenylamine	ND	0.098	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Naphthalene	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2-Nitroaniline	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
4-Nitroaniline	ND	0.12	0.37		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Nitrobenzene	ND	0.13	0.37		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
4-Nitrophenol	ND	0.13	0.23		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Pentachlorophenol	ND	0.096	0.37		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Phenanthrene	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Phenol	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Pyrene	ND	0.088	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Pyridine	ND	0.11	0.37		mg/Kg	1	10/30/2019 2:12:18 PM	48424
1,2,4-Trichlorobenzene	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2,4,5-Trichlorophenol	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
2,4,6-Trichlorophenol	ND	0.098	0.19		mg/Kg	1	10/30/2019 2:12:18 PM	48424
Surr: 2-Fluorophenol	41.5		26.7-85.9		%Rec	1	10/30/2019 2:12:18 PM	48424
Surr: Phenol-d5	47.4		18.5-101		%Rec	1	10/30/2019 2:12:18 PM	48424
Surr: 2,4,6-Tribromophenol	53.4		35.8-85.6		%Rec	1	10/30/2019 2:12:18 PM	48424
Surr: Nitrobenzene-d5	49.2		40.8-95.2		%Rec	1	10/30/2019 2:12:18 PM	48424
Surr: 2-Fluorobiphenyl	48.2		34.7-85.2		%Rec	1	10/30/2019 2:12:18 PM	48424
Surr: 4-Terphenyl-d14	59.0		37.4-91.3		%Rec	1	10/30/2019 2:12:18 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0040	0.025		mg/Kg	1	10/30/2019 12:39:40 P	48446
Toluene	ND	0.0047	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Ethylbenzene	ND	0.0029	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Methyl tert-butyl ether (MTBE)	ND	0.012	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,2,4-Trimethylbenzene	ND	0.0045	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,3,5-Trimethylbenzene	ND	0.0048	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,2-Dichloroethane (EDC)	ND	0.0051	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,2-Dibromoethane (EDB)	ND	0.0045	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Naphthalene	ND	0.0099	0.099		mg/Kg	1	10/30/2019 12:39:40 P	48446
1-Methylnaphthalene	ND	0.028	0.20		mg/Kg	1	10/30/2019 12:39:40 P	48446
2-Methylnaphthalene	ND	0.022	0.20		mg/Kg	1	10/30/2019 12:39:40 P	48446
Acetone	1.8	0.041	0.74		mg/Kg	1	10/30/2019 12:39:40 P	48446
Bromobenzene	ND	0.0047	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU13-1 (5-6')
Project: SWMU 13
Collection Date: 10/22/2019 11:00:00 AM
Lab ID: 1910D16-003
Matrix: SOIL
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0045	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Bromoform	ND	0.0045	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Bromomethane	ND	0.012	0.15		mg/Kg	1	10/30/2019 12:39:40 P	48446
2-Butanone	ND	0.057	0.50		mg/Kg	1	10/30/2019 12:39:40 P	48446
Carbon disulfide	ND	0.016	0.50		mg/Kg	1	10/30/2019 12:39:40 P	48446
Carbon tetrachloride	ND	0.0047	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Chlorobenzene	ND	0.0063	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Chloroethane	ND	0.0073	0.099		mg/Kg	1	10/30/2019 12:39:40 P	48446
Chloroform	ND	0.0040	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Chloromethane	ND	0.0047	0.15		mg/Kg	1	10/30/2019 12:39:40 P	48446
2-Chlorotoluene	ND	0.0043	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
4-Chlorotoluene	ND	0.0041	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
cis-1,2-DCE	ND	0.0068	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
cis-1,3-Dichloropropene	ND	0.0042	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,2-Dibromo-3-chloropropane	ND	0.0051	0.099		mg/Kg	1	10/30/2019 12:39:40 P	48446
Dibromochloromethane	ND	0.0035	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Dibromomethane	ND	0.0053	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,2-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,3-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,4-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Dichlorodifluoromethane	ND	0.011	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,1-Dichloroethane	ND	0.0032	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,3-Dichloropropane	ND	0.0054	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
2,2-Dichloropropane	ND	0.016	0.099		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,1-Dichloropropene	ND	0.0045	0.099		mg/Kg	1	10/30/2019 12:39:40 P	48446
Hexachlorobutadiene	ND	0.0050	0.099		mg/Kg	1	10/30/2019 12:39:40 P	48446
2-Hexanone	ND	0.0082	0.50		mg/Kg	1	10/30/2019 12:39:40 P	48446
Isopropylbenzene	ND	0.0036	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
4-Isopropyltoluene	ND	0.0041	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
4-Methyl-2-pentanone	ND	0.0093	0.50		mg/Kg	1	10/30/2019 12:39:40 P	48446
Methylene chloride	ND	0.0087	0.15		mg/Kg	1	10/30/2019 12:39:40 P	48446
n-Butylbenzene	ND	0.0046	0.15		mg/Kg	1	10/30/2019 12:39:40 P	48446
n-Propylbenzene	ND	0.0039	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
sec-Butylbenzene	ND	0.0056	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Styrene	ND	0.0039	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
tert-Butylbenzene	ND	0.0047	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,1,1,2-Tetrachloroethane	ND	0.0033	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU13-1 (5-6')
Project: SWMU 13
Collection Date: 10/22/2019 11:00:00 AM
Lab ID: 1910D16-003
Matrix: SOIL
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0050	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
trans-1,2-DCE	ND	0.0045	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
trans-1,3-Dichloropropene	ND	0.0052	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,2,3-Trichlorobenzene	ND	0.0043	0.099		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,2,4-Trichlorobenzene	ND	0.0050	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,1,1-Trichloroethane	ND	0.0045	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,1,2-Trichloroethane	ND	0.0035	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Trichloroethene (TCE)	ND	0.0057	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Trichlorofluoromethane	ND	0.017	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
1,2,3-Trichloropropane	ND	0.0080	0.099		mg/Kg	1	10/30/2019 12:39:40 P	48446
Vinyl chloride	ND	0.0032	0.050		mg/Kg	1	10/30/2019 12:39:40 P	48446
Xylenes, Total	ND	0.012	0.099		mg/Kg	1	10/30/2019 12:39:40 P	48446
Surr: Dibromofluoromethane	109		70-130		%Rec	1	10/30/2019 12:39:40 P	48446
Surr: 1,2-Dichloroethane-d4	94.3		70-130		%Rec	1	10/30/2019 12:39:40 P	48446
Surr: Toluene-d8	103		70-130		%Rec	1	10/30/2019 12:39:40 P	48446
Surr: 4-Bromofluorobenzene	91.4		70-130		%Rec	1	10/30/2019 12:39:40 P	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 11:05:00 AM
Lab ID: 1910D16-004
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	2.1	1.6	7.8	J	mg/Kg	1	10/29/2019 1:48:43 PM	48409
Motor Oil Range Organics (MRO)	ND	39	39		mg/Kg	1	10/29/2019 1:48:43 PM	48409
Surr: DNOP	99.0	0	70-130		%Rec	1	10/29/2019 1:48:43 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.83	2.7		mg/Kg	1	10/27/2019 11:24:35 A	G63989
Surr: BFB	87.9	0	77.4-118		%Rec	1	10/27/2019 11:24:35 A	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0034	0.0018	0.033	J	mg/Kg	1	11/1/2019 12:21:08 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.73	5.0		mg/Kg	2	11/7/2019 5:01:12 PM	48420
Arsenic	ND	2.8	5.0		mg/Kg	2	11/7/2019 5:01:12 PM	48420
Barium	330	0.046	0.20		mg/Kg	2	11/7/2019 5:01:12 PM	48420
Beryllium	0.67	0.018	0.30		mg/Kg	2	11/7/2019 5:01:12 PM	48420
Cadmium	ND	0.048	0.20		mg/Kg	2	11/7/2019 5:01:12 PM	48420
Chromium	5.4	0.16	0.60		mg/Kg	2	11/7/2019 5:01:12 PM	48420
Cobalt	5.2	0.21	0.60		mg/Kg	2	11/7/2019 5:01:12 PM	48420
Iron	9400	72	250		mg/Kg	100	11/12/2019 12:54:48 P	48420
Lead	3.8	0.48	0.50		mg/Kg	2	11/12/2019 3:12:58 PM	48420
Manganese	370	0.041	0.20		mg/Kg	2	11/7/2019 5:01:12 PM	48420
Nickel	6.0	0.30	0.99		mg/Kg	2	11/7/2019 5:01:12 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 11:53:07 A	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 5:01:12 PM	48420
Vanadium	12	0.13	5.0		mg/Kg	2	11/7/2019 5:01:12 PM	48420
Zinc	9.9	0.79	5.0		mg/Kg	2	11/7/2019 5:01:12 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Acenaphthylene	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Aniline	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Anthracene	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Azobenzene	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Benz(a)anthracene	ND	0.094	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Benzo(a)pyrene	ND	0.087	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Benzo(b)fluoranthene	ND	0.086	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Benzo(g,h,i)perylene	ND	0.084	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Benzo(k)fluoranthene	ND	0.089	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Benzoic acid	ND	0.10	0.49		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 11:05:00 AM
Lab ID: 1910D16-004
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	10/30/2019 2:41:10 PM	48424
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Butyl benzyl phthalate	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Carbazole	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	10/30/2019 2:41:10 PM	48424
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
4-Chlorophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Chrysene	ND	0.086	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Di-n-butyl phthalate	ND	0.15	0.39		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Di-n-octyl phthalate	ND	0.099	0.39		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Dibenz(a,h)anthracene	ND	0.089	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Dibenzofuran	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
1,2-Dichlorobenzene	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
3,3´-Dichlorobenzidine	ND	0.087	0.24		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	10/30/2019 2:41:10 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2,4-Dinitrotoluene	ND	0.11	0.49		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Fluoranthene	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Fluorene	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Hexachlorobutadiene	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.097	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Isophorone	ND	0.14	0.39		mg/Kg	1	10/30/2019 2:41:10 PM	48424
1-Methylnaphthalene	ND	0.15	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 11:05:00 AM
Lab ID: 1910D16-004
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	10/30/2019 2:41:10 PM	48424
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Naphthalene	ND	0.15	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Nitrobenzene	ND	0.13	0.39		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Phenanthrene	ND	0.11	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Phenol	ND	0.12	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Pyrene	ND	0.092	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Pyridine	ND	0.12	0.39		mg/Kg	1	10/30/2019 2:41:10 PM	48424
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2,4,5-Trichlorophenol	ND	0.13	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	10/30/2019 2:41:10 PM	48424
Surr: 2-Fluorophenol	48.6		26.7-85.9		%Rec	1	10/30/2019 2:41:10 PM	48424
Surr: Phenol-d5	52.4		18.5-101		%Rec	1	10/30/2019 2:41:10 PM	48424
Surr: 2,4,6-Tribromophenol	65.1		35.8-85.6		%Rec	1	10/30/2019 2:41:10 PM	48424
Surr: Nitrobenzene-d5	56.6		40.8-95.2		%Rec	1	10/30/2019 2:41:10 PM	48424
Surr: 2-Fluorobiphenyl	57.6		34.7-85.2		%Rec	1	10/30/2019 2:41:10 PM	48424
Surr: 4-Terphenyl-d14	67.3		37.4-91.3		%Rec	1	10/30/2019 2:41:10 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0022	0.014		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Toluene	ND	0.0026	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Ethylbenzene	ND	0.0016	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Methyl tert-butyl ether (MTBE)	ND	0.0065	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,2,4-Trimethylbenzene	ND	0.0025	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,3,5-Trimethylbenzene	ND	0.0027	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,2-Dichloroethane (EDC)	ND	0.0028	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,2-Dibromoethane (EDB)	ND	0.0025	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Naphthalene	ND	0.0055	0.055		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1-Methylnaphthalene	ND	0.016	0.11		mg/Kg	1	10/25/2019 11:23:20 P	S63992
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Acetone	ND	0.023	0.41		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Bromobenzene	ND	0.0026	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 11:05:00 AM
Lab ID: 1910D16-004
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0025	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Bromoform	ND	0.0025	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Bromomethane	ND	0.0066	0.082		mg/Kg	1	10/25/2019 11:23:20 P	S63992
2-Butanone	ND	0.032	0.27		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Carbon disulfide	ND	0.0091	0.27		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Carbon tetrachloride	ND	0.0026	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Chlorobenzene	ND	0.0035	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Chloroethane	ND	0.0040	0.055		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Chloroform	ND	0.0022	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Chloromethane	ND	0.0026	0.082		mg/Kg	1	10/25/2019 11:23:20 P	S63992
2-Chlorotoluene	ND	0.0024	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
4-Chlorotoluene	ND	0.0022	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
cis-1,2-DCE	ND	0.0038	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
cis-1,3-Dichloropropene	ND	0.0023	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,2-Dibromo-3-chloropropane	ND	0.0028	0.055		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Dibromochloromethane	ND	0.0019	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Dibromomethane	ND	0.0030	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,2-Dichlorobenzene	ND	0.0022	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,3-Dichlorobenzene	ND	0.0024	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,4-Dichlorobenzene	ND	0.0023	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Dichlorodifluoromethane	ND	0.0064	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,1-Dichloroethane	ND	0.0018	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,1-Dichloroethene	ND	0.011	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,2-Dichloropropane	ND	0.0020	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,3-Dichloropropane	ND	0.0030	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
2,2-Dichloropropane	ND	0.0089	0.055		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,1-Dichloropropene	ND	0.0025	0.055		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Hexachlorobutadiene	ND	0.0028	0.055		mg/Kg	1	10/25/2019 11:23:20 P	S63992
2-Hexanone	ND	0.0046	0.27		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Isopropylbenzene	ND	0.0020	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
4-Isopropyltoluene	ND	0.0023	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
4-Methyl-2-pentanone	ND	0.0052	0.27		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Methylene chloride	0.0055	0.0048	0.082	J	mg/Kg	1	10/25/2019 11:23:20 P	S63992
n-Butylbenzene	ND	0.0026	0.082		mg/Kg	1	10/25/2019 11:23:20 P	S63992
n-Propylbenzene	ND	0.0022	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
sec-Butylbenzene	ND	0.0031	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Styrene	ND	0.0022	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
tert-Butylbenzene	ND	0.0026	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,1,1,2-Tetrachloroethane	ND	0.0019	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 11:05:00 AM
Lab ID: 1910D16-004
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0028	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Tetrachloroethene (PCE)	ND	0.0022	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
trans-1,2-DCE	ND	0.0025	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
trans-1,3-Dichloropropene	ND	0.0029	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,2,3-Trichlorobenzene	ND	0.0024	0.055		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,2,4-Trichlorobenzene	ND	0.0028	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,1,1-Trichloroethane	ND	0.0025	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,1,2-Trichloroethane	ND	0.0019	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Trichloroethene (TCE)	ND	0.0032	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Trichlorofluoromethane	ND	0.0093	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
1,2,3-Trichloropropane	ND	0.0044	0.055		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Vinyl chloride	ND	0.0018	0.027		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Xylenes, Total	ND	0.0069	0.055		mg/Kg	1	10/25/2019 11:23:20 P	S63992
Surr: Dibromofluoromethane	104		70-130		%Rec	1	10/25/2019 11:23:20 P	S63992
Surr: 1,2-Dichloroethane-d4	94.6		70-130		%Rec	1	10/25/2019 11:23:20 P	S63992
Surr: Toluene-d8	103		70-130		%Rec	1	10/25/2019 11:23:20 P	S63992
Surr: 4-Bromofluorobenzene	90.6		70-130		%Rec	1	10/25/2019 11:23:20 P	S63992

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PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (14-16')
Project: SWMU 13
Collection Date: 10/22/2019 11:15:00 AM
Lab ID: 1910D16-005
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	ND	1.9	9.7		mg/Kg	1	10/29/2019 1:57:51 PM	48409
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/29/2019 1:57:51 PM	48409
Surr: DNOP	106	0	70-130		%Rec	1	10/29/2019 1:57:51 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.84	2.8		mg/Kg	1	10/27/2019 11:47:32 A	G63989
Surr: BFB	101	0	77.4-118		%Rec	1	10/27/2019 11:47:32 A	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0057	0.0018	0.033	J	mg/Kg	1	11/1/2019 12:23:11 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.73	5.0		mg/Kg	2	11/7/2019 5:02:43 PM	48420
Arsenic	ND	2.8	5.0		mg/Kg	2	11/7/2019 5:02:43 PM	48420
Barium	230	0.046	0.20		mg/Kg	2	11/7/2019 5:02:43 PM	48420
Beryllium	1.3	0.018	0.30		mg/Kg	2	11/7/2019 5:02:43 PM	48420
Cadmium	ND	0.048	0.20		mg/Kg	2	11/7/2019 5:02:43 PM	48420
Chromium	12	0.16	0.60		mg/Kg	2	11/7/2019 5:02:43 PM	48420
Cobalt	5.3	0.21	0.60		mg/Kg	2	11/7/2019 5:02:43 PM	48420
Iron	17000	72	250		mg/Kg	100	11/12/2019 12:56:23 P	48420
Lead	1.5	0.48	0.50		mg/Kg	2	11/12/2019 3:14:30 PM	48420
Manganese	310	0.041	0.20		mg/Kg	2	11/7/2019 5:02:43 PM	48420
Nickel	11	0.30	0.99		mg/Kg	2	11/7/2019 5:02:43 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 11:54:39 A	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 5:02:43 PM	48420
Vanadium	21	0.13	5.0		mg/Kg	2	11/7/2019 5:02:43 PM	48420
Zinc	18	0.79	5.0		mg/Kg	2	11/7/2019 5:02:43 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Aniline	ND	0.13	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Anthracene	ND	0.10	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Azobenzene	ND	0.14	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Benz(a)anthracene	ND	0.094	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Benzo(a)pyrene	ND	0.087	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Benzo(b)fluoranthene	ND	0.086	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Benzo(g,h,i)perylene	ND	0.084	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Benzo(k)fluoranthene	ND	0.089	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Benzoic acid	ND	0.10	0.49		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (14-16')
Project: SWMU 13
Collection Date: 10/22/2019 11:15:00 AM
Lab ID: 1910D16-005
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Bis(2-ethylhexyl)phthalate	0.14	0.14	0.49	J	mg/Kg	1	10/30/2019 3:10:12 PM	48424
4-Bromophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Carbazole	ND	0.11	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	10/30/2019 3:10:12 PM	48424
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Chrysene	ND	0.086	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Di-n-butyl phthalate	ND	0.15	0.39		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Di-n-octyl phthalate	ND	0.10	0.39		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Dibenz(a,h)anthracene	ND	0.089	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
1,4-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
3,3´-Dichlorobenzidine	ND	0.087	0.24		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	10/30/2019 3:10:12 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Fluoranthene	ND	0.11	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Fluorene	ND	0.11	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.097	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Isophorone	ND	0.14	0.39		mg/Kg	1	10/30/2019 3:10:12 PM	48424
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424

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Qualifiers:

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (14-16')
Project: SWMU 13
Collection Date: 10/22/2019 11:15:00 AM
Lab ID: 1910D16-005
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	10/30/2019 3:10:12 PM	48424
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Naphthalene	ND	0.15	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
3-Nitroaniline	ND	0.13	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Nitrobenzene	ND	0.14	0.39		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Phenanthrene	ND	0.11	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Phenol	ND	0.12	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Pyrene	ND	0.092	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Pyridine	ND	0.12	0.39		mg/Kg	1	10/30/2019 3:10:12 PM	48424
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	10/30/2019 3:10:12 PM	48424
Surr: 2-Fluorophenol	66.5		26.7-85.9		%Rec	1	10/30/2019 3:10:12 PM	48424
Surr: Phenol-d5	71.0		18.5-101		%Rec	1	10/30/2019 3:10:12 PM	48424
Surr: 2,4,6-Tribromophenol	71.1		35.8-85.6		%Rec	1	10/30/2019 3:10:12 PM	48424
Surr: Nitrobenzene-d5	81.8		40.8-95.2		%Rec	1	10/30/2019 3:10:12 PM	48424
Surr: 2-Fluorobiphenyl	67.1		34.7-85.2		%Rec	1	10/30/2019 3:10:12 PM	48424
Surr: 4-Terphenyl-d14	78.5		37.4-91.3		%Rec	1	10/30/2019 3:10:12 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0023	0.014		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Toluene	ND	0.0026	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Ethylbenzene	ND	0.0016	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0066	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,2,4-Trimethylbenzene	ND	0.0025	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,3,5-Trimethylbenzene	ND	0.0027	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,2-Dichloroethane (EDC)	ND	0.0028	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,2-Dibromoethane (EDB)	ND	0.0025	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Naphthalene	ND	0.0055	0.055		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1-Methylnaphthalene	ND	0.016	0.11		mg/Kg	1	10/28/2019 12:20:51 P	S64028
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Acetone	ND	0.023	0.42		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Bromobenzene	ND	0.0027	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (14-16')
Project: SWMU 13
Collection Date: 10/22/2019 11:15:00 AM
Lab ID: 1910D16-005
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0025	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Bromoform	ND	0.0025	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Bromomethane	ND	0.0067	0.083		mg/Kg	1	10/28/2019 12:20:51 P	S64028
2-Butanone	0.040	0.032	0.28	J	mg/Kg	1	10/28/2019 12:20:51 P	S64028
Carbon disulfide	ND	0.0091	0.28		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Carbon tetrachloride	ND	0.0026	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Chlorobenzene	ND	0.0035	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Chloroethane	ND	0.0041	0.055		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Chloroform	ND	0.0022	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Chloromethane	ND	0.0026	0.083		mg/Kg	1	10/28/2019 12:20:51 P	S64028
2-Chlorotoluene	ND	0.0024	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
4-Chlorotoluene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
cis-1,2-DCE	ND	0.0038	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
cis-1,3-Dichloropropene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,2-Dibromo-3-chloropropane	ND	0.0028	0.055		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Dibromochloromethane	ND	0.0020	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Dibromomethane	ND	0.0030	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,2-Dichlorobenzene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,3-Dichlorobenzene	ND	0.0024	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,4-Dichlorobenzene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Dichlorodifluoromethane	ND	0.0064	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,1-Dichloroethane	ND	0.0018	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,1-Dichloroethene	ND	0.011	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,2-Dichloropropane	ND	0.0020	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,3-Dichloropropane	ND	0.0030	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
2,2-Dichloropropane	ND	0.0090	0.055		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,1-Dichloropropene	ND	0.0025	0.055		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Hexachlorobutadiene	ND	0.0028	0.055		mg/Kg	1	10/28/2019 12:20:51 P	S64028
2-Hexanone	ND	0.0046	0.28		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Isopropylbenzene	ND	0.0020	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
4-Isopropyltoluene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
4-Methyl-2-pentanone	ND	0.0052	0.28		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Methylene chloride	0.0056	0.0049	0.083	J	mg/Kg	1	10/28/2019 12:20:51 P	S64028
n-Butylbenzene	ND	0.0026	0.083		mg/Kg	1	10/28/2019 12:20:51 P	S64028
n-Propylbenzene	ND	0.0022	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
sec-Butylbenzene	ND	0.0031	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Styrene	ND	0.0022	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
tert-Butylbenzene	ND	0.0026	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,1,1,2-Tetrachloroethane	ND	0.0019	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-1 (14-16')
Project: SWMU 13
Collection Date: 10/22/2019 11:15:00 AM
Lab ID: 1910D16-005
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0028	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Tetrachloroethene (PCE)	ND	0.0022	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
trans-1,2-DCE	ND	0.0025	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
trans-1,3-Dichloropropene	ND	0.0029	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,2,3-Trichlorobenzene	ND	0.0024	0.055		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,2,4-Trichlorobenzene	ND	0.0028	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,1,1-Trichloroethane	ND	0.0025	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,1,2-Trichloroethane	ND	0.0020	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Trichloroethene (TCE)	ND	0.0032	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Trichlorofluoromethane	ND	0.0094	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
1,2,3-Trichloropropane	ND	0.0045	0.055		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Vinyl chloride	ND	0.0018	0.028		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Xylenes, Total	ND	0.0070	0.055		mg/Kg	1	10/28/2019 12:20:51 P	S64028
Surr: Dibromofluoromethane	97.3		70-130		%Rec	1	10/28/2019 12:20:51 P	S64028
Surr: 1,2-Dichloroethane-d4	89.0		70-130		%Rec	1	10/28/2019 12:20:51 P	S64028
Surr: Toluene-d8	103		70-130		%Rec	1	10/28/2019 12:20:51 P	S64028
Surr: 4-Bromofluorobenzene	96.9		70-130		%Rec	1	10/28/2019 12:20:51 P	S64028

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 1:35:00 PM
Lab ID: 1910D16-006
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	1.9	1.8	8.8	J	mg/Kg	1	10/29/2019 2:06:57 PM	48409
Motor Oil Range Organics (MRO)	ND	44	44		mg/Kg	1	10/29/2019 2:06:57 PM	48409
Surr: DNOP	80.8	0	70-130		%Rec	1	10/29/2019 2:06:57 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.1	3.5		mg/Kg	1	10/27/2019 12:10:30 P	G63989
Surr: BFB	88.5	0	77.4-118		%Rec	1	10/27/2019 12:10:30 P	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0079	0.0018	0.033	J	mg/Kg	1	11/1/2019 12:25:13 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.73	5.0		mg/Kg	2	11/7/2019 5:04:18 PM	48420
Arsenic	ND	2.8	5.0		mg/Kg	2	11/7/2019 5:04:18 PM	48420
Barium	350	0.046	0.20		mg/Kg	2	11/7/2019 5:04:18 PM	48420
Beryllium	0.94	0.018	0.30		mg/Kg	2	11/7/2019 5:04:18 PM	48420
Cadmium	ND	0.048	0.20		mg/Kg	2	11/7/2019 5:04:18 PM	48420
Chromium	8.6	0.16	0.60		mg/Kg	2	11/7/2019 5:04:18 PM	48420
Cobalt	4.2	0.21	0.60		mg/Kg	2	11/7/2019 5:04:18 PM	48420
Iron	13000	72	250		mg/Kg	100	11/12/2019 12:57:57 P	48420
Lead	3.6	0.48	0.50		mg/Kg	2	11/12/2019 3:16:04 PM	48420
Manganese	350	0.041	0.20		mg/Kg	2	11/7/2019 5:04:18 PM	48420
Nickel	8.4	0.30	1.0		mg/Kg	2	11/7/2019 5:04:18 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 11:56:09 A	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 5:04:18 PM	48420
Vanadium	17	0.13	5.0		mg/Kg	2	11/7/2019 5:04:18 PM	48420
Zinc	14	0.79	5.0		mg/Kg	2	11/7/2019 5:04:18 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.24	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Acenaphthylene	ND	0.22	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Aniline	ND	0.26	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Anthracene	ND	0.21	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Azobenzene	ND	0.28	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Benz(a)anthracene	ND	0.19	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Benzo(a)pyrene	ND	0.18	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Benzo(b)fluoranthene	ND	0.18	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Benzo(g,h,i)perylene	ND	0.17	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Benzo(k)fluoranthene	ND	0.18	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Benzoic acid	ND	0.21	0.99		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Benzyl alcohol	ND	0.25	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 1:35:00 PM
Lab ID: 1910D16-006
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.29	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Bis(2-chloroethyl)ether	ND	0.24	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.23	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Bis(2-ethylhexyl)phthalate	ND	0.29	0.99		mg/Kg	1	10/30/2019 3:39:03 PM	48424
4-Bromophenyl phenyl ether	ND	0.23	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Butyl benzyl phthalate	ND	0.20	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Carbazole	ND	0.23	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
4-Chloro-3-methylphenol	ND	0.31	0.99		mg/Kg	1	10/30/2019 3:39:03 PM	48424
4-Chloroaniline	ND	0.28	0.99		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2-Chloronaphthalene	ND	0.25	0.50		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2-Chlorophenol	ND	0.25	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
4-Chlorophenyl phenyl ether	ND	0.22	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Chrysene	ND	0.18	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Di-n-butyl phthalate	ND	0.30	0.80		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Di-n-octyl phthalate	ND	0.20	0.80		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Dibenz(a,h)anthracene	ND	0.18	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Dibenzofuran	ND	0.26	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
1,2-Dichlorobenzene	ND	0.24	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
1,3-Dichlorobenzene	ND	0.21	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
1,4-Dichlorobenzene	ND	0.21	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
3,3´-Dichlorobenzidine	ND	0.18	0.50		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Diethyl phthalate	ND	0.28	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Dimethyl phthalate	ND	0.27	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2,4-Dichlorophenol	ND	0.23	0.80		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2,4-Dimethylphenol	ND	0.22	0.60		mg/Kg	1	10/30/2019 3:39:03 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.18	0.80		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2,4-Dinitrophenol	ND	0.14	0.99		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2,4-Dinitrotoluene	ND	0.23	0.99		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2,6-Dinitrotoluene	ND	0.26	0.99		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Fluoranthene	ND	0.22	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Fluorene	ND	0.23	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Hexachlorobenzene	ND	0.25	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Hexachlorobutadiene	ND	0.28	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Hexachlorocyclopentadiene	ND	0.23	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Hexachloroethane	ND	0.22	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.20	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Isophorone	ND	0.29	0.80		mg/Kg	1	10/30/2019 3:39:03 PM	48424
1-Methylnaphthalene	ND	0.30	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2-Methylnaphthalene	ND	0.29	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 1:35:00 PM
Lab ID: 1910D16-006
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.24	0.80		mg/Kg	1	10/30/2019 3:39:03 PM	48424
3+4-Methylphenol	ND	0.24	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
N-Nitrosodi-n-propylamine	ND	0.28	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
N-Nitrosodiphenylamine	ND	0.21	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Naphthalene	ND	0.30	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2-Nitroaniline	ND	0.28	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
3-Nitroaniline	ND	0.27	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
4-Nitroaniline	ND	0.25	0.80		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Nitrobenzene	ND	0.27	0.80		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2-Nitrophenol	ND	0.27	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
4-Nitrophenol	ND	0.27	0.50		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Pentachlorophenol	ND	0.20	0.80		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Phenanthrene	ND	0.22	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Phenol	ND	0.25	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Pyrene	ND	0.19	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Pyridine	ND	0.24	0.80		mg/Kg	1	10/30/2019 3:39:03 PM	48424
1,2,4-Trichlorobenzene	ND	0.31	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2,4,5-Trichlorophenol	ND	0.26	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
2,4,6-Trichlorophenol	ND	0.21	0.40		mg/Kg	1	10/30/2019 3:39:03 PM	48424
Surr: 2-Fluorophenol	70.2		26.7-85.9		%Rec	1	10/30/2019 3:39:03 PM	48424
Surr: Phenol-d5	70.5		18.5-101		%Rec	1	10/30/2019 3:39:03 PM	48424
Surr: 2,4,6-Tribromophenol	69.0		35.8-85.6		%Rec	1	10/30/2019 3:39:03 PM	48424
Surr: Nitrobenzene-d5	81.1		40.8-95.2		%Rec	1	10/30/2019 3:39:03 PM	48424
Surr: 2-Fluorobiphenyl	73.5		34.7-85.2		%Rec	1	10/30/2019 3:39:03 PM	48424
Surr: 4-Terphenyl-d14	77.6		37.4-91.3		%Rec	1	10/30/2019 3:39:03 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0029	0.018		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Toluene	ND	0.0034	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Ethylbenzene	ND	0.0021	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Methyl tert-butyl ether (MTBE)	ND	0.0084	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,2,4-Trimethylbenzene	ND	0.0032	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,3,5-Trimethylbenzene	ND	0.0034	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,2-Dichloroethane (EDC)	ND	0.0036	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,2-Dibromoethane (EDB)	ND	0.0032	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Naphthalene	ND	0.0071	0.071		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1-Methylnaphthalene	ND	0.020	0.14		mg/Kg	1	10/26/2019 12:21:40 A	S63992
2-Methylnaphthalene	ND	0.015	0.14		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Acetone	ND	0.029	0.53		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Bromobenzene	ND	0.0034	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 1:35:00 PM
Lab ID: 1910D16-006
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0032	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Bromoform	ND	0.0032	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Bromomethane	ND	0.0085	0.11		mg/Kg	1	10/26/2019 12:21:40 A	S63992
2-Butanone	ND	0.041	0.35		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Carbon disulfide	ND	0.012	0.35		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Carbon tetrachloride	ND	0.0033	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Chlorobenzene	ND	0.0045	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Chloroethane	ND	0.0052	0.071		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Chloroform	ND	0.0028	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Chloromethane	ND	0.0034	0.11		mg/Kg	1	10/26/2019 12:21:40 A	S63992
2-Chlorotoluene	ND	0.0031	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
4-Chlorotoluene	ND	0.0029	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
cis-1,2-DCE	ND	0.0048	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
cis-1,3-Dichloropropene	ND	0.0030	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,2-Dibromo-3-chloropropane	ND	0.0036	0.071		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Dibromochloromethane	ND	0.0025	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Dibromomethane	ND	0.0038	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,2-Dichlorobenzene	ND	0.0029	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,3-Dichlorobenzene	ND	0.0031	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,4-Dichlorobenzene	ND	0.0030	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Dichlorodifluoromethane	ND	0.0082	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,1-Dichloroethane	ND	0.0023	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,1-Dichloroethene	ND	0.014	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,2-Dichloropropane	ND	0.0026	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,3-Dichloropropane	ND	0.0038	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
2,2-Dichloropropane	ND	0.011	0.071		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,1-Dichloropropene	ND	0.0032	0.071		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Hexachlorobutadiene	ND	0.0036	0.071		mg/Kg	1	10/26/2019 12:21:40 A	S63992
2-Hexanone	ND	0.0059	0.35		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Isopropylbenzene	ND	0.0025	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
4-Isopropyltoluene	ND	0.0029	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
4-Methyl-2-pentanone	ND	0.0067	0.35		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Methylene chloride	ND	0.0062	0.11		mg/Kg	1	10/26/2019 12:21:40 A	S63992
n-Butylbenzene	ND	0.0033	0.11		mg/Kg	1	10/26/2019 12:21:40 A	S63992
n-Propylbenzene	ND	0.0028	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
sec-Butylbenzene	ND	0.0040	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Styrene	ND	0.0028	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
tert-Butylbenzene	ND	0.0033	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,1,1,2-Tetrachloroethane	ND	0.0024	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 1:35:00 PM
Lab ID: 1910D16-006
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0036	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Tetrachloroethene (PCE)	ND	0.0028	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
trans-1,2-DCE	ND	0.0032	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
trans-1,3-Dichloropropene	ND	0.0037	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,2,3-Trichlorobenzene	ND	0.0031	0.071		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,2,4-Trichlorobenzene	ND	0.0036	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,1,1-Trichloroethane	ND	0.0032	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,1,2-Trichloroethane	ND	0.0025	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Trichloroethene (TCE)	ND	0.0041	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Trichlorofluoromethane	ND	0.012	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
1,2,3-Trichloropropane	ND	0.0057	0.071		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Vinyl chloride	ND	0.0023	0.035		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Xylenes, Total	ND	0.0089	0.071		mg/Kg	1	10/26/2019 12:21:40 A	S63992
Surr: Dibromofluoromethane	107		70-130		%Rec	1	10/26/2019 12:21:40 A	S63992
Surr: 1,2-Dichloroethane-d4	98.1		70-130		%Rec	1	10/26/2019 12:21:40 A	S63992
Surr: Toluene-d8	102		70-130		%Rec	1	10/26/2019 12:21:40 A	S63992
Surr: 4-Bromofluorobenzene	90.4		70-130		%Rec	1	10/26/2019 12:21:40 A	S63992

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 1:45:00 PM
Lab ID: 1910D16-007
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	3.1	1.8	9.2	J	mg/Kg	1	10/29/2019 2:16:07 PM	48409
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	10/29/2019 2:16:07 PM	48409
Surr: DNOP	112	0	70-130		%Rec	1	10/29/2019 2:16:07 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.96	3.2		mg/Kg	1	10/27/2019 12:33:32 P	G63989
Surr: BFB	90.6	0	77.4-118		%Rec	1	10/27/2019 12:33:32 P	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0080	0.0018	0.033	J	mg/Kg	1	11/1/2019 12:27:17 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.73	5.0		mg/Kg	2	11/7/2019 5:05:53 PM	48420
Arsenic	ND	2.8	5.0		mg/Kg	2	11/7/2019 5:05:53 PM	48420
Barium	550	0.11	0.50		mg/Kg	5	11/12/2019 12:20:50 P	48420
Beryllium	0.88	0.018	0.30		mg/Kg	2	11/7/2019 5:05:53 PM	48420
Cadmium	ND	0.048	0.20		mg/Kg	2	11/7/2019 5:05:53 PM	48420
Chromium	7.9	0.16	0.59		mg/Kg	2	11/7/2019 5:05:53 PM	48420
Cobalt	4.3	0.21	0.59		mg/Kg	2	11/7/2019 5:05:53 PM	48420
Iron	12000	72	250		mg/Kg	100	11/12/2019 12:59:31 P	48420
Lead	3.0	0.48	0.50		mg/Kg	2	11/12/2019 3:17:38 PM	48420
Manganese	920	2.1	9.9		mg/Kg	100	11/12/2019 12:59:31 P	48420
Nickel	8.5	0.30	0.99		mg/Kg	2	11/7/2019 5:05:53 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 11:57:37 A	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 5:05:53 PM	48420
Vanadium	20	0.13	5.0		mg/Kg	2	11/7/2019 5:05:53 PM	48420
Zinc	14	0.78	5.0		mg/Kg	2	11/7/2019 5:05:53 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Acenaphthylene	ND	0.11	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Aniline	ND	0.13	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Anthracene	ND	0.10	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Azobenzene	ND	0.14	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Benz(a)anthracene	ND	0.094	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Benzo(a)pyrene	ND	0.086	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Benzo(b)fluoranthene	ND	0.086	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Benzo(g,h,i)perylene	ND	0.083	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Benzo(k)fluoranthene	ND	0.088	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Benzoic acid	ND	0.10	0.49		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 1:45:00 PM
Lab ID: 1910D16-007
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Bis(2-ethylhexyl)phthalate	0.14	0.14	0.49	J	mg/Kg	1	10/30/2019 4:07:54 PM	48424
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Butyl benzyl phthalate	ND	0.099	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Carbazole	ND	0.11	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	10/30/2019 4:07:54 PM	48424
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
4-Chlorophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Chrysene	ND	0.086	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Di-n-butyl phthalate	ND	0.15	0.39		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Di-n-octyl phthalate	ND	0.099	0.39		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Dibenz(a,h)anthracene	ND	0.088	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Dibenzofuran	ND	0.13	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
1,2-Dichlorobenzene	ND	0.12	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
3,3´-Dichlorobenzidine	ND	0.086	0.24		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	10/30/2019 4:07:54 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2,4-Dinitrotoluene	ND	0.11	0.49		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Fluoranthene	ND	0.11	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Fluorene	ND	0.11	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Hexachlorobutadiene	ND	0.14	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.097	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Isophorone	ND	0.14	0.39		mg/Kg	1	10/30/2019 4:07:54 PM	48424
1-Methylnaphthalene	ND	0.15	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 1:45:00 PM
Lab ID: 1910D16-007
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	10/30/2019 4:07:54 PM	48424
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Naphthalene	ND	0.15	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Nitrobenzene	ND	0.13	0.39		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Phenanthrene	ND	0.11	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Phenol	ND	0.12	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Pyrene	ND	0.091	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Pyridine	ND	0.12	0.39		mg/Kg	1	10/30/2019 4:07:54 PM	48424
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2,4,5-Trichlorophenol	ND	0.13	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	10/30/2019 4:07:54 PM	48424
Surr: 2-Fluorophenol	66.3		26.7-85.9		%Rec	1	10/30/2019 4:07:54 PM	48424
Surr: Phenol-d5	70.1		18.5-101		%Rec	1	10/30/2019 4:07:54 PM	48424
Surr: 2,4,6-Tribromophenol	67.5		35.8-85.6		%Rec	1	10/30/2019 4:07:54 PM	48424
Surr: Nitrobenzene-d5	83.2		40.8-95.2		%Rec	1	10/30/2019 4:07:54 PM	48424
Surr: 2-Fluorobiphenyl	80.6		34.7-85.2		%Rec	1	10/30/2019 4:07:54 PM	48424
Surr: 4-Terphenyl-d14	80.6		37.4-91.3		%Rec	1	10/30/2019 4:07:54 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0026	0.016		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Toluene	ND	0.0030	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Ethylbenzene	ND	0.0018	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Methyl tert-butyl ether (MTBE)	ND	0.0075	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,2,4-Trimethylbenzene	ND	0.0029	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,3,5-Trimethylbenzene	ND	0.0031	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,2-Dichloroethane (EDC)	ND	0.0032	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,2-Dibromoethane (EDB)	ND	0.0029	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Naphthalene	ND	0.0064	0.064		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1-Methylnaphthalene	ND	0.018	0.13		mg/Kg	1	10/26/2019 12:50:45 A	S63992
2-Methylnaphthalene	ND	0.014	0.13		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Acetone	ND	0.026	0.48		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Bromobenzene	ND	0.0030	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 1:45:00 PM
Lab ID: 1910D16-007
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0029	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Bromoform	ND	0.0029	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Bromomethane	ND	0.0077	0.095		mg/Kg	1	10/26/2019 12:50:45 A	S63992
2-Butanone	ND	0.037	0.32		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Carbon disulfide	ND	0.010	0.32		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Carbon tetrachloride	ND	0.0030	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Chlorobenzene	ND	0.0041	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Chloroethane	ND	0.0047	0.064		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Chloroform	ND	0.0026	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Chloromethane	ND	0.0030	0.095		mg/Kg	1	10/26/2019 12:50:45 A	S63992
2-Chlorotoluene	ND	0.0028	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
4-Chlorotoluene	ND	0.0026	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
cis-1,2-DCE	ND	0.0043	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
cis-1,3-Dichloropropene	ND	0.0027	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,2-Dibromo-3-chloropropane	ND	0.0033	0.064		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Dibromochloromethane	ND	0.0023	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Dibromomethane	ND	0.0034	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,2-Dichlorobenzene	ND	0.0026	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,3-Dichlorobenzene	ND	0.0028	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,4-Dichlorobenzene	ND	0.0027	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Dichlorodifluoromethane	ND	0.0074	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,1-Dichloroethane	ND	0.0020	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,1-Dichloroethene	ND	0.013	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,2-Dichloropropane	ND	0.0023	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,3-Dichloropropane	ND	0.0034	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
2,2-Dichloropropane	ND	0.010	0.064		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,1-Dichloropropene	ND	0.0029	0.064		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Hexachlorobutadiene	ND	0.0032	0.064		mg/Kg	1	10/26/2019 12:50:45 A	S63992
2-Hexanone	ND	0.0053	0.32		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Isopropylbenzene	ND	0.0023	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
4-Isopropyltoluene	ND	0.0026	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
4-Methyl-2-pentanone	ND	0.0060	0.32		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Methylene chloride	ND	0.0056	0.095		mg/Kg	1	10/26/2019 12:50:45 A	S63992
n-Butylbenzene	ND	0.0030	0.095		mg/Kg	1	10/26/2019 12:50:45 A	S63992
n-Propylbenzene	ND	0.0025	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
sec-Butylbenzene	ND	0.0036	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Styrene	ND	0.0025	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
tert-Butylbenzene	ND	0.0030	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,1,1,2-Tetrachloroethane	ND	0.0021	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 1:45:00 PM
Lab ID: 1910D16-007
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0032	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Tetrachloroethene (PCE)	ND	0.0025	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
trans-1,2-DCE	ND	0.0029	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
trans-1,3-Dichloropropene	ND	0.0034	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,2,3-Trichlorobenzene	ND	0.0028	0.064		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,2,4-Trichlorobenzene	ND	0.0032	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,1,1-Trichloroethane	ND	0.0029	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,1,2-Trichloroethane	ND	0.0022	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Trichloroethene (TCE)	ND	0.0037	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Trichlorofluoromethane	ND	0.011	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
1,2,3-Trichloropropane	ND	0.0051	0.064		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Vinyl chloride	ND	0.0021	0.032		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Xylenes, Total	ND	0.0080	0.064		mg/Kg	1	10/26/2019 12:50:45 A	S63992
Surr: Dibromofluoromethane	105		70-130		%Rec	1	10/26/2019 12:50:45 A	S63992
Surr: 1,2-Dichloroethane-d4	96.0		70-130		%Rec	1	10/26/2019 12:50:45 A	S63992
Surr: Toluene-d8	103		70-130		%Rec	1	10/26/2019 12:50:45 A	S63992
Surr: 4-Bromofluorobenzene	94.3		70-130		%Rec	1	10/26/2019 12:50:45 A	S63992

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 1:50:00 PM
Lab ID: 1910D16-008
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	3.2	1.9	9.7	J	mg/Kg	1	10/29/2019 2:25:13 PM	48409
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/29/2019 2:25:13 PM	48409
Surr: DNOP	105	0	70-130		%Rec	1	10/29/2019 2:25:13 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.86	2.8		mg/Kg	1	10/27/2019 12:56:17 P	G63989
Surr: BFB	91.2	0	77.4-118		%Rec	1	10/27/2019 12:56:17 P	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0071	0.0017	0.032	J	mg/Kg	1	11/1/2019 12:29:21 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/7/2019 5:07:34 PM	48420
Arsenic	ND	2.9	5.0		mg/Kg	2	11/7/2019 5:07:34 PM	48420
Barium	320	0.046	0.20		mg/Kg	2	11/7/2019 5:07:34 PM	48420
Beryllium	0.79	0.018	0.30		mg/Kg	2	11/7/2019 5:07:34 PM	48420
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 5:07:34 PM	48420
Chromium	5.6	0.16	0.60		mg/Kg	2	11/7/2019 5:07:34 PM	48420
Cobalt	3.8	0.21	0.60		mg/Kg	2	11/7/2019 5:07:34 PM	48420
Iron	11000	73	250		mg/Kg	100	11/12/2019 1:04:33 PM	48420
Lead	3.6	0.49	0.50		mg/Kg	2	11/12/2019 3:19:13 PM	48420
Manganese	340	0.041	0.20		mg/Kg	2	11/7/2019 5:07:34 PM	48420
Nickel	6.5	0.30	1.0		mg/Kg	2	11/7/2019 5:07:34 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 11:59:14 A	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 5:07:34 PM	48420
Vanadium	13	0.13	5.0		mg/Kg	2	11/7/2019 5:07:34 PM	48420
Zinc	10	0.79	5.0		mg/Kg	2	11/7/2019 5:07:34 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Aniline	ND	0.13	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Anthracene	ND	0.11	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Azobenzene	ND	0.14	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Benz(a)anthracene	ND	0.096	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Benzo(a)pyrene	ND	0.089	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Benzo(b)fluoranthene	ND	0.088	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Benzo(g,h,i)perylene	ND	0.086	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Benzo(k)fluoranthene	ND	0.091	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Benzoic acid	ND	0.10	0.50		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424

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E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 1:50:00 PM
Lab ID: 1910D16-008
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Bis(2-ethylhexyl)phthalate	ND	0.14	0.50		mg/Kg	1	10/30/2019 4:36:46 PM	48424
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Carbazole	ND	0.12	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
4-Chloro-3-methylphenol	ND	0.15	0.50		mg/Kg	1	10/30/2019 4:36:46 PM	48424
4-Chloroaniline	ND	0.14	0.50		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2-Chloronaphthalene	ND	0.12	0.25		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Chrysene	ND	0.088	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Di-n-butyl phthalate	ND	0.15	0.40		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Di-n-octyl phthalate	ND	0.10	0.40		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Dibenz(a,h)anthracene	ND	0.091	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
3,3´-Dichlorobenzidine	ND	0.089	0.25		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2,4-Dichlorophenol	ND	0.12	0.40		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	10/30/2019 4:36:46 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.092	0.40		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2,4-Dinitrophenol	ND	0.072	0.50		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2,6-Dinitrotoluene	ND	0.13	0.50		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Fluoranthene	ND	0.11	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Fluorene	ND	0.11	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.099	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Isophorone	ND	0.15	0.40		mg/Kg	1	10/30/2019 4:36:46 PM	48424
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 1:50:00 PM
Lab ID: 1910D16-008
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.40		mg/Kg	1	10/30/2019 4:36:46 PM	48424
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Naphthalene	ND	0.15	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Nitrobenzene	ND	0.14	0.40		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2-Nitrophenol	ND	0.14	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
4-Nitrophenol	ND	0.14	0.25		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Pentachlorophenol	ND	0.10	0.40		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Phenanthrene	ND	0.11	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Phenol	ND	0.12	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Pyrene	ND	0.094	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Pyridine	ND	0.12	0.40		mg/Kg	1	10/30/2019 4:36:46 PM	48424
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	10/30/2019 4:36:46 PM	48424
Surr: 2-Fluorophenol	54.0		26.7-85.9		%Rec	1	10/30/2019 4:36:46 PM	48424
Surr: Phenol-d5	59.4		18.5-101		%Rec	1	10/30/2019 4:36:46 PM	48424
Surr: 2,4,6-Tribromophenol	59.3		35.8-85.6		%Rec	1	10/30/2019 4:36:46 PM	48424
Surr: Nitrobenzene-d5	60.8		40.8-95.2		%Rec	1	10/30/2019 4:36:46 PM	48424
Surr: 2-Fluorobiphenyl	59.6		34.7-85.2		%Rec	1	10/30/2019 4:36:46 PM	48424
Surr: 4-Terphenyl-d14	65.8		37.4-91.3		%Rec	1	10/30/2019 4:36:46 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0023	0.014		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Toluene	ND	0.0027	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Ethylbenzene	ND	0.0016	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0067	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,2,4-Trimethylbenzene	ND	0.0026	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,3,5-Trimethylbenzene	ND	0.0027	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,2-Dichloroethane (EDC)	ND	0.0029	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,2-Dibromoethane (EDB)	ND	0.0026	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Naphthalene	ND	0.0057	0.057		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1-Methylnaphthalene	ND	0.016	0.11		mg/Kg	1	10/28/2019 12:50:08 P	S64028
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Acetone	ND	0.023	0.43		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Bromobenzene	ND	0.0027	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 1:50:00 PM
Lab ID: 1910D16-008
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0026	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Bromoform	ND	0.0026	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Bromomethane	ND	0.0068	0.085		mg/Kg	1	10/28/2019 12:50:08 P	S64028
2-Butanone	0.045	0.033	0.28	J	mg/Kg	1	10/28/2019 12:50:08 P	S64028
Carbon disulfide	ND	0.0094	0.28		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Carbon tetrachloride	ND	0.0027	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Chlorobenzene	ND	0.0036	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Chloroethane	ND	0.0042	0.057		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Chloroform	ND	0.0023	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Chloromethane	ND	0.0027	0.085		mg/Kg	1	10/28/2019 12:50:08 P	S64028
2-Chlorotoluene	ND	0.0025	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
4-Chlorotoluene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
cis-1,2-DCE	ND	0.0039	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
cis-1,3-Dichloropropene	ND	0.0024	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,2-Dibromo-3-chloropropane	ND	0.0029	0.057		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Dibromochloromethane	ND	0.0020	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Dibromomethane	ND	0.0031	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,2-Dichlorobenzene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,3-Dichlorobenzene	ND	0.0025	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,4-Dichlorobenzene	ND	0.0024	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Dichlorodifluoromethane	ND	0.0066	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,1-Dichloroethane	ND	0.0018	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,1-Dichloroethene	ND	0.011	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,2-Dichloropropane	ND	0.0021	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,3-Dichloropropane	ND	0.0031	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
2,2-Dichloropropane	ND	0.0092	0.057		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,1-Dichloropropene	ND	0.0026	0.057		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Hexachlorobutadiene	ND	0.0029	0.057		mg/Kg	1	10/28/2019 12:50:08 P	S64028
2-Hexanone	ND	0.0047	0.28		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Isopropylbenzene	ND	0.0020	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
4-Isopropyltoluene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
4-Methyl-2-pentanone	ND	0.0054	0.28		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Methylene chloride	0.0052	0.0050	0.085	J	mg/Kg	1	10/28/2019 12:50:08 P	S64028
n-Butylbenzene	ND	0.0026	0.085		mg/Kg	1	10/28/2019 12:50:08 P	S64028
n-Propylbenzene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
sec-Butylbenzene	ND	0.0032	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Styrene	ND	0.0022	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
tert-Butylbenzene	ND	0.0027	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,1,1,2-Tetrachloroethane	ND	0.0019	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 1:50:00 PM
Lab ID: 1910D16-008
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0029	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Tetrachloroethene (PCE)	ND	0.0023	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
trans-1,2-DCE	ND	0.0026	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
trans-1,3-Dichloropropene	ND	0.0030	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,2,3-Trichlorobenzene	ND	0.0025	0.057		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,2,4-Trichlorobenzene	ND	0.0029	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,1,1-Trichloroethane	ND	0.0026	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,1,2-Trichloroethane	ND	0.0020	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Trichloroethene (TCE)	ND	0.0033	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Trichlorofluoromethane	ND	0.0096	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
1,2,3-Trichloropropane	ND	0.0046	0.057		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Vinyl chloride	ND	0.0019	0.028		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Xylenes, Total	ND	0.0071	0.057		mg/Kg	1	10/28/2019 12:50:08 P	S64028
Surr: Dibromofluoromethane	99.3		70-130		%Rec	1	10/28/2019 12:50:08 P	S64028
Surr: 1,2-Dichloroethane-d4	89.3		70-130		%Rec	1	10/28/2019 12:50:08 P	S64028
Surr: Toluene-d8	96.9		70-130		%Rec	1	10/28/2019 12:50:08 P	S64028
Surr: 4-Bromofluorobenzene	94.5		70-130		%Rec	1	10/28/2019 12:50:08 P	S64028

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (14-16')
Project: SWMU 13
Collection Date: 10/22/2019 1:55:00 PM
Lab ID: 1910D16-009
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	2.0	1.8	9.0	J	mg/Kg	1	10/29/2019 2:34:18 PM	48409
Motor Oil Range Organics (MRO)	ND	45	45		mg/Kg	1	10/29/2019 2:34:18 PM	48409
Surr: DNOP	102	0	70-130		%Rec	1	10/29/2019 2:34:18 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.74	2.5		mg/Kg	1	10/27/2019 1:19:05 PM	G63989
Surr: BFB	115	0	77.4-118		%Rec	1	10/27/2019 1:19:05 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0037	0.0017	0.031	J	mg/Kg	1	11/1/2019 12:31:25 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/7/2019 5:09:09 PM	48420
Arsenic	ND	2.9	5.0		mg/Kg	2	11/7/2019 5:09:09 PM	48420
Barium	270	0.047	0.20		mg/Kg	2	11/7/2019 5:09:09 PM	48420
Beryllium	1.0	0.018	0.30		mg/Kg	2	11/7/2019 5:09:09 PM	48420
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 5:09:09 PM	48420
Chromium	7.8	0.16	0.60		mg/Kg	2	11/7/2019 5:09:09 PM	48420
Cobalt	4.5	0.21	0.60		mg/Kg	2	11/7/2019 5:09:09 PM	48420
Iron	13000	73	250		mg/Kg	100	11/12/2019 1:12:02 PM	48420
Lead	3.5	0.49	0.50		mg/Kg	2	11/12/2019 3:20:46 PM	48420
Manganese	330	0.042	0.20		mg/Kg	2	11/7/2019 5:09:09 PM	48420
Nickel	8.6	0.30	1.0		mg/Kg	2	11/7/2019 5:09:09 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 12:06:47 P	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 5:09:09 PM	48420
Vanadium	16	0.13	5.0		mg/Kg	2	11/7/2019 5:09:09 PM	48420
Zinc	13	0.79	5.0		mg/Kg	2	11/7/2019 5:09:09 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Aniline	ND	0.13	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Anthracene	ND	0.11	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Azobenzene	ND	0.14	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Benz(a)anthracene	ND	0.095	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Benzo(a)pyrene	ND	0.088	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Benzo(b)fluoranthene	ND	0.087	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Benzo(g,h,i)perylene	ND	0.085	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Benzo(k)fluoranthene	ND	0.090	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Benzoic acid	ND	0.10	0.49		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (14-16')
Project: SWMU 13
Collection Date: 10/22/2019 1:55:00 PM
Lab ID: 1910D16-009
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	10/30/2019 5:05:48 PM	48424
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Carbazole	ND	0.12	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	10/30/2019 5:05:48 PM	48424
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2-Chloronaphthalene	ND	0.12	0.25		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Chrysene	ND	0.087	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Di-n-butyl phthalate	ND	0.15	0.39		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Di-n-octyl phthalate	ND	0.10	0.39		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Dibenz(a,h)anthracene	ND	0.090	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
3,3´-Dichlorobenzidine	ND	0.088	0.25		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	10/30/2019 5:05:48 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.091	0.39		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2,4-Dinitrophenol	ND	0.072	0.49		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Fluoranthene	ND	0.11	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Fluorene	ND	0.11	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.098	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Isophorone	ND	0.15	0.39		mg/Kg	1	10/30/2019 5:05:48 PM	48424
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (14-16')
Project: SWMU 13
Collection Date: 10/22/2019 1:55:00 PM
Lab ID: 1910D16-009
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	10/30/2019 5:05:48 PM	48424
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Naphthalene	ND	0.15	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Nitrobenzene	ND	0.14	0.39		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
4-Nitrophenol	ND	0.13	0.25		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Phenanthrene	ND	0.11	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Phenol	ND	0.12	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Pyrene	ND	0.093	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Pyridine	ND	0.12	0.39		mg/Kg	1	10/30/2019 5:05:48 PM	48424
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	10/30/2019 5:05:48 PM	48424
Surr: 2-Fluorophenol	52.8		26.7-85.9		%Rec	1	10/30/2019 5:05:48 PM	48424
Surr: Phenol-d5	54.4		18.5-101		%Rec	1	10/30/2019 5:05:48 PM	48424
Surr: 2,4,6-Tribromophenol	55.9		35.8-85.6		%Rec	1	10/30/2019 5:05:48 PM	48424
Surr: Nitrobenzene-d5	62.8		40.8-95.2		%Rec	1	10/30/2019 5:05:48 PM	48424
Surr: 2-Fluorobiphenyl	52.7		34.7-85.2		%Rec	1	10/30/2019 5:05:48 PM	48424
Surr: 4-Terphenyl-d14	62.6		37.4-91.3		%Rec	1	10/30/2019 5:05:48 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0020	0.012		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Toluene	ND	0.0023	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Ethylbenzene	ND	0.0014	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0058	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0022	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0024	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0025	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0022	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Naphthalene	ND	0.0049	0.049		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1-Methylnaphthalene	ND	0.014	0.098		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
2-Methylnaphthalene	ND	0.011	0.098		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Acetone	ND	0.020	0.37		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Bromobenzene	ND	0.0024	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (14-16')
Project: SWMU 13
Collection Date: 10/22/2019 1:55:00 PM
Lab ID: 1910D16-009
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0022	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Bromoform	ND	0.0022	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Bromomethane	ND	0.0059	0.074		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
2-Butanone	0.034	0.028	0.25	J	mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Carbon disulfide	ND	0.0081	0.25		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Carbon tetrachloride	ND	0.0023	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Chlorobenzene	ND	0.0031	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Chloroethane	ND	0.0036	0.049		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Chloroform	ND	0.0020	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Chloromethane	ND	0.0024	0.074		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
2-Chlorotoluene	ND	0.0021	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
4-Chlorotoluene	ND	0.0020	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
cis-1,2-DCE	ND	0.0034	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
cis-1,3-Dichloropropene	ND	0.0021	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0025	0.049		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Dibromochloromethane	ND	0.0017	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Dibromomethane	ND	0.0026	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,2-Dichlorobenzene	ND	0.0020	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,3-Dichlorobenzene	ND	0.0021	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,4-Dichlorobenzene	ND	0.0021	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Dichlorodifluoromethane	ND	0.0057	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,1-Dichloroethane	ND	0.0016	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,1-Dichloroethene	ND	0.0098	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,2-Dichloropropane	ND	0.0018	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,3-Dichloropropane	ND	0.0027	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
2,2-Dichloropropane	ND	0.0080	0.049		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,1-Dichloropropene	ND	0.0022	0.049		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Hexachlorobutadiene	ND	0.0025	0.049		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
2-Hexanone	ND	0.0041	0.25		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Isopropylbenzene	ND	0.0018	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
4-Isopropyltoluene	ND	0.0020	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
4-Methyl-2-pentanone	ND	0.0046	0.25		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Methylene chloride	ND	0.0043	0.074		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
n-Butylbenzene	ND	0.0023	0.074		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
n-Propylbenzene	ND	0.0020	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
sec-Butylbenzene	ND	0.0028	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Styrene	ND	0.0019	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
tert-Butylbenzene	ND	0.0023	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0017	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2 (14-16')
Project: SWMU 13
Collection Date: 10/22/2019 1:55:00 PM
Lab ID: 1910D16-009
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0025	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Tetrachloroethene (PCE)	ND	0.0020	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
trans-1,2-DCE	ND	0.0022	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
trans-1,3-Dichloropropene	ND	0.0026	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0022	0.049		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0025	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,1,1-Trichloroethane	ND	0.0022	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,1,2-Trichloroethane	ND	0.0017	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Trichloroethene (TCE)	ND	0.0028	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Trichlorofluoromethane	ND	0.0083	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
1,2,3-Trichloropropane	ND	0.0040	0.049		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Vinyl chloride	ND	0.0016	0.025		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Xylenes, Total	ND	0.0062	0.049		mg/Kg	1	10/28/2019 1:19:35 PM	S64028
Surr: Dibromofluoromethane	102		70-130		%Rec	1	10/28/2019 1:19:35 PM	S64028
Surr: 1,2-Dichloroethane-d4	90.0		70-130		%Rec	1	10/28/2019 1:19:35 PM	S64028
Surr: Toluene-d8	103		70-130		%Rec	1	10/28/2019 1:19:35 PM	S64028
Surr: 4-Bromofluorobenzene	92.4		70-130		%Rec	1	10/28/2019 1:19:35 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 3:25:00 PM
Lab ID: 1910D16-010
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	110	2.0	9.8		mg/Kg	1	10/30/2019 3:29:19 PM	48409
Motor Oil Range Organics (MRO)	160	49	49		mg/Kg	1	10/30/2019 3:29:19 PM	48409
Surr: DNOP	105	0	70-130		%Rec	1	10/30/2019 3:29:19 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.89	3.0		mg/Kg	1	10/27/2019 1:41:51 PM	G63989
Surr: BFB	91.5	0	77.4-118		%Rec	1	10/27/2019 1:41:51 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.074	0.0018	0.032		mg/Kg	1	11/1/2019 12:33:30 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/7/2019 5:10:43 PM	48420
Arsenic	ND	2.9	5.0		mg/Kg	2	11/7/2019 5:10:43 PM	48420
Barium	260	0.046	0.20		mg/Kg	2	11/7/2019 5:10:43 PM	48420
Beryllium	1.4	0.018	0.30		mg/Kg	2	11/7/2019 5:10:43 PM	48420
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 5:10:43 PM	48420
Chromium	30	0.16	0.60		mg/Kg	2	11/7/2019 5:10:43 PM	48420
Cobalt	6.1	0.21	0.60		mg/Kg	2	11/7/2019 5:10:43 PM	48420
Iron	19000	73	250		mg/Kg	100	11/12/2019 1:13:33 PM	48420
Lead	0.87	0.49	0.50		mg/Kg	2	11/12/2019 3:22:21 PM	48420
Manganese	280	0.041	0.20		mg/Kg	2	11/7/2019 5:10:43 PM	48420
Nickel	13	0.30	1.0		mg/Kg	2	11/7/2019 5:10:43 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 12:08:20 P	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 5:10:43 PM	48420
Vanadium	26	0.13	5.0		mg/Kg	2	11/7/2019 5:10:43 PM	48420
Zinc	41	0.79	5.0		mg/Kg	2	11/7/2019 5:10:43 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.59	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Acenaphthylene	ND	0.54	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Aniline	ND	0.63	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Anthracene	ND	0.53	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Azobenzene	ND	0.69	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Benz(a)anthracene	ND	0.47	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Benzo(a)pyrene	ND	0.44	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Benzo(b)fluoranthene	ND	0.43	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Benzo(g,h,i)perylene	ND	0.42	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Benzo(k)fluoranthene	ND	0.45	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Benzoic acid	ND	0.51	2.5		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Benzyl alcohol	ND	0.61	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
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P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 3:25:00 PM
Lab ID: 1910D16-010
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.73	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Bis(2-chloroethyl)ether	ND	0.60	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.56	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Bis(2-ethylhexyl)phthalate	ND	0.71	2.5		mg/Kg	1	10/30/2019 5:34:39 PM	48424
4-Bromophenyl phenyl ether	ND	0.58	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Butyl benzyl phthalate	ND	0.50	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Carbazole	ND	0.58	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
4-Chloro-3-methylphenol	ND	0.75	2.5		mg/Kg	1	10/30/2019 5:34:39 PM	48424
4-Chloroaniline	ND	0.70	2.5		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2-Chloronaphthalene	ND	0.61	1.2		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2-Chlorophenol	ND	0.61	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
4-Chlorophenyl phenyl ether	ND	0.54	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Chrysene	ND	0.43	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Di-n-butyl phthalate	ND	0.73	2.0		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Di-n-octyl phthalate	ND	0.50	2.0		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Dibenz(a,h)anthracene	ND	0.45	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Dibenzofuran	ND	0.64	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
1,2-Dichlorobenzene	ND	0.59	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
1,3-Dichlorobenzene	ND	0.52	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
1,4-Dichlorobenzene	ND	0.52	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
3,3´-Dichlorobenzidine	ND	0.44	1.2		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Diethyl phthalate	ND	0.70	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Dimethyl phthalate	ND	0.66	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2,4-Dichlorophenol	ND	0.57	2.0		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2,4-Dimethylphenol	ND	0.54	1.5		mg/Kg	1	10/30/2019 5:34:39 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.45	2.0		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2,4-Dinitrophenol	ND	0.36	2.5		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2,4-Dinitrotoluene	ND	0.58	2.5		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2,6-Dinitrotoluene	ND	0.65	2.5		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Fluoranthene	ND	0.55	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Fluorene	ND	0.56	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Hexachlorobenzene	ND	0.61	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Hexachlorobutadiene	ND	0.69	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Hexachlorocyclopentadiene	ND	0.56	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Hexachloroethane	ND	0.55	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.49	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Isophorone	ND	0.72	2.0		mg/Kg	1	10/30/2019 5:34:39 PM	48424
1-Methylnaphthalene	ND	0.74	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2-Methylnaphthalene	ND	0.72	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 3:25:00 PM
Lab ID: 1910D16-010
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.58	2.0		mg/Kg	1	10/30/2019 5:34:39 PM	48424
3+4-Methylphenol	ND	0.60	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
N-Nitrosodi-n-propylamine	ND	0.70	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
N-Nitrosodiphenylamine	ND	0.52	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Naphthalene	ND	0.74	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2-Nitroaniline	ND	0.70	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
3-Nitroaniline	ND	0.68	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
4-Nitroaniline	ND	0.63	2.0		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Nitrobenzene	ND	0.68	2.0		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2-Nitrophenol	ND	0.67	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
4-Nitrophenol	ND	0.67	1.2		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Pentachlorophenol	ND	0.51	2.0		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Phenanthrene	ND	0.53	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Phenol	ND	0.61	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Pyrene	ND	0.46	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Pyridine	ND	0.59	2.0		mg/Kg	1	10/30/2019 5:34:39 PM	48424
1,2,4-Trichlorobenzene	ND	0.76	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2,4,5-Trichlorophenol	ND	0.64	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
2,4,6-Trichlorophenol	ND	0.52	0.98		mg/Kg	1	10/30/2019 5:34:39 PM	48424
Surr: 2-Fluorophenol	61.2		26.7-85.9		%Rec	1	10/30/2019 5:34:39 PM	48424
Surr: Phenol-d5	62.3		18.5-101		%Rec	1	10/30/2019 5:34:39 PM	48424
Surr: 2,4,6-Tribromophenol	68.7		35.8-85.6		%Rec	1	10/30/2019 5:34:39 PM	48424
Surr: Nitrobenzene-d5	60.7		40.8-95.2		%Rec	1	10/30/2019 5:34:39 PM	48424
Surr: 2-Fluorobiphenyl	60.6		34.7-85.2		%Rec	1	10/30/2019 5:34:39 PM	48424
Surr: 4-Terphenyl-d14	69.6		37.4-91.3		%Rec	1	10/30/2019 5:34:39 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0024	0.015		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Toluene	ND	0.0028	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Ethylbenzene	ND	0.0017	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Methyl tert-butyl ether (MTBE)	ND	0.0070	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,2,4-Trimethylbenzene	ND	0.0027	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,3,5-Trimethylbenzene	ND	0.0029	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,2-Dichloroethane (EDC)	ND	0.0030	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,2-Dibromoethane (EDB)	ND	0.0027	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Naphthalene	ND	0.0059	0.059		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1-Methylnaphthalene	ND	0.017	0.12		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
2-Methylnaphthalene	ND	0.013	0.12		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Acetone	ND	0.025	0.44		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Bromobenzene	ND	0.0028	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 3:25:00 PM
Lab ID: 1910D16-010
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0027	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Bromoform	ND	0.0027	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Bromomethane	ND	0.0071	0.089		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
2-Butanone	0.059	0.034	0.30	J	mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Carbon disulfide	ND	0.0098	0.30		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Carbon tetrachloride	ND	0.0028	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Chlorobenzene	ND	0.0038	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Chloroethane	ND	0.0044	0.059		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Chloroform	ND	0.0024	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Chloromethane	ND	0.0028	0.089		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
2-Chlorotoluene	ND	0.0026	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
4-Chlorotoluene	ND	0.0024	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
cis-1,2-DCE	ND	0.0040	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
cis-1,3-Dichloropropene	ND	0.0025	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,2-Dibromo-3-chloropropane	ND	0.0030	0.059		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Dibromochloromethane	ND	0.0021	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Dibromomethane	ND	0.0032	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,2-Dichlorobenzene	ND	0.0024	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,3-Dichlorobenzene	ND	0.0026	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,4-Dichlorobenzene	ND	0.0025	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Dichlorodifluoromethane	ND	0.0069	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,1-Dichloroethane	ND	0.0019	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,1-Dichloroethene	ND	0.012	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,2-Dichloropropane	ND	0.0022	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,3-Dichloropropane	ND	0.0032	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
2,2-Dichloropropane	ND	0.0096	0.059		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,1-Dichloropropene	ND	0.0027	0.059		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Hexachlorobutadiene	ND	0.0030	0.059		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
2-Hexanone	ND	0.0049	0.30		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Isopropylbenzene	ND	0.0021	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
4-Isopropyltoluene	ND	0.0024	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
4-Methyl-2-pentanone	ND	0.0056	0.30		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Methylene chloride	ND	0.0052	0.089		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
n-Butylbenzene	ND	0.0028	0.089		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
n-Propylbenzene	ND	0.0024	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
sec-Butylbenzene	ND	0.0033	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Styrene	ND	0.0023	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
tert-Butylbenzene	ND	0.0028	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,1,1,2-Tetrachloroethane	ND	0.0020	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (0-0.5')
Project: SWMU 13
Collection Date: 10/22/2019 3:25:00 PM
Lab ID: 1910D16-010
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0030	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Tetrachloroethene (PCE)	ND	0.0024	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
trans-1,2-DCE	ND	0.0027	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
trans-1,3-Dichloropropene	ND	0.0031	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,2,3-Trichlorobenzene	ND	0.0026	0.059		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,2,4-Trichlorobenzene	ND	0.0030	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,1,1-Trichloroethane	ND	0.0027	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,1,2-Trichloroethane	ND	0.0021	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Trichloroethene (TCE)	ND	0.0034	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Trichlorofluoromethane	ND	0.010	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
1,2,3-Trichloropropane	ND	0.0048	0.059		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Vinyl chloride	ND	0.0019	0.030		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Xylenes, Total	ND	0.0075	0.059		mg/Kg	1	10/26/2019 2:18:00 AM	S63992
Surr: Dibromofluoromethane	106		70-130		%Rec	1	10/26/2019 2:18:00 AM	S63992
Surr: 1,2-Dichloroethane-d4	97.2		70-130		%Rec	1	10/26/2019 2:18:00 AM	S63992
Surr: Toluene-d8	101		70-130		%Rec	1	10/26/2019 2:18:00 AM	S63992
Surr: 4-Bromofluorobenzene	89.7		70-130		%Rec	1	10/26/2019 2:18:00 AM	S63992

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 3:35:00 PM
Lab ID: 1910D16-011
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	21	1.8	9.1		mg/Kg	1	10/30/2019 3:47:22 PM	48409
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	10/30/2019 3:47:22 PM	48409
Surr: DNOP	108	0	70-130		%Rec	1	10/30/2019 3:47:22 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.98	3.2		mg/Kg	1	10/27/2019 2:04:40 PM	G63989
Surr: BFB	94.5	0	77.4-118		%Rec	1	10/27/2019 2:04:40 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.034	0.0017	0.032		mg/Kg	1	11/1/2019 12:39:37 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/7/2019 5:19:47 PM	48420
Arsenic	ND	2.9	5.0		mg/Kg	2	11/7/2019 5:19:47 PM	48420
Barium	230	0.047	0.20		mg/Kg	2	11/7/2019 5:19:47 PM	48420
Beryllium	1.5	0.019	0.30		mg/Kg	2	11/7/2019 5:19:47 PM	48420
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 5:19:47 PM	48420
Chromium	26	0.16	0.60		mg/Kg	2	11/7/2019 5:19:47 PM	48420
Cobalt	6.6	0.21	0.60		mg/Kg	2	11/7/2019 5:19:47 PM	48420
Iron	22000	73	250		mg/Kg	100	11/12/2019 1:15:03 PM	48420
Lead	1.4	0.49	0.50		mg/Kg	2	11/12/2019 3:23:54 PM	48420
Manganese	360	0.042	0.20		mg/Kg	2	11/7/2019 5:19:47 PM	48420
Nickel	15	0.30	1.0		mg/Kg	2	11/7/2019 5:19:47 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 12:09:54 P	48420
Silver	ND	0.065	0.50		mg/Kg	2	11/7/2019 5:19:47 PM	48420
Vanadium	27	0.13	5.0		mg/Kg	2	11/7/2019 5:19:47 PM	48420
Zinc	29	0.80	5.0		mg/Kg	2	11/7/2019 5:19:47 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.23	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Acenaphthylene	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Aniline	ND	0.25	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Anthracene	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Azobenzene	ND	0.27	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Benz(a)anthracene	ND	0.19	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Benzo(a)pyrene	ND	0.17	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Benzo(b)fluoranthene	ND	0.17	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Benzo(g,h,i)perylene	ND	0.17	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Benzo(k)fluoranthene	ND	0.18	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Benzoic acid	ND	0.20	0.98		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Benzyl alcohol	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424

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Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
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P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 3:35:00 PM
Lab ID: 1910D16-011
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.29	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Bis(2-chloroethyl)ether	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.22	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Bis(2-ethylhexyl)phthalate	ND	0.28	0.98		mg/Kg	1	10/30/2019 6:03:26 PM	48424
4-Bromophenyl phenyl ether	ND	0.23	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Butyl benzyl phthalate	ND	0.20	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Carbazole	ND	0.23	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
4-Chloro-3-methylphenol	ND	0.30	0.98		mg/Kg	1	10/30/2019 6:03:26 PM	48424
4-Chloroaniline	ND	0.28	0.98		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2-Chloronaphthalene	ND	0.24	0.49		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2-Chlorophenol	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
4-Chlorophenyl phenyl ether	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Chrysene	ND	0.17	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Di-n-butyl phthalate	ND	0.29	0.78		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Di-n-octyl phthalate	ND	0.20	0.78		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Dibenz(a,h)anthracene	ND	0.18	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Dibenzofuran	ND	0.26	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
1,2-Dichlorobenzene	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
1,3-Dichlorobenzene	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
1,4-Dichlorobenzene	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
3,3´-Dichlorobenzidine	ND	0.17	0.49		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Diethyl phthalate	ND	0.28	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Dimethyl phthalate	ND	0.26	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2,4-Dichlorophenol	ND	0.23	0.78		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2,4-Dimethylphenol	ND	0.22	0.59		mg/Kg	1	10/30/2019 6:03:26 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.18	0.78		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2,4-Dinitrophenol	ND	0.14	0.98		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2,4-Dinitrotoluene	ND	0.23	0.98		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2,6-Dinitrotoluene	ND	0.26	0.98		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Fluoranthene	ND	0.22	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Fluorene	ND	0.22	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Hexachlorobenzene	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Hexachlorobutadiene	ND	0.27	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Hexachlorocyclopentadiene	ND	0.22	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Hexachloroethane	ND	0.22	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.19	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Isophorone	ND	0.29	0.78		mg/Kg	1	10/30/2019 6:03:26 PM	48424
1-Methylnaphthalene	ND	0.29	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2-Methylnaphthalene	ND	0.29	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 3:35:00 PM
Lab ID: 1910D16-011
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.23	0.78		mg/Kg	1	10/30/2019 6:03:26 PM	48424
3+4-Methylphenol	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
N-Nitrosodi-n-propylamine	ND	0.28	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
N-Nitrosodiphenylamine	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Naphthalene	ND	0.30	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2-Nitroaniline	ND	0.28	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
3-Nitroaniline	ND	0.27	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
4-Nitroaniline	ND	0.25	0.78		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Nitrobenzene	ND	0.27	0.78		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2-Nitrophenol	ND	0.27	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
4-Nitrophenol	ND	0.27	0.49		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Pentachlorophenol	ND	0.20	0.78		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Phenanthrene	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Phenol	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Pyrene	ND	0.18	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Pyridine	ND	0.24	0.78		mg/Kg	1	10/30/2019 6:03:26 PM	48424
1,2,4-Trichlorobenzene	ND	0.30	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2,4,5-Trichlorophenol	ND	0.25	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
2,4,6-Trichlorophenol	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:03:26 PM	48424
Surr: 2-Fluorophenol	64.9		26.7-85.9		%Rec	1	10/30/2019 6:03:26 PM	48424
Surr: Phenol-d5	72.9		18.5-101		%Rec	1	10/30/2019 6:03:26 PM	48424
Surr: 2,4,6-Tribromophenol	77.8		35.8-85.6		%Rec	1	10/30/2019 6:03:26 PM	48424
Surr: Nitrobenzene-d5	71.6		40.8-95.2		%Rec	1	10/30/2019 6:03:26 PM	48424
Surr: 2-Fluorobiphenyl	76.6		34.7-85.2		%Rec	1	10/30/2019 6:03:26 PM	48424
Surr: 4-Terphenyl-d14	83.6		37.4-91.3		%Rec	1	10/30/2019 6:03:26 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0026	0.016		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Toluene	ND	0.0031	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Ethylbenzene	ND	0.0019	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Methyl tert-butyl ether (MTBE)	ND	0.0077	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,2,4-Trimethylbenzene	ND	0.0030	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,3,5-Trimethylbenzene	ND	0.0031	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,2-Dichloroethane (EDC)	ND	0.0033	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,2-Dibromoethane (EDB)	ND	0.0029	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Naphthalene	ND	0.0065	0.065		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1-Methylnaphthalene	ND	0.019	0.13		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
2-Methylnaphthalene	ND	0.014	0.13		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Acetone	ND	0.027	0.48		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Bromobenzene	ND	0.0031	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 3:35:00 PM
Lab ID: 1910D16-011
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0029	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Bromoform	ND	0.0029	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Bromomethane	ND	0.0078	0.097		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
2-Butanone	ND	0.037	0.32		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Carbon disulfide	ND	0.011	0.32		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Carbon tetrachloride	ND	0.0031	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Chlorobenzene	ND	0.0041	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Chloroethane	ND	0.0048	0.065		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Chloroform	ND	0.0026	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Chloromethane	ND	0.0031	0.097		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
2-Chlorotoluene	ND	0.0028	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
4-Chlorotoluene	ND	0.0026	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
cis-1,2-DCE	ND	0.0044	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
cis-1,3-Dichloropropene	ND	0.0027	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,2-Dibromo-3-chloropropane	ND	0.0033	0.065		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Dibromochloromethane	ND	0.0023	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Dibromomethane	ND	0.0035	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,2-Dichlorobenzene	ND	0.0026	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,3-Dichlorobenzene	ND	0.0028	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,4-Dichlorobenzene	ND	0.0027	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Dichlorodifluoromethane	ND	0.0075	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,1-Dichloroethane	ND	0.0021	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,1-Dichloroethene	ND	0.013	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,2-Dichloropropane	ND	0.0024	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,3-Dichloropropane	ND	0.0035	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
2,2-Dichloropropane	ND	0.011	0.065		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,1-Dichloropropene	ND	0.0029	0.065		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Hexachlorobutadiene	ND	0.0033	0.065		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
2-Hexanone	ND	0.0054	0.32		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Isopropylbenzene	ND	0.0023	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
4-Isopropyltoluene	ND	0.0027	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
4-Methyl-2-pentanone	ND	0.0061	0.32		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Methylene chloride	0.0067	0.0057	0.097	J	mg/Kg	1	10/26/2019 2:46:58 AM	S63992
n-Butylbenzene	ND	0.0030	0.097		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
n-Propylbenzene	ND	0.0026	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
sec-Butylbenzene	ND	0.0036	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Styrene	ND	0.0025	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
tert-Butylbenzene	ND	0.0030	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,1,1,2-Tetrachloroethane	ND	0.0022	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (1.5-2')
Project: SWMU 13
Collection Date: 10/22/2019 3:35:00 PM
Lab ID: 1910D16-011
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0033	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Tetrachloroethene (PCE)	ND	0.0026	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
trans-1,2-DCE	ND	0.0030	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
trans-1,3-Dichloropropene	ND	0.0034	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,2,3-Trichlorobenzene	ND	0.0028	0.065		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,2,4-Trichlorobenzene	ND	0.0033	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,1,1-Trichloroethane	ND	0.0029	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,1,2-Trichloroethane	ND	0.0023	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Trichloroethene (TCE)	ND	0.0037	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Trichlorofluoromethane	ND	0.011	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
1,2,3-Trichloropropane	ND	0.0052	0.065		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Vinyl chloride	ND	0.0021	0.032		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Xylenes, Total	ND	0.0081	0.065		mg/Kg	1	10/26/2019 2:46:58 AM	S63992
Surr: Dibromofluoromethane	104		70-130		%Rec	1	10/26/2019 2:46:58 AM	S63992
Surr: 1,2-Dichloroethane-d4	92.0		70-130		%Rec	1	10/26/2019 2:46:58 AM	S63992
Surr: Toluene-d8	104		70-130		%Rec	1	10/26/2019 2:46:58 AM	S63992
Surr: 4-Bromofluorobenzene	89.5		70-130		%Rec	1	10/26/2019 2:46:58 AM	S63992

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SMWU 13-3 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 4:50:00 PM
Lab ID: 1910D16-012
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	2.4	1.6	8.0	J	mg/Kg	1	10/29/2019 3:01:42 PM	48409
Motor Oil Range Organics (MRO)	ND	40	40		mg/Kg	1	10/29/2019 3:01:42 PM	48409
Surr: DNOP	106	0	70-130		%Rec	1	10/29/2019 3:01:42 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.82	2.7		mg/Kg	1	10/27/2019 2:27:32 PM	G63989
Surr: BFB	95.2	0	77.4-118		%Rec	1	10/27/2019 2:27:32 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.026	0.0018	0.033	J	mg/Kg	1	11/1/2019 12:41:35 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/7/2019 5:21:30 PM	48420
Arsenic	ND	2.9	5.0		mg/Kg	2	11/7/2019 5:21:30 PM	48420
Barium	290	0.047	0.20		mg/Kg	2	11/7/2019 5:21:30 PM	48420
Beryllium	1.2	0.018	0.30		mg/Kg	2	11/7/2019 5:21:30 PM	48420
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 5:21:30 PM	48420
Chromium	13	0.16	0.60		mg/Kg	2	11/7/2019 5:21:30 PM	48420
Cobalt	5.0	0.21	0.60		mg/Kg	2	11/7/2019 5:21:30 PM	48420
Iron	16000	73	250		mg/Kg	100	11/12/2019 1:16:31 PM	48420
Lead	2.9	0.49	0.50		mg/Kg	2	11/12/2019 3:25:30 PM	48420
Manganese	340	0.042	0.20		mg/Kg	2	11/7/2019 5:21:30 PM	48420
Nickel	10	0.30	1.0		mg/Kg	2	11/7/2019 5:21:30 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 12:11:30 P	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 5:21:30 PM	48420
Vanadium	19	0.13	5.0		mg/Kg	2	11/7/2019 5:21:30 PM	48420
Zinc	18	0.80	5.0		mg/Kg	2	11/7/2019 5:21:30 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.23	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Acenaphthylene	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Aniline	ND	0.25	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Anthracene	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Azobenzene	ND	0.27	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Benz(a)anthracene	ND	0.19	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Benzo(a)pyrene	ND	0.17	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Benzo(b)fluoranthene	ND	0.17	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Benzo(g,h,i)perylene	ND	0.17	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Benzo(k)fluoranthene	ND	0.18	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Benzoic acid	ND	0.20	0.97		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Benzyl alcohol	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SMWU 13-3 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 4:50:00 PM
Lab ID: 1910D16-012
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.29	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Bis(2-chloroethyl)ether	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.22	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Bis(2-ethylhexyl)phthalate	ND	0.28	0.97		mg/Kg	1	10/30/2019 6:32:09 PM	48424
4-Bromophenyl phenyl ether	ND	0.23	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Butyl benzyl phthalate	ND	0.20	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Carbazole	ND	0.23	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
4-Chloro-3-methylphenol	ND	0.30	0.97		mg/Kg	1	10/30/2019 6:32:09 PM	48424
4-Chloroaniline	ND	0.28	0.97		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2-Chloronaphthalene	ND	0.24	0.49		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2-Chlorophenol	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
4-Chlorophenyl phenyl ether	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Chrysene	ND	0.17	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Di-n-butyl phthalate	ND	0.29	0.78		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Di-n-octyl phthalate	ND	0.20	0.78		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Dibenz(a,h)anthracene	ND	0.18	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Dibenzofuran	ND	0.25	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
1,2-Dichlorobenzene	ND	0.23	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
1,3-Dichlorobenzene	ND	0.20	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
1,4-Dichlorobenzene	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
3,3´-Dichlorobenzidine	ND	0.17	0.49		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Diethyl phthalate	ND	0.28	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Dimethyl phthalate	ND	0.26	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2,4-Dichlorophenol	ND	0.23	0.78		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2,4-Dimethylphenol	ND	0.21	0.58		mg/Kg	1	10/30/2019 6:32:09 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.18	0.78		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2,4-Dinitrophenol	ND	0.14	0.97		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2,4-Dinitrotoluene	ND	0.23	0.97		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2,6-Dinitrotoluene	ND	0.26	0.97		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Fluoranthene	ND	0.22	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Fluorene	ND	0.22	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Hexachlorobenzene	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Hexachlorobutadiene	ND	0.27	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Hexachlorocyclopentadiene	ND	0.22	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Hexachloroethane	ND	0.22	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.19	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Isophorone	ND	0.29	0.78		mg/Kg	1	10/30/2019 6:32:09 PM	48424
1-Methylnaphthalene	ND	0.29	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2-Methylnaphthalene	ND	0.28	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SMWU 13-3 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 4:50:00 PM
Lab ID: 1910D16-012
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.23	0.78		mg/Kg	1	10/30/2019 6:32:09 PM	48424
3+4-Methylphenol	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
N-Nitrosodi-n-propylamine	ND	0.28	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
N-Nitrosodiphenylamine	ND	0.20	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Naphthalene	ND	0.29	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2-Nitroaniline	ND	0.28	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
3-Nitroaniline	ND	0.27	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
4-Nitroaniline	ND	0.25	0.78		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Nitrobenzene	ND	0.27	0.78		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2-Nitrophenol	ND	0.27	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
4-Nitrophenol	ND	0.26	0.49		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Pentachlorophenol	ND	0.20	0.78		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Phenanthrene	ND	0.21	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Phenol	ND	0.24	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Pyrene	ND	0.18	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Pyridine	ND	0.23	0.78		mg/Kg	1	10/30/2019 6:32:09 PM	48424
1,2,4-Trichlorobenzene	ND	0.30	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2,4,5-Trichlorophenol	ND	0.25	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
2,4,6-Trichlorophenol	ND	0.20	0.39		mg/Kg	1	10/30/2019 6:32:09 PM	48424
Surr: 2-Fluorophenol	66.7		26.7-85.9		%Rec	1	10/30/2019 6:32:09 PM	48424
Surr: Phenol-d5	69.6		18.5-101		%Rec	1	10/30/2019 6:32:09 PM	48424
Surr: 2,4,6-Tribromophenol	62.1		35.8-85.6		%Rec	1	10/30/2019 6:32:09 PM	48424
Surr: Nitrobenzene-d5	73.3		40.8-95.2		%Rec	1	10/30/2019 6:32:09 PM	48424
Surr: 2-Fluorobiphenyl	61.4		34.7-85.2		%Rec	1	10/30/2019 6:32:09 PM	48424
Surr: 4-Terphenyl-d14	70.7		37.4-91.3		%Rec	1	10/30/2019 6:32:09 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0022	0.014		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Toluene	ND	0.0026	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Ethylbenzene	ND	0.0016	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Methyl tert-butyl ether (MTBE)	ND	0.0064	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,2,4-Trimethylbenzene	ND	0.0025	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,3,5-Trimethylbenzene	ND	0.0026	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,2-Dichloroethane (EDC)	ND	0.0028	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,2-Dibromoethane (EDB)	ND	0.0025	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Naphthalene	ND	0.0054	0.054		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1-Methylnaphthalene	ND	0.016	0.11		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Acetone	ND	0.023	0.41		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Bromobenzene	ND	0.0026	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SMWU 13-3 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 4:50:00 PM
Lab ID: 1910D16-012
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0025	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Bromoform	ND	0.0025	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Bromomethane	ND	0.0066	0.082		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
2-Butanone	0.033	0.031	0.27	J	mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Carbon disulfide	ND	0.0090	0.27		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Carbon tetrachloride	ND	0.0026	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Chlorobenzene	ND	0.0035	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Chloroethane	ND	0.0040	0.054		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Chloroform	ND	0.0022	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Chloromethane	ND	0.0026	0.082		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
2-Chlorotoluene	ND	0.0024	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
4-Chlorotoluene	ND	0.0022	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
cis-1,2-DCE	ND	0.0037	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
cis-1,3-Dichloropropene	ND	0.0023	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,2-Dibromo-3-chloropropane	ND	0.0028	0.054		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Dibromochloromethane	ND	0.0019	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Dibromomethane	ND	0.0029	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,2-Dichlorobenzene	ND	0.0022	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,3-Dichlorobenzene	ND	0.0024	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,4-Dichlorobenzene	ND	0.0023	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Dichlorodifluoromethane	ND	0.0063	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,1-Dichloroethane	ND	0.0017	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,1-Dichloroethene	ND	0.011	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,2-Dichloropropane	ND	0.0020	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,3-Dichloropropane	ND	0.0029	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
2,2-Dichloropropane	ND	0.0088	0.054		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,1-Dichloropropene	ND	0.0025	0.054		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Hexachlorobutadiene	ND	0.0028	0.054		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
2-Hexanone	ND	0.0045	0.27		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Isopropylbenzene	ND	0.0020	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
4-Isopropyltoluene	ND	0.0023	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
4-Methyl-2-pentanone	ND	0.0051	0.27		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Methylene chloride	ND	0.0048	0.082		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
n-Butylbenzene	ND	0.0025	0.082		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
n-Propylbenzene	ND	0.0022	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
sec-Butylbenzene	ND	0.0031	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Styrene	ND	0.0021	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
tert-Butylbenzene	ND	0.0026	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,1,1,2-Tetrachloroethane	ND	0.0018	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SMWU 13-3 (8-10')
Project: SWMU 13
Collection Date: 10/22/2019 4:50:00 PM
Lab ID: 1910D16-012
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0028	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Tetrachloroethene (PCE)	ND	0.0022	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
trans-1,2-DCE	ND	0.0025	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
trans-1,3-Dichloropropene	ND	0.0029	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,2,3-Trichlorobenzene	ND	0.0024	0.054		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,2,4-Trichlorobenzene	ND	0.0027	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,1,1-Trichloroethane	ND	0.0025	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,1,2-Trichloroethane	ND	0.0019	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Trichloroethene (TCE)	ND	0.0031	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Trichlorofluoromethane	ND	0.0092	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
1,2,3-Trichloropropane	ND	0.0044	0.054		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Vinyl chloride	ND	0.0018	0.027		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Xylenes, Total	ND	0.0069	0.054		mg/Kg	1	10/26/2019 3:15:56 AM	S63992
Surr: Dibromofluoromethane	108		70-130		%Rec	1	10/26/2019 3:15:56 AM	S63992
Surr: 1,2-Dichloroethane-d4	97.9		70-130		%Rec	1	10/26/2019 3:15:56 AM	S63992
Surr: Toluene-d8	99.8		70-130		%Rec	1	10/26/2019 3:15:56 AM	S63992
Surr: 4-Bromofluorobenzene	91.3		70-130		%Rec	1	10/26/2019 3:15:56 AM	S63992

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (14-15.25')
Project: SWMU 13
Collection Date: 10/22/2019 4:55:00 PM
Lab ID: 1910D16-013
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	2.1	1.8	8.8	J	mg/Kg	1	10/29/2019 3:10:52 PM	48409
Motor Oil Range Organics (MRO)	ND	44	44		mg/Kg	1	10/29/2019 3:10:52 PM	48409
Surr: DNOP	108	0	70-130		%Rec	1	10/29/2019 3:10:52 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.69	2.3		mg/Kg	1	10/27/2019 2:50:33 PM	G63989
Surr: BFB	114	0	77.4-118		%Rec	1	10/27/2019 2:50:33 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0059	0.0017	0.031	J	mg/Kg	1	11/1/2019 12:43:33 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/7/2019 5:23:04 PM	48420
Arsenic	ND	2.9	5.0		mg/Kg	2	11/7/2019 5:23:04 PM	48420
Barium	180	0.046	0.20		mg/Kg	2	11/7/2019 5:23:04 PM	48420
Beryllium	1.2	0.018	0.30		mg/Kg	2	11/7/2019 5:23:04 PM	48420
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 5:23:04 PM	48420
Chromium	12	0.16	0.60		mg/Kg	2	11/7/2019 5:23:04 PM	48420
Cobalt	4.8	0.21	0.60		mg/Kg	2	11/7/2019 5:23:04 PM	48420
Iron	16000	73	250		mg/Kg	100	11/12/2019 1:18:05 PM	48420
Lead	1.0	0.49	0.50		mg/Kg	2	11/12/2019 3:27:04 PM	48420
Manganese	310	0.042	0.20		mg/Kg	2	11/7/2019 5:23:04 PM	48420
Nickel	10	0.30	1.0		mg/Kg	2	11/7/2019 5:23:04 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 12:13:03 P	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 5:23:04 PM	48420
Vanadium	20	0.13	5.0		mg/Kg	2	11/7/2019 5:23:04 PM	48420
Zinc	16	0.79	5.0		mg/Kg	2	11/7/2019 5:23:04 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Aniline	ND	0.13	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Anthracene	ND	0.11	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Azobenzene	ND	0.14	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Benz(a)anthracene	ND	0.098	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Benzo(a)pyrene	ND	0.090	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Benzo(b)fluoranthene	ND	0.090	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Benzo(g,h,i)perylene	ND	0.087	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Benzo(k)fluoranthene	ND	0.092	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Benzoic acid	ND	0.10	0.51		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Benzyl alcohol	ND	0.13	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424

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ND	Not Detected at the Reporting Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (14-15.25')
Project: SWMU 13
Collection Date: 10/22/2019 4:55:00 PM
Lab ID: 1910D16-013
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Bis(2-chloroisopropyl)ether	ND	0.12	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Bis(2-ethylhexyl)phthalate	0.31	0.15	0.51	J	mg/Kg	1	10/30/2019 7:00:49 PM	48424
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Carbazole	ND	0.12	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
4-Chloro-3-methylphenol	ND	0.16	0.51		mg/Kg	1	10/30/2019 7:00:49 PM	48424
4-Chloroaniline	ND	0.14	0.51		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2-Chloronaphthalene	ND	0.13	0.25		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2-Chlorophenol	ND	0.13	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Chrysene	ND	0.089	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Di-n-butyl phthalate	ND	0.15	0.41		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Di-n-octyl phthalate	ND	0.10	0.41		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Dibenz(a,h)anthracene	ND	0.092	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
1,3-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
3,3´-Dichlorobenzidine	ND	0.090	0.25		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Dimethyl phthalate	ND	0.14	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2,4-Dichlorophenol	ND	0.12	0.41		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	10/30/2019 7:00:49 PM	48424
4,6-Dinitro-2-methylphenol	ND	0.094	0.41		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2,4-Dinitrophenol	ND	0.074	0.51		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2,4-Dinitrotoluene	ND	0.12	0.51		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2,6-Dinitrotoluene	ND	0.13	0.51		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Fluoranthene	ND	0.11	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Fluorene	ND	0.12	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Hexachlorobenzene	ND	0.13	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Hexachlorocyclopentadiene	ND	0.12	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Indeno(1,2,3-cd)pyrene	ND	0.10	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Isophorone	ND	0.15	0.41		mg/Kg	1	10/30/2019 7:00:49 PM	48424
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
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Lab ID: 1910D16-013
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.41		mg/Kg	1	10/30/2019 7:00:49 PM	48424
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
N-Nitrosodiphenylamine	ND	0.11	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Naphthalene	ND	0.15	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
4-Nitroaniline	ND	0.13	0.41		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Nitrobenzene	ND	0.14	0.41		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2-Nitrophenol	ND	0.14	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
4-Nitrophenol	ND	0.14	0.25		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Pentachlorophenol	ND	0.10	0.41		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Phenanthrene	ND	0.11	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Phenol	ND	0.13	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Pyrene	ND	0.095	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Pyridine	ND	0.12	0.41		mg/Kg	1	10/30/2019 7:00:49 PM	48424
1,2,4-Trichlorobenzene	ND	0.16	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
2,4,6-Trichlorophenol	ND	0.11	0.20		mg/Kg	1	10/30/2019 7:00:49 PM	48424
Surr: 2-Fluorophenol	58.9		26.7-85.9		%Rec	1	10/30/2019 7:00:49 PM	48424
Surr: Phenol-d5	62.4		18.5-101		%Rec	1	10/30/2019 7:00:49 PM	48424
Surr: 2,4,6-Tribromophenol	57.0		35.8-85.6		%Rec	1	10/30/2019 7:00:49 PM	48424
Surr: Nitrobenzene-d5	61.5		40.8-95.2		%Rec	1	10/30/2019 7:00:49 PM	48424
Surr: 2-Fluorobiphenyl	52.2		34.7-85.2		%Rec	1	10/30/2019 7:00:49 PM	48424
Surr: 4-Terphenyl-d14	56.1		37.4-91.3		%Rec	1	10/30/2019 7:00:49 PM	48424
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0019	0.011		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Toluene	ND	0.0022	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Ethylbenzene	ND	0.0013	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0054	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0021	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0022	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0023	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0021	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Naphthalene	ND	0.0046	0.046		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1-Methylnaphthalene	ND	0.013	0.091		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
2-Methylnaphthalene	ND	0.0099	0.091		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Acetone	ND	0.019	0.34		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Bromobenzene	ND	0.0022	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028

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CLIENT: Marathon
Client Sample ID: SWMU 13-3 (14-15.25')
Project: SWMU 13
Collection Date: 10/22/2019 4:55:00 PM
Lab ID: 1910D16-013
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0021	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Bromoform	ND	0.0021	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Bromomethane	ND	0.0055	0.068		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
2-Butanone	ND	0.026	0.23		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Carbon disulfide	ND	0.0075	0.23		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Carbon tetrachloride	ND	0.0022	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Chlorobenzene	ND	0.0029	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Chloroethane	ND	0.0034	0.046		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Chloroform	ND	0.0018	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Chloromethane	ND	0.0022	0.068		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
2-Chlorotoluene	ND	0.0020	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
4-Chlorotoluene	ND	0.0019	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
cis-1,2-DCE	ND	0.0031	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
cis-1,3-Dichloropropene	ND	0.0019	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0023	0.046		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Dibromochloromethane	ND	0.0016	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Dibromomethane	ND	0.0024	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,2-Dichlorobenzene	ND	0.0019	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,3-Dichlorobenzene	ND	0.0020	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,4-Dichlorobenzene	ND	0.0019	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Dichlorodifluoromethane	ND	0.0053	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,1-Dichloroethane	ND	0.0015	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,1-Dichloroethene	ND	0.0091	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,2-Dichloropropane	ND	0.0017	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,3-Dichloropropane	ND	0.0025	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
2,2-Dichloropropane	ND	0.0074	0.046		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,1-Dichloropropene	ND	0.0021	0.046		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Hexachlorobutadiene	ND	0.0023	0.046		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
2-Hexanone	ND	0.0038	0.23		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Isopropylbenzene	ND	0.0016	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
4-Isopropyltoluene	ND	0.0019	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
4-Methyl-2-pentanone	ND	0.0043	0.23		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Methylene chloride	0.0043	0.0040	0.068	J	mg/Kg	1	10/28/2019 1:48:28 PM	S64028
n-Butylbenzene	ND	0.0021	0.068		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
n-Propylbenzene	ND	0.0018	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
sec-Butylbenzene	ND	0.0026	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Styrene	ND	0.0018	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
tert-Butylbenzene	ND	0.0021	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0015	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028

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Project: SWMU 13
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EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0023	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Tetrachloroethene (PCE)	ND	0.0018	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
trans-1,2-DCE	ND	0.0021	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
trans-1,3-Dichloropropene	ND	0.0024	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0020	0.046		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0023	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,1,1-Trichloroethane	ND	0.0021	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,1,2-Trichloroethane	ND	0.0016	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Trichloroethene (TCE)	ND	0.0026	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Trichlorofluoromethane	ND	0.0077	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
1,2,3-Trichloropropane	ND	0.0037	0.046		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Vinyl chloride	ND	0.0015	0.023		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Xylenes, Total	ND	0.0057	0.046		mg/Kg	1	10/28/2019 1:48:28 PM	S64028
Surr: Dibromofluoromethane	102		70-130		%Rec	1	10/28/2019 1:48:28 PM	S64028
Surr: 1,2-Dichloroethane-d4	90.1		70-130		%Rec	1	10/28/2019 1:48:28 PM	S64028
Surr: Toluene-d8	104		70-130		%Rec	1	10/28/2019 1:48:28 PM	S64028
Surr: 4-Bromofluorobenzene	97.7		70-130		%Rec	1	10/28/2019 1:48:28 PM	S64028

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Client Sample ID: SWMU 13-3 (15.25-16')
Project: SWMU 13
Collection Date: 10/22/2019 5:05:00 PM
Lab ID: 1910D16-014
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	2.1	1.8	8.9	J	mg/Kg	1	10/29/2019 3:19:59 PM	48409
Motor Oil Range Organics (MRO)	ND	44	44		mg/Kg	1	10/29/2019 3:19:59 PM	48409
Surr: DNOP	105	0	70-130		%Rec	1	10/29/2019 3:19:59 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.85	2.8		mg/Kg	1	10/27/2019 3:13:40 PM	G63989
Surr: BFB	96.5	0	77.4-118		%Rec	1	10/27/2019 3:13:40 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	ND	0.0018	0.033		mg/Kg	1	11/4/2019 5:59:32 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/7/2019 5:24:39 PM	48420
Arsenic	ND	2.9	5.0		mg/Kg	2	11/7/2019 5:24:39 PM	48420
Barium	190	0.047	0.20		mg/Kg	2	11/7/2019 5:24:39 PM	48420
Beryllium	0.59	0.019	0.30		mg/Kg	2	11/7/2019 5:24:39 PM	48420
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 5:24:39 PM	48420
Chromium	4.8	0.16	0.61		mg/Kg	2	11/7/2019 5:24:39 PM	48420
Cobalt	3.0	0.21	0.61		mg/Kg	2	11/7/2019 5:24:39 PM	48420
Iron	8000	73	250		mg/Kg	100	11/12/2019 1:19:38 PM	48420
Lead	1.7	0.49	0.50		mg/Kg	2	11/12/2019 3:33:17 PM	48420
Manganese	320	0.042	0.20		mg/Kg	2	11/7/2019 5:24:39 PM	48420
Nickel	5.1	0.30	1.0		mg/Kg	2	11/7/2019 5:24:39 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 12:14:33 P	48420
Silver	ND	0.065	0.50		mg/Kg	2	11/7/2019 5:24:39 PM	48420
Vanadium	11	0.13	5.0		mg/Kg	2	11/7/2019 5:24:39 PM	48420
Zinc	9.2	0.80	5.0		mg/Kg	2	11/7/2019 5:24:39 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Acenaphthylene	ND	0.11	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Aniline	ND	0.12	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Anthracene	ND	0.10	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Azobenzene	ND	0.14	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Benz(a)anthracene	ND	0.093	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Benzo(a)pyrene	ND	0.086	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Benzo(b)fluoranthene	ND	0.085	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Benzo(g,h,i)perylene	ND	0.083	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Benzo(k)fluoranthene	ND	0.088	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Benzoic acid	ND	0.10	0.48		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (15.25-16')
Project: SWMU 13
Collection Date: 10/22/2019 5:05:00 PM
Lab ID: 1910D16-014
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Bis(2-ethylhexyl)phthalate	ND	0.14	0.48		mg/Kg	1	10/31/2019 5:18:20 PM	48455
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Butyl benzyl phthalate	ND	0.099	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Carbazole	ND	0.11	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
4-Chloro-3-methylphenol	ND	0.15	0.48		mg/Kg	1	10/31/2019 5:18:20 PM	48455
4-Chloroaniline	ND	0.14	0.48		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
4-Chlorophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Chrysene	ND	0.085	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Di-n-butyl phthalate	0.15	0.14	0.39	J	mg/Kg	1	10/31/2019 5:18:20 PM	48455
Di-n-octyl phthalate	ND	0.099	0.39		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Dibenz(a,h)anthracene	ND	0.088	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Dibenzofuran	ND	0.13	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
1,2-Dichlorobenzene	ND	0.12	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
3,3´-Dichlorobenzidine	ND	0.086	0.24		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	10/31/2019 5:18:20 PM	48455
4,6-Dinitro-2-methylphenol	ND	0.089	0.39		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2,4-Dinitrophenol	ND	0.070	0.48		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2,4-Dinitrotoluene	ND	0.11	0.48		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2,6-Dinitrotoluene	ND	0.13	0.48		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Fluoranthene	ND	0.11	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Fluorene	ND	0.11	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Hexachlorobutadiene	ND	0.13	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Indeno(1,2,3-cd)pyrene	ND	0.096	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Isophorone	ND	0.14	0.39		mg/Kg	1	10/31/2019 5:18:20 PM	48455
1-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (15.25-16')
Project: SWMU 13
Collection Date: 10/22/2019 5:05:00 PM
Lab ID: 1910D16-014
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.11	0.39		mg/Kg	1	10/31/2019 5:18:20 PM	48455
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Naphthalene	ND	0.15	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Nitrobenzene	ND	0.13	0.39		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Phenanthrene	ND	0.10	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Phenol	ND	0.12	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Pyrene	ND	0.091	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Pyridine	ND	0.12	0.39		mg/Kg	1	10/31/2019 5:18:20 PM	48455
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2,4,5-Trichlorophenol	ND	0.13	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	10/31/2019 5:18:20 PM	48455
Surr: 2-Fluorophenol	63.1		26.7-85.9		%Rec	1	10/31/2019 5:18:20 PM	48455
Surr: Phenol-d5	69.0		18.5-101		%Rec	1	10/31/2019 5:18:20 PM	48455
Surr: 2,4,6-Tribromophenol	70.4		35.8-85.6		%Rec	1	10/31/2019 5:18:20 PM	48455
Surr: Nitrobenzene-d5	68.7		40.8-95.2		%Rec	1	10/31/2019 5:18:20 PM	48455
Surr: 2-Fluorobiphenyl	62.2		34.7-85.2		%Rec	1	10/31/2019 5:18:20 PM	48455
Surr: 4-Terphenyl-d14	85.0		37.4-91.3		%Rec	1	10/31/2019 5:18:20 PM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0023	0.014		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Toluene	ND	0.0027	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Ethylbenzene	ND	0.0016	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0067	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0026	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0027	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0029	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0026	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Naphthalene	ND	0.0056	0.056		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1-Methylnaphthalene	ND	0.016	0.11		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Acetone	ND	0.023	0.42		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Bromobenzene	ND	0.0027	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028

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Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (15.25-16')
Project: SWMU 13
Collection Date: 10/22/2019 5:05:00 PM
Lab ID: 1910D16-014
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0026	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Bromoform	ND	0.0025	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Bromomethane	ND	0.0068	0.085		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
2-Butanone	ND	0.033	0.28		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Carbon disulfide	ND	0.0093	0.28		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Carbon tetrachloride	ND	0.0027	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Chlorobenzene	ND	0.0036	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Chloroethane	ND	0.0042	0.056		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Chloroform	ND	0.0023	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Chloromethane	ND	0.0027	0.085		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
2-Chlorotoluene	ND	0.0025	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
4-Chlorotoluene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
cis-1,2-DCE	ND	0.0039	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
cis-1,3-Dichloropropene	ND	0.0024	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0029	0.056		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Dibromochloromethane	ND	0.0020	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Dibromomethane	ND	0.0030	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,2-Dichlorobenzene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,3-Dichlorobenzene	ND	0.0025	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,4-Dichlorobenzene	ND	0.0024	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Dichlorodifluoromethane	ND	0.0065	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,1-Dichloroethane	ND	0.0018	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,1-Dichloroethene	ND	0.011	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,2-Dichloropropane	ND	0.0021	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,3-Dichloropropane	ND	0.0031	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
2,2-Dichloropropane	ND	0.0092	0.056		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,1-Dichloropropene	ND	0.0026	0.056		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Hexachlorobutadiene	ND	0.0029	0.056		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
2-Hexanone	ND	0.0047	0.28		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Isopropylbenzene	ND	0.0020	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
4-Isopropyltoluene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
4-Methyl-2-pentanone	ND	0.0053	0.28		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Methylene chloride	ND	0.0050	0.085		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
n-Butylbenzene	ND	0.0026	0.085		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
n-Propylbenzene	ND	0.0022	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
sec-Butylbenzene	ND	0.0032	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Styrene	ND	0.0022	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
tert-Butylbenzene	ND	0.0027	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0019	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3 (15.25-16')
Project: SWMU 13
Collection Date: 10/22/2019 5:05:00 PM
Lab ID: 1910D16-014
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0029	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Tetrachloroethene (PCE)	ND	0.0023	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
trans-1,2-DCE	ND	0.0026	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
trans-1,3-Dichloropropene	ND	0.0030	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0025	0.056		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0028	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,1,1-Trichloroethane	ND	0.0025	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,1,2-Trichloroethane	ND	0.0020	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Trichloroethene (TCE)	ND	0.0033	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Trichlorofluoromethane	ND	0.0096	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
1,2,3-Trichloropropane	ND	0.0046	0.056		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Vinyl chloride	ND	0.0018	0.028		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Xylenes, Total	ND	0.0071	0.056		mg/Kg	1	10/28/2019 2:17:48 PM	S64028
Surr: Dibromofluoromethane	101		70-130		%Rec	1	10/28/2019 2:17:48 PM	S64028
Surr: 1,2-Dichloroethane-d4	92.0		70-130		%Rec	1	10/28/2019 2:17:48 PM	S64028
Surr: Toluene-d8	106		70-130		%Rec	1	10/28/2019 2:17:48 PM	S64028
Surr: 4-Bromofluorobenzene	95.8		70-130		%Rec	1	10/28/2019 2:17:48 PM	S64028

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP01
Project: SWMU 13
Collection Date: 10/22/2019
Lab ID: 1910D16-015
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	100	1.8	8.9		mg/Kg	1	10/30/2019 3:56:25 PM	48409
Motor Oil Range Organics (MRO)	160	44	44		mg/Kg	1	10/30/2019 3:56:25 PM	48409
Surr: DNOP	83.7	0	70-130		%Rec	1	10/30/2019 3:56:25 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.2	4.0		mg/Kg	1	10/27/2019 3:36:37 PM	G63989
Surr: BFB	86.2	0	77.4-118		%Rec	1	10/27/2019 3:36:37 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.14	0.0018	0.032		mg/Kg	1	11/1/2019 12:45:33 PM	48512
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/7/2019 5:26:12 PM	48420
Arsenic	ND	2.9	5.0		mg/Kg	2	11/7/2019 5:26:12 PM	48420
Barium	290	0.047	0.20		mg/Kg	2	11/7/2019 5:26:12 PM	48420
Beryllium	1.4	0.018	0.30		mg/Kg	2	11/7/2019 5:26:12 PM	48420
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 5:26:12 PM	48420
Chromium	40	0.16	0.60		mg/Kg	2	11/7/2019 5:26:12 PM	48420
Cobalt	6.6	0.21	0.60		mg/Kg	2	11/7/2019 5:26:12 PM	48420
Iron	22000	73	250		mg/Kg	100	11/12/2019 1:21:23 PM	48420
Lead	1.0	0.49	0.50		mg/Kg	2	11/12/2019 3:34:51 PM	48420
Manganese	400	0.042	0.20		mg/Kg	2	11/7/2019 5:26:12 PM	48420
Nickel	14	0.30	1.0		mg/Kg	2	11/7/2019 5:26:12 PM	48420
Selenium	ND	2.5	5.0		mg/Kg	2	11/12/2019 12:16:03 P	48420
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 5:26:12 PM	48420
Vanadium	30	0.13	5.0		mg/Kg	2	11/7/2019 5:26:12 PM	48420
Zinc	45	0.79	5.0		mg/Kg	2	11/7/2019 5:26:12 PM	48420
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.60	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Acenaphthylene	ND	0.55	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Aniline	ND	0.64	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Anthracene	ND	0.53	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Azobenzene	ND	0.70	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Benz(a)anthracene	ND	0.48	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Benzo(a)pyrene	ND	0.44	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Benzo(b)fluoranthene	ND	0.44	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Benzo(g,h,i)perylene	ND	0.43	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Benzo(k)fluoranthene	ND	0.45	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Benzoic acid	ND	0.51	2.5	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Benzyl alcohol	ND	0.62	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP01
Project: SWMU 13
Collection Date: 10/22/2019
Lab ID: 1910D16-015
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.74	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Bis(2-chloroethyl)ether	ND	0.61	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Bis(2-chloroisopropyl)ether	ND	0.57	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Bis(2-ethylhexyl)phthalate	ND	0.72	2.5	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
4-Bromophenyl phenyl ether	ND	0.59	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Butyl benzyl phthalate	ND	0.51	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Carbazole	ND	0.58	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
4-Chloro-3-methylphenol	ND	0.76	2.5	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
4-Chloroaniline	ND	0.71	2.5	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2-Chloronaphthalene	ND	0.62	1.2	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2-Chlorophenol	ND	0.62	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
4-Chlorophenyl phenyl ether	ND	0.54	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Chrysene	ND	0.44	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Di-n-butyl phthalate	ND	0.74	2.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Di-n-octyl phthalate	ND	0.51	2.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Dibenz(a,h)anthracene	ND	0.45	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Dibenzofuran	ND	0.65	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
1,2-Dichlorobenzene	ND	0.60	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
1,3-Dichlorobenzene	ND	0.52	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
1,4-Dichlorobenzene	ND	0.53	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
3,3´-Dichlorobenzidine	ND	0.44	1.2	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Diethyl phthalate	ND	0.71	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Dimethyl phthalate	ND	0.66	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2,4-Dichlorophenol	ND	0.58	2.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2,4-Dimethylphenol	ND	0.55	1.5	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
4,6-Dinitro-2-methylphenol	ND	0.46	2.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2,4-Dinitrophenol	ND	0.36	2.5	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2,4-Dinitrotoluene	ND	0.59	2.5	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2,6-Dinitrotoluene	ND	0.66	2.5	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Fluoranthene	ND	0.56	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Fluorene	ND	0.57	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Hexachlorobenzene	ND	0.62	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Hexachlorobutadiene	ND	0.69	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Hexachlorocyclopentadiene	ND	0.57	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Hexachloroethane	ND	0.56	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Indeno(1,2,3-cd)pyrene	ND	0.50	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Isophorone	ND	0.73	2.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
1-Methylnaphthalene	ND	0.75	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2-Methylnaphthalene	ND	0.73	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP01
Project: SWMU 13
Collection Date: 10/22/2019
Lab ID: 1910D16-015
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.59	2.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
3+4-Methylphenol	ND	0.61	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
N-Nitrosodi-n-propylamine	ND	0.71	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
N-Nitrosodiphenylamine	ND	0.52	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Naphthalene	ND	0.75	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2-Nitroaniline	ND	0.71	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
3-Nitroaniline	ND	0.69	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
4-Nitroaniline	ND	0.64	2.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Nitrobenzene	ND	0.69	2.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2-Nitrophenol	ND	0.68	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
4-Nitrophenol	ND	0.68	1.2	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Pentachlorophenol	ND	0.51	2.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Phenanthrene	ND	0.54	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Phenol	ND	0.62	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Pyrene	ND	0.47	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Pyridine	ND	0.60	2.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
1,2,4-Trichlorobenzene	ND	0.77	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2,4,5-Trichlorophenol	ND	0.65	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
2,4,6-Trichlorophenol	ND	0.52	1.0	D	mg/Kg	1	10/31/2019 6:44:54 PM	48455
Surr: 2-Fluorophenol	61.2		26.7-85.9	D	%Rec	1	10/31/2019 6:44:54 PM	48455
Surr: Phenol-d5	67.9		18.5-101	D	%Rec	1	10/31/2019 6:44:54 PM	48455
Surr: 2,4,6-Tribromophenol	67.8		35.8-85.6	D	%Rec	1	10/31/2019 6:44:54 PM	48455
Surr: Nitrobenzene-d5	62.8		40.8-95.2	D	%Rec	1	10/31/2019 6:44:54 PM	48455
Surr: 2-Fluorobiphenyl	68.1		34.7-85.2	D	%Rec	1	10/31/2019 6:44:54 PM	48455
Surr: 4-Terphenyl-d14	90.1		37.4-91.3	D	%Rec	1	10/31/2019 6:44:54 PM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0032	0.020		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Toluene	ND	0.0038	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Ethylbenzene	ND	0.0023	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Methyl tert-butyl ether (MTBE)	ND	0.0094	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,2,4-Trimethylbenzene	ND	0.0036	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,3,5-Trimethylbenzene	ND	0.0038	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,2-Dichloroethane (EDC)	ND	0.0040	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,2-Dibromoethane (EDB)	ND	0.0036	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Naphthalene	ND	0.0079	0.079		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1-Methylnaphthalene	ND	0.023	0.16		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
2-Methylnaphthalene	ND	0.017	0.16		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Acetone	ND	0.033	0.59		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Bromobenzene	ND	0.0038	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP01
Project: SWMU 13
Collection Date: 10/22/2019
Lab ID: 1910D16-015
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0036	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Bromoform	ND	0.0036	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Bromomethane	ND	0.0096	0.12		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
2-Butanone	0.054	0.046	0.40	J	mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Carbon disulfide	ND	0.013	0.40		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Carbon tetrachloride	ND	0.0038	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Chlorobenzene	ND	0.0051	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Chloroethane	ND	0.0058	0.079		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Chloroform	ND	0.0032	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Chloromethane	ND	0.0038	0.12		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
2-Chlorotoluene	ND	0.0035	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
4-Chlorotoluene	ND	0.0032	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
cis-1,2-DCE	ND	0.0054	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
cis-1,3-Dichloropropene	ND	0.0033	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,2-Dibromo-3-chloropropane	ND	0.0041	0.079		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Dibromochloromethane	ND	0.0028	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Dibromomethane	ND	0.0043	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,2-Dichlorobenzene	ND	0.0033	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,3-Dichlorobenzene	ND	0.0034	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,4-Dichlorobenzene	ND	0.0033	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Dichlorodifluoromethane	ND	0.0092	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,1-Dichloroethane	ND	0.0025	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,1-Dichloroethene	ND	0.016	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,2-Dichloropropane	ND	0.0029	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,3-Dichloropropane	ND	0.0043	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
2,2-Dichloropropane	ND	0.013	0.079		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,1-Dichloropropene	ND	0.0036	0.079		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Hexachlorobutadiene	ND	0.0040	0.079		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
2-Hexanone	ND	0.0066	0.40		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Isopropylbenzene	ND	0.0029	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
4-Isopropyltoluene	ND	0.0033	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
4-Methyl-2-pentanone	ND	0.0075	0.40		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Methylene chloride	ND	0.0070	0.12		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
n-Butylbenzene	ND	0.0037	0.12		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
n-Propylbenzene	ND	0.0032	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
sec-Butylbenzene	ND	0.0045	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Styrene	ND	0.0031	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
tert-Butylbenzene	ND	0.0037	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,1,1,2-Tetrachloroethane	ND	0.0027	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP01
Project: SWMU 13
Collection Date: 10/22/2019
Lab ID: 1910D16-015
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0040	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Tetrachloroethene (PCE)	ND	0.0032	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
trans-1,2-DCE	ND	0.0036	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
trans-1,3-Dichloropropene	ND	0.0042	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,2,3-Trichlorobenzene	ND	0.0035	0.079		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,2,4-Trichlorobenzene	ND	0.0040	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,1,1-Trichloroethane	ND	0.0036	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,1,2-Trichloroethane	ND	0.0028	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Trichloroethene (TCE)	ND	0.0046	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Trichlorofluoromethane	ND	0.013	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
1,2,3-Trichloropropane	ND	0.0064	0.079		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Vinyl chloride	ND	0.0026	0.040		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Xylenes, Total	ND	0.010	0.079		mg/Kg	1	10/26/2019 4:42:48 AM	S63992
Surr: Dibromofluoromethane	105		70-130		%Rec	1	10/26/2019 4:42:48 AM	S63992
Surr: 1,2-Dichloroethane-d4	93.5		70-130		%Rec	1	10/26/2019 4:42:48 AM	S63992
Surr: Toluene-d8	100		70-130		%Rec	1	10/26/2019 4:42:48 AM	S63992
Surr: 4-Bromofluorobenzene	91.1		70-130		%Rec	1	10/26/2019 4:42:48 AM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank
Project: SWMU 13
Collection Date:
Lab ID: 1910D16-016
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0041	0.025		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Toluene	ND	0.0048	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Ethylbenzene	ND	0.0029	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Methyl tert-butyl ether (MTBE)	ND	0.012	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,2,4-Trimethylbenzene	ND	0.0046	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,3,5-Trimethylbenzene	ND	0.0048	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,2-Dichloroethane (EDC)	ND	0.0051	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,2-Dibromoethane (EDB)	ND	0.0046	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Naphthalene	ND	0.010	0.10		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1-Methylnaphthalene	ND	0.029	0.20		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
2-Methylnaphthalene	ND	0.022	0.20		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Acetone	ND	0.041	0.75		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Bromobenzene	ND	0.0048	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Bromodichloromethane	ND	0.0046	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Bromoform	ND	0.0045	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Bromomethane	ND	0.012	0.15		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
2-Butanone	ND	0.058	0.50		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Carbon disulfide	ND	0.017	0.50		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Carbon tetrachloride	ND	0.0047	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Chlorobenzene	ND	0.0064	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Chloroethane	ND	0.0074	0.10		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Chloroform	ND	0.0040	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Chloromethane	ND	0.0048	0.15		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
2-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
4-Chlorotoluene	ND	0.0041	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
cis-1,2-DCE	ND	0.0068	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
cis-1,3-Dichloropropene	ND	0.0042	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,2-Dibromo-3-chloropropane	ND	0.0051	0.10		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Dibromochloromethane	ND	0.0035	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Dibromomethane	ND	0.0054	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,2-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,3-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,4-Dichlorobenzene	ND	0.0042	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Dichlorodifluoromethane	ND	0.012	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,1-Dichloroethane	ND	0.0032	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,3-Dichloropropane	ND	0.0054	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
2,2-Dichloropropane	ND	0.016	0.10		mg/Kg	1	10/26/2019 5:11:42 AM	S63992

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank
Project: SWMU 13
Collection Date:
Lab ID: 1910D16-016
Matrix: MEOH (SOIL)
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1-Dichloropropene	ND	0.0046	0.10		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Hexachlorobutadiene	ND	0.0051	0.10		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
2-Hexanone	ND	0.0083	0.50		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Isopropylbenzene	ND	0.0036	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
4-Isopropyltoluene	ND	0.0041	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
4-Methyl-2-pentanone	ND	0.0094	0.50		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Methylene chloride	0.011	0.0088	0.15	J	mg/Kg	1	10/26/2019 5:11:42 AM	S63992
n-Butylbenzene	ND	0.0047	0.15		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
n-Propylbenzene	ND	0.0040	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
sec-Butylbenzene	ND	0.0056	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Styrene	ND	0.0039	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
tert-Butylbenzene	ND	0.0047	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,1,1,2-Tetrachloroethane	ND	0.0034	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,1,2,2-Tetrachloroethane	ND	0.0051	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
trans-1,2-DCE	ND	0.0046	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
trans-1,3-Dichloropropene	ND	0.0053	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,2,3-Trichlorobenzene	ND	0.0044	0.10		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,2,4-Trichlorobenzene	ND	0.0051	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,1,1-Trichloroethane	ND	0.0045	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,1,2-Trichloroethane	ND	0.0035	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Trichloroethene (TCE)	ND	0.0058	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Trichlorofluoromethane	ND	0.017	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
1,2,3-Trichloropropane	ND	0.0081	0.10		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Vinyl chloride	ND	0.0033	0.050		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Xylenes, Total	ND	0.013	0.10		mg/Kg	1	10/26/2019 5:11:42 AM	S63992
Surr: Dibromofluoromethane	105		70-130		%Rec	1	10/26/2019 5:11:42 AM	S63992
Surr: 1,2-Dichloroethane-d4	92.5		70-130		%Rec	1	10/26/2019 5:11:42 AM	S63992
Surr: Toluene-d8	101		70-130		%Rec	1	10/26/2019 5:11:42 AM	S63992
Surr: 4-Bromofluorobenzene	87.5		70-130		%Rec	1	10/26/2019 5:11:42 AM	S63992

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102219
Project: SWMU 13
Collection Date: 10/22/2019 2:15:00 PM
Lab ID: 1910D16-017
Matrix: AQUEOUS
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	0.35	1.0		mg/L	1	10/30/2019 3:26:14 AM	48422
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	10/30/2019 3:26:14 AM	48422
Surr: DNOP	85.3	0	70-130		%Rec	1	10/30/2019 3:26:14 AM	48422
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/1/2019 3:47:05 PM	R64171
Surr: BFB	94.0	0	65.8-143		%Rec	1	11/1/2019 3:47:05 PM	R64171
EPA METHOD 7470: MERCURY							Analyst: **pmf**	
Mercury	0.00019	0.000038	0.00020	J	mg/L	1	11/5/2019 2:26:36 PM	48565
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Antimony	ND	0.0081	0.050		mg/L	1	11/14/2019 5:16:57 PM	48486
Arsenic	ND	0.015	0.020		mg/L	1	11/13/2019 7:56:41 PM	48486
Barium	ND	0.0012	0.020		mg/L	1	11/13/2019 7:56:41 PM	48486
Beryllium	ND	0.00025	0.0030		mg/L	1	11/13/2019 7:56:41 PM	48486
Cadmium	ND	0.00055	0.0020		mg/L	1	11/13/2019 7:56:41 PM	48486
Chromium	ND	0.00086	0.0060		mg/L	1	11/13/2019 7:56:41 PM	48486
Cobalt	ND	0.0012	0.0060		mg/L	1	11/14/2019 5:16:57 PM	48486
Iron	ND	0.0093	0.020		mg/L	1	11/13/2019 7:56:41 PM	48486
Lead	ND	0.0035	0.0050		mg/L	1	11/13/2019 7:56:41 PM	48486
Manganese	ND	0.00041	0.0020		mg/L	1	11/14/2019 5:16:57 PM	48486
Nickel	ND	0.0028	0.010		mg/L	1	11/13/2019 7:56:41 PM	48486
Selenium	ND	0.035	0.050		mg/L	1	11/13/2019 7:56:41 PM	48486
Silver	ND	0.00055	0.0050		mg/L	1	11/13/2019 7:56:41 PM	48486
Vanadium	ND	0.00086	0.050		mg/L	1	11/13/2019 7:56:41 PM	48486
Zinc	ND	0.011	0.020		mg/L	1	11/13/2019 7:56:41 PM	48486
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	3.0	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Acenaphthylene	ND	2.4	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Aniline	ND	3.6	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Anthracene	ND	2.7	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Azobenzene	ND	3.3	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Benz(a)anthracene	ND	3.6	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Benzo(a)pyrene	ND	3.5	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Benzo(b)fluoranthene	ND	3.4	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Benzo(g,h,i)perylene	ND	2.2	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Benzo(k)fluoranthene	ND	2.9	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Benzoic acid	ND	11	20		µg/L	1	10/31/2019 2:53:33 PM	48439
Benzyl alcohol	ND	2.4	10		µg/L	1	10/31/2019 2:53:33 PM	48439

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102219
Project: SWMU 13
Collection Date: 10/22/2019 2:15:00 PM
Lab ID: 1910D16-017
Matrix: AQUEOUS
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	2.6	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Bis(2-chloroethyl)ether	ND	3.2	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Bis(2-chloroisopropyl)ether	ND	3.9	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Bis(2-ethylhexyl)phthalate	ND	4.3	10		µg/L	1	10/31/2019 2:53:33 PM	48439
4-Bromophenyl phenyl ether	ND	3.0	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Butyl benzyl phthalate	ND	3.3	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Carbazole	ND	2.9	10		µg/L	1	10/31/2019 2:53:33 PM	48439
4-Chloro-3-methylphenol	ND	3.4	10		µg/L	1	10/31/2019 2:53:33 PM	48439
4-Chloroaniline	ND	2.3	10		µg/L	1	10/31/2019 2:53:33 PM	48439
2-Chloronaphthalene	ND	3.1	10		µg/L	1	10/31/2019 2:53:33 PM	48439
2-Chlorophenol	ND	2.7	10		µg/L	1	10/31/2019 2:53:33 PM	48439
4-Chlorophenyl phenyl ether	ND	2.4	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Chrysene	ND	2.8	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Di-n-butyl phthalate	ND	2.7	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Di-n-octyl phthalate	ND	3.5	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Dibenz(a,h)anthracene	ND	3.0	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Dibenzofuran	ND	3.2	10		µg/L	1	10/31/2019 2:53:33 PM	48439
1,2-Dichlorobenzene	ND	4.8	10		µg/L	1	10/31/2019 2:53:33 PM	48439
1,3-Dichlorobenzene	ND	5.3	10		µg/L	1	10/31/2019 2:53:33 PM	48439
1,4-Dichlorobenzene	ND	4.4	10		µg/L	1	10/31/2019 2:53:33 PM	48439
3,3´-Dichlorobenzidine	ND	2.8	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Diethyl phthalate	ND	2.9	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Dimethyl phthalate	ND	3.2	10		µg/L	1	10/31/2019 2:53:33 PM	48439
2,4-Dichlorophenol	ND	2.9	20		µg/L	1	10/31/2019 2:53:33 PM	48439
2,4-Dimethylphenol	ND	3.0	10		µg/L	1	10/31/2019 2:53:33 PM	48439
4,6-Dinitro-2-methylphenol	ND	2.9	20		µg/L	1	10/31/2019 2:53:33 PM	48439
2,4-Dinitrophenol	ND	2.6	20		µg/L	1	10/31/2019 2:53:33 PM	48439
2,4-Dinitrotoluene	ND	3.8	10		µg/L	1	10/31/2019 2:53:33 PM	48439
2,6-Dinitrotoluene	ND	2.4	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Fluoranthene	ND	2.4	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Fluorene	ND	2.9	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Hexachlorobenzene	ND	3.1	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Hexachlorobutadiene	ND	4.7	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Hexachlorocyclopentadiene	ND	3.6	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Hexachloroethane	ND	4.8	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Indeno(1,2,3-cd)pyrene	ND	2.7	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Isophorone	ND	3.0	10		µg/L	1	10/31/2019 2:53:33 PM	48439
1-Methylnaphthalene	ND	3.1	10		µg/L	1	10/31/2019 2:53:33 PM	48439
2-Methylnaphthalene	ND	3.0	10		µg/L	1	10/31/2019 2:53:33 PM	48439

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102219
Project: SWMU 13
Collection Date: 10/22/2019 2:15:00 PM
Lab ID: 1910D16-017
Matrix: AQUEOUS
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	2.9	10		µg/L	1	10/31/2019 2:53:33 PM	48439
3+4-Methylphenol	ND	3.6	10		µg/L	1	10/31/2019 2:53:33 PM	48439
N-Nitrosodi-n-propylamine	ND	6.5	10		µg/L	1	10/31/2019 2:53:33 PM	48439
N-Nitrosodimethylamine	ND	5.0	10		µg/L	1	10/31/2019 2:53:33 PM	48439
N-Nitrosodiphenylamine	ND	2.4	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Naphthalene	ND	4.1	10		µg/L	1	10/31/2019 2:53:33 PM	48439
2-Nitroaniline	ND	3.2	10		µg/L	1	10/31/2019 2:53:33 PM	48439
3-Nitroaniline	ND	3.2	10		µg/L	1	10/31/2019 2:53:33 PM	48439
4-Nitroaniline	ND	2.7	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Nitrobenzene	ND	2.8	10		µg/L	1	10/31/2019 2:53:33 PM	48439
2-Nitrophenol	ND	3.0	10		µg/L	1	10/31/2019 2:53:33 PM	48439
4-Nitrophenol	ND	7.6	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Pentachlorophenol	ND	2.7	20		µg/L	1	10/31/2019 2:53:33 PM	48439
Phenanthrene	ND	2.8	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Phenol	ND	8.0	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Pyrene	ND	2.5	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Pyridine	ND	9.6	10		µg/L	1	10/31/2019 2:53:33 PM	48439
1,2,4-Trichlorobenzene	ND	4.0	10		µg/L	1	10/31/2019 2:53:33 PM	48439
2,4,5-Trichlorophenol	ND	3.0	10		µg/L	1	10/31/2019 2:53:33 PM	48439
2,4,6-Trichlorophenol	ND	2.3	10		µg/L	1	10/31/2019 2:53:33 PM	48439
Surr: 2-Fluorophenol	51.5	0	15-101		%Rec	1	10/31/2019 2:53:33 PM	48439
Surr: Phenol-d5	37.5	0	15-84.6		%Rec	1	10/31/2019 2:53:33 PM	48439
Surr: 2,4,6-Tribromophenol	69.9	0	27.8-112		%Rec	1	10/31/2019 2:53:33 PM	48439
Surr: Nitrobenzene-d5	75.7	0	33-113		%Rec	1	10/31/2019 2:53:33 PM	48439
Surr: 2-Fluorobiphenyl	69.5	0	26.6-107		%Rec	1	10/31/2019 2:53:33 PM	48439
Surr: 4-Terphenyl-d14	51.7	0	18.7-148		%Rec	1	10/31/2019 2:53:33 PM	48439
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.17	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Toluene	ND	0.35	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Ethylbenzene	ND	0.13	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Naphthalene	ND	0.28	2.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Acetone	ND	1.2	10		µg/L	1	10/30/2019 6:18:25 AM	R64075

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102219
Project: SWMU 13
Collection Date: 10/22/2019 2:15:00 PM
Lab ID: 1910D16-017
Matrix: AQUEOUS
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Bromobenzene	ND	0.24	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Bromodichloromethane	ND	0.13	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Bromoform	ND	0.29	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Bromomethane	ND	0.27	3.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
2-Butanone	ND	2.1	10		µg/L	1	10/30/2019 6:18:25 AM	R64075
Carbon disulfide	ND	0.45	10		µg/L	1	10/30/2019 6:18:25 AM	R64075
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Chlorobenzene	ND	0.19	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Chloroethane	ND	0.18	2.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Chloroform	ND	0.12	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Chloromethane	ND	0.32	3.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,2-Dibromo-3-chloropropane	ND	0.33	2.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Dibromochloromethane	ND	0.24	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Dibromomethane	ND	0.21	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
2-Hexanone	ND	1.5	10		µg/L	1	10/30/2019 6:18:25 AM	R64075
Isopropylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	10/30/2019 6:18:25 AM	R64075
Methylene Chloride	ND	0.15	3.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
n-Butylbenzene	ND	0.23	3.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
n-Propylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Styrene	ND	0.19	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102219
Project: SWMU 13
Collection Date: 10/22/2019 2:15:00 PM
Lab ID: 1910D16-017
Matrix: AQUEOUS
Received Date: 10/24/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
1,2,3-Trichloropropane	ND	0.30	2.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Vinyl chloride	ND	0.18	1.0		µg/L	1	10/30/2019 6:18:25 AM	R64075
Xylenes, Total	ND	0.45	1.5		µg/L	1	10/30/2019 6:18:25 AM	R64075
Surr: 1,2-Dichloroethane-d4	95.3	0	70-130		%Rec	1	10/30/2019 6:18:25 AM	R64075
Surr: 4-Bromofluorobenzene	93.7	0	70-130		%Rec	1	10/30/2019 6:18:25 AM	R64075
Surr: Dibromofluoromethane	102	0	70-130		%Rec	1	10/30/2019 6:18:25 AM	R64075
Surr: Toluene-d8	100	0	70-130		%Rec	1	10/30/2019 6:18:25 AM	R64075

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48409**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48409**	RunNo: **64033**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2190866** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.3		10.00		93.3	70	130			

Sample ID: **MB-48409**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48409**	RunNo: **64033**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2191318** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	12		10.00		115	70	130			

Sample ID: **LCS-48409**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **48409**	RunNo: **64033**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2191319** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.3	63.9	124			
Surr: DNOP	4.9		5.000		97.7	70	130			

Sample ID: **1910D16-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SWMU 13-1 (0-0.5')**	Batch ID: **48409**	RunNo: **64090**
Prep Date: **10/28/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193139** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	9.7	48.50	0	97.7	57	142			
Surr: DNOP	4.5		4.850		92.3	70	130			

Sample ID: **1910D16-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SWMU 13-1 (0-0.5')**	Batch ID: **48409**	RunNo: **64090**
Prep Date: **10/28/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193141** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	9.9	49.50	0	102	57	142	6.10	20	
Surr: DNOP	5.0		4.950		102	70	130	0	0	

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48422**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **48422**	RunNo: **64033**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2190876** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.3		1.000		125	70	130			

Sample ID: **LCS-48422**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW**	Batch ID: **48422**	RunNo: **64047**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2192516** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.4	1.0	5.000	0	107	71.8	135			
Surr: DNOP	0.40		0.5000		79.9	70	130			

Sample ID: **MB-48422**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **48422**	RunNo: **64047**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2192517** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	0.83		1.000		82.7	70	130			

Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **G63989**	RunNo: **63989**
Prep Date:	Analysis Date: **10/27/2019**	SeqNo: **2189138** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		96.3	77.4	118			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **G63989**	RunNo: **63989**
Prep Date:	Analysis Date: **10/27/2019**	SeqNo: **2189139** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	106	80	120			
Surr: BFB	1200		1000		116	77.4	118			

Sample ID: **1910D16-002AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SWMU13-1 (1.5-2')**	Batch ID: **G63989**	RunNo: **63989**
Prep Date:	Analysis Date: **10/27/2019**	SeqNo: **2189142** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	15	3.2	16.22	0	91.5	69.1	142			
Surr: BFB	670		648.9		104	77.4	118			

Sample ID: **1910D16-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SWMU13-1 (1.5-2')**	Batch ID: **G63989**	RunNo: **63989**
Prep Date:	Analysis Date: **10/27/2019**	SeqNo: **2189143** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	15	3.2	16.22	0	89.8	69.1	142	1.94	20	
Surr: BFB	650		648.9		101	77.4	118	0	0	

Sample ID: **MB-48446**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193023** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		99.9	77.4	118			

Sample ID: **LCS-48446**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193024** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **LCS-48446**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193024** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.5	80	120			
Surr: BFB	1100		1000		108	77.4	118			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **R64171**	RunNo: **64171**
Prep Date:	Analysis Date: **11/1/2019**	SeqNo: **2195897** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	19		20.00		97.4	65.8	143			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **R64171**	RunNo: **64171**
Prep Date:	Analysis Date: **11/1/2019**	SeqNo: **2195898** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.39	0.050	0.5000	0	77.4	73.6	119			
Surr: BFB	22		20.00		109	65.8	143			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **S63992**	RunNo: **63992**
Prep Date:	Analysis Date: **10/25/2019**	SeqNo: **2189469** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **S63992**	RunNo: **63992**
Prep Date:	Analysis Date: **10/25/2019**	SeqNo: **2189469** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.55		0.5000		110	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		97.5	70	130			
Surr: Toluene-d8	0.51		0.5000		101	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.2	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **S63992**	RunNo: **63992**
Prep Date:	Analysis Date: **10/25/2019**	SeqNo: **2189470** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	1.000	0	89.4	68	135			
Toluene	0.89	0.050	1.000	0	89.5	70	130			
Chlorobenzene	0.89	0.050	1.000	0	89.2	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **S63992**	RunNo: **63992**
Prep Date:	Analysis Date: **10/25/2019**	SeqNo: **2189470** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.77	0.050	1.000	0	77.4	51.1	139			
Trichloroethene (TCE)	0.82	0.050	1.000	0	82.3	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		95.6	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		90.5	70	130			
Surr: Toluene-d8	0.48		0.5000		96.9	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		93.8	70	130			

Sample ID: **1910d16-001ams**	SampType: **MS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU 13-1 (0-0.5')**	Batch ID: **S63992**	RunNo: **63992**
Prep Date:	Analysis Date: **10/25/2019**	SeqNo: **2189472** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.68	0.021	0.8230	0	83.1	57.1	141			
Toluene	0.72	0.041	0.8230	0	87.0	70	130			
Chlorobenzene	0.72	0.041	0.8230	0	87.2	70	130			
1,1-Dichloroethene	0.63	0.041	0.8230	0	76.0	38.5	141			
Trichloroethene (TCE)	0.66	0.041	0.8230	0	80.3	70	130			
Surr: Dibromofluoromethane	0.40		0.4115		96.0	70	130			
Surr: 1,2-Dichloroethane-d4	0.38		0.4115		92.6	70	130			
Surr: Toluene-d8	0.40		0.4115		97.5	70	130			
Surr: 4-Bromofluorobenzene	0.39		0.4115		94.5	70	130			

Sample ID: **1910d16-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU 13-1 (0-0.5')**	Batch ID: **S63992**	RunNo: **63992**
Prep Date:	Analysis Date: **10/25/2019**	SeqNo: **2189473** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.65	0.021	0.8230	0	79.6	57.1	141	4.31	20	
Toluene	0.70	0.041	0.8230	0	84.6	70	130	2.72	20	
Chlorobenzene	0.69	0.041	0.8230	0	83.8	70	130	3.97	20	
1,1-Dichloroethene	0.57	0.041	0.8230	0	69.8	38.5	141	8.43	20	
Trichloroethene (TCE)	0.61	0.041	0.8230	0	74.6	70	130	7.43	20	
Surr: Dibromofluoromethane	0.38		0.4115		91.5	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.36		0.4115		88.5	70	130	0	0	
Surr: Toluene-d8	0.40		0.4115		96.2	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.37		0.4115		89.9	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **S64028**	RunNo: **64028**
Prep Date:	Analysis Date: **10/28/2019**	SeqNo: **2190354** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **S64028**	RunNo: **64028**
Prep Date:	Analysis Date: **10/28/2019**	SeqNo: **2190354** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	0.010	0.15								J
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.49		0.5000		98.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.44		0.5000		87.9	70	130			
Surr: Toluene-d8	0.48		0.5000		96.3	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.6	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **S64028**	RunNo: **64028**
Prep Date:	Analysis Date: **10/28/2019**	SeqNo: **2190356** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	1.000	0	89.0	68	135			
Toluene	0.93	0.050	1.000	0	93.2	70	130			
Chlorobenzene	0.91	0.050	1.000	0	91.5	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **S64028**	RunNo: **64028**
Prep Date:	Analysis Date: **10/28/2019**	SeqNo: **2190356** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.90	0.050	1.000	0	90.4	51.1	139			
Trichloroethene (TCE)	0.85	0.050	1.000	0	85.2	70	130			
Surr: Dibromofluoromethane	0.44		0.5000		87.4	70	130			
Surr: 1,2-Dichloroethane-d4	0.41		0.5000		82.2	70	130			
Surr: Toluene-d8	0.47		0.5000		93.5	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.7	70	130			

Sample ID: **mb-48446**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **48446**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194198** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48446**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **48446**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194198** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.54		0.5000		107	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **mb-48446**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **48446**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194198** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		93.0	70	130			
Surr: Toluene-d8	0.49		0.5000		98.5	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.1	70	130			

Sample ID: **lcs-48446**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **48446**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194199** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	98.8	68	135			
Toluene	0.96	0.050	1.000	0	95.8	70	130			
Chlorobenzene	0.91	0.050	1.000	0	91.0	70	130			
1,1-Dichloroethene	0.94	0.050	1.000	0	93.8	51.1	139			
Trichloroethene (TCE)	0.94	0.050	1.000	0	93.9	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		95.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.4	70	130			
Surr: Toluene-d8	0.48		0.5000		95.6	70	130			
Surr: 4-Bromofluorobenzene	0.44		0.5000		88.7	70	130			

Sample ID: **1910d16-003ams**	SampType: **MS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU13-1 (5-6')**	Batch ID: **48446**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194201** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.024	0.9718	0	109	57.1	141			
Toluene	1.1	0.049	0.9718	0	109	70	130			
Chlorobenzene	1.0	0.049	0.9718	0	106	70	130			
1,1-Dichloroethene	1.0	0.049	0.9718	0	104	38.5	141			
Trichloroethene (TCE)	1.0	0.049	0.9718	0	103	70	130			
Surr: Dibromofluoromethane	0.43		0.4859		89.5	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.4859		93.3	70	130			
Surr: Toluene-d8	0.47		0.4859		96.7	70	130			
Surr: 4-Bromofluorobenzene	0.45		0.4859		91.9	70	130			

Sample ID: **1910d16-003amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU13-1 (5-6')**	Batch ID: **48446**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194202** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.024	0.9756	0	112	57.1	141	2.89	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **1910d16-003amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU13-1 (5-6')**	Batch ID: **48446**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194202** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	1.1	0.049	0.9756	0	111	70	130	2.49	20	
Chlorobenzene	1.1	0.049	0.9756	0	108	70	130	1.81	20	
1,1-Dichloroethene	1.0	0.049	0.9756	0	105	38.5	141	1.23	20	
Trichloroethene (TCE)	1.0	0.049	0.9756	0	105	70	130	1.94	20	
Surr: Dibromofluoromethane	0.44		0.4878		90.5	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.46		0.4878		95.3	70	130	0	0	
Surr: Toluene-d8	0.47		0.4878		96.2	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.43		0.4878		88.7	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192371** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.5	70	130			
Toluene	19	1.0	20.00	0	93.8	70	130			
Chlorobenzene	20	1.0	20.00	0	99.5	70	130			
1,1-Dichloroethene	17	1.0	20.00	0	84.9	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	84.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.1	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		90.9	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.9		10.00		99.1	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.2		10.00		92.4	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		93.8	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.0	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48424**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48424**	RunNo: **64102**
Prep Date: **10/28/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193522** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48424**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48424**	RunNo: **64102**
Prep Date: **10/28/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193522** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	1.7		3.330		52.4	26.7	85.9			
Surr: Phenol-d5	1.9		3.330		57.3	18.5	101			
Surr: 2,4,6-Tribromophenol	2.3		3.330		68.1	35.8	85.6			
Surr: Nitrobenzene-d5	0.99		1.670		59.4	40.8	95.2			
Surr: 2-Fluorobiphenyl	0.97		1.670		57.9	34.7	85.2			
Surr: 4-Terphenyl-d14	1.2		1.670		70.0	37.4	91.3			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **lcs-48424**	SampType: **LCS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS**	Batch ID: **48424**	RunNo: **64102**
Prep Date: **10/28/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193523** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.670	0	66.1	46	89.5			
4-Chloro-3-methylphenol	2.1	0.50	3.330	0	63.3	44.1	101			
2-Chlorophenol	2.2	0.20	3.330	0	67.2	47	91			
1,4-Dichlorobenzene	1.1	0.20	1.670	0	62.9	41.4	85.8			
2,4-Dinitrotoluene	0.94	0.50	1.670	0	56.2	37.4	82			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	69.8	47.8	92.9			
4-Nitrophenol	1.9	0.25	3.330	0	56.0	45	94.3			
Pentachlorophenol	1.6	0.40	3.330	0	48.9	31.7	76.9			
Phenol	2.3	0.20	3.330	0	70.4	49.4	92.5			
Pyrene	0.92	0.20	1.670	0	54.9	52.9	82.7			
1,2,4-Trichlorobenzene	0.99	0.20	1.670	0	59.2	43.6	98.1			
Surr: 2-Fluorophenol	2.1		3.330		62.6	26.7	85.9			
Surr: Phenol-d5	2.3		3.330		67.7	18.5	101			
Surr: 2,4,6-Tribromophenol	1.9		3.330		57.6	35.8	85.6			
Surr: Nitrobenzene-d5	1.1		1.670		68.7	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.0		1.670		61.5	34.7	85.2			
Surr: 4-Terphenyl-d14	0.94		1.670		56.5	37.4	91.3			

Sample ID: **mb-48455**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48455**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194553** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48455**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48455**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194553** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.16	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48455** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48455** RunNo: **64136**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194553** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.3		3.330		69.5	26.7	85.9			
Surr: Phenol-d5	2.4		3.330		71.3	18.5	101			
Surr: 2,4,6-Tribromophenol	2.2		3.330		66.0	35.8	85.6			
Surr: Nitrobenzene-d5	1.2		1.670		74.7	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		69.1	34.7	85.2			
Surr: 4-Terphenyl-d14	1.5		1.670		90.2	37.4	91.3			

Sample ID: **lcs-48455** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **48455** RunNo: **64136**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194554** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.3	0.20	1.670	0	75.4	46	89.5			
4-Chloro-3-methylphenol	2.6	0.50	3.330	0	78.8	44.1	101			
2-Chlorophenol	2.5	0.20	3.330	0	74.9	47	91			
1,4-Dichlorobenzene	1.2	0.20	1.670	0	72.1	41.4	85.8			
2,4-Dinitrotoluene	1.1	0.50	1.670	0	65.5	37.4	82			
N-Nitrosodi-n-propylamine	1.4	0.20	1.670	0	86.6	47.8	92.9			
4-Nitrophenol	2.4	0.25	3.330	0	71.5	45	94.3			
Pentachlorophenol	2.0	0.40	3.330	0	60.3	31.7	76.9			
Phenol	2.9	0.20	3.330	0	87.0	49.4	92.5			
Pyrene	1.2	0.20	1.670	0	69.1	52.9	82.7			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	71.1	43.6	98.1			
Surr: 2-Fluorophenol	2.3		3.330		68.5	26.7	85.9			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **lcs-48455**	SampType: **LCS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS**	Batch ID: **48455**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194554** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Phenol-d5	2.5		3.330		74.8	18.5	101			
Surr: 2,4,6-Tribromophenol	2.4		3.330		70.7	35.8	85.6			
Surr: Nitrobenzene-d5	1.3		1.670		78.1	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		73.2	34.7	85.2			
Surr: 4-Terphenyl-d14	1.3		1.670		76.0	37.4	91.3			

Sample ID: **1910D16-014Ams**	SampType: **MS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **SWMU 13-3 (15.25-1**	Batch ID: **48455**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194577** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.94	0.20	1.661	0	56.6	28	113			
4-Chloro-3-methylphenol	2.1	0.50	3.311	0	63.0	28.8	121			
2-Chlorophenol	1.8	0.20	3.311	0	54.1	15.4	115			
1,4-Dichlorobenzene	0.53	0.20	1.661	0	32.2	15	107			
2,4-Dinitrotoluene	0.89	0.50	1.661	0	53.7	29.9	100			
N-Nitrosodi-n-propylamine	1.1	0.20	1.661	0	64.5	23.5	120			
4-Nitrophenol	1.9	0.25	3.311	0	57.2	42.3	125			
Pentachlorophenol	1.6	0.40	3.311	0	49.8	23.4	114			
Phenol	2.1	0.20	3.311	0	62.7	16.3	117			
Pyrene	0.89	0.20	1.661	0	53.4	34.2	122			
1,2,4-Trichlorobenzene	0.73	0.20	1.661	0	44.2	16.3	117			
Surr: 2-Fluorophenol	1.8		3.311		53.2	26.7	85.9			
Surr: Phenol-d5	1.9		3.311		56.6	18.5	101			
Surr: 2,4,6-Tribromophenol	1.9		3.311		58.8	35.8	85.6			
Surr: Nitrobenzene-d5	0.99		1.661		59.7	40.8	95.2			
Surr: 2-Fluorobiphenyl	0.85		1.661		51.4	34.7	85.2			
Surr: 4-Terphenyl-d14	1.2		1.661		70.3	37.4	91.3			

Sample ID: **1910D16-014Amsd**	SampType: **MSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **SWMU 13-3 (15.25-1**	Batch ID: **48455**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194578** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.2	0.20	1.640	0	71.0	28	113	21.3	33.1	
4-Chloro-3-methylphenol	2.4	0.49	3.270	0	73.5	28.8	121	14.1	39	
2-Chlorophenol	2.3	0.20	3.270	0	70.6	15.4	115	25.3	27.1	
1,4-Dichlorobenzene	0.76	0.20	1.640	0	46.4	15	107	34.9	26.3	R
2,4-Dinitrotoluene	1.1	0.49	1.640	0	64.1	29.9	100	16.4	51.5	
N-Nitrosodi-n-propylamine	1.3	0.20	1.640	0	80.3	23.5	120	20.6	22.8	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **1910D16-014Amsd** SampType: **MSD** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **SWMU 13-3 (15.25-1** Batch ID: **48455** RunNo: **64136**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194578** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Nitrophenol	2.3	0.25	3.270	0	70.1	42.3	125	19.0	52.9	
Pentachlorophenol	1.9	0.39	3.270	0	57.8	23.4	114	13.6	52.1	
Phenol	2.6	0.20	3.270	0	80.9	16.3	117	24.0	28.8	
Pyrene	1.1	0.20	1.640	0	66.3	34.2	122	20.4	37.1	
1,2,4-Trichlorobenzene	0.97	0.20	1.640	0	59.2	16.3	117	27.9	28.4	
Surr: 2-Fluorophenol	2.2		3.270		66.2	26.7	85.9	0	0	
Surr: Phenol-d5	2.4		3.270		73.3	18.5	101	0	0	
Surr: 2,4,6-Tribromophenol	2.2		3.270		65.9	35.8	85.6	0	0	
Surr: Nitrobenzene-d5	1.2		1.640		75.3	40.8	95.2	0	0	
Surr: 2-Fluorobiphenyl	1.1		1.640		68.2	34.7	85.2	0	0	
Surr: 4-Terphenyl-d14	1.3		1.640		76.7	37.4	91.3	0	0	

Sample ID: **MB-48455** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48455** RunNo: **64267**
Prep Date: **10/29/2019** Analysis Date: **11/6/2019** SeqNo: **2199506** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.030	0.20								J
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	0.015	0.20								J
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	0.14	0.50								J
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48455**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48455**	RunNo: **64267**
Prep Date: **10/29/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199506** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.18	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	0.11	0.20								J
Dimethyl phthalate	0.036	0.20								J
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	0.030	0.20								J
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	0.019	0.20								J
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48455**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48455**	RunNo: **64267**
Prep Date: **10/29/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199506** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	0.0082	0.20								J
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.6		3.330		76.8	26.7	85.9			
Surr: Phenol-d5	2.6		3.330		79.5	18.5	101			
Surr: 2,4,6-Tribromophenol	1.7		3.330		52.3	35.8	85.6			
Surr: Nitrobenzene-d5	1.2		1.670		71.3	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.0		1.670		59.7	34.7	85.2			
Surr: 4-Terphenyl-d14	1.4		1.670		85.6	37.4	91.3			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194544** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3´-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194544** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	130		200.0		66.6	15	101			
Surr: Phenol-d5	99		200.0		49.5	15	84.6			
Surr: 2,4,6-Tribromophenol	170		200.0		84.1	27.8	112			
Surr: Nitrobenzene-d5	93		100.0		92.9	33	113			
Surr: 2-Fluorobiphenyl	83		100.0		83.1	26.6	107			
Surr: 4-Terphenyl-d14	62		100.0		61.9	18.7	148			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **lcs-48439**	SampType: **LCS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW**	Batch ID: **48439**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194545** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	85	10	100.0	0	84.9	32.2	94			
4-Chloro-3-methylphenol	180	10	200.0	0	88.4	37.7	101			
2-Chlorophenol	170	10	200.0	0	83.6	32.6	90.1			
1,4-Dichlorobenzene	79	10	100.0	0	79.2	30	87.2			
2,4-Dinitrotoluene	72	10	100.0	0	72.2	35.9	85.8			
N-Nitrosodi-n-propylamine	97	10	100.0	0	97.0	37.1	108			
4-Nitrophenol	94	10	200.0	0	47.2	22.4	86.6			
Pentachlorophenol	140	20	200.0	0	70.0	31.6	91			
Phenol	110	10	200.0	0	57.2	21.7	84.9			
Pyrene	80	10	100.0	0	80.4	46.3	103			
1,2,4-Trichlorobenzene	78	10	100.0	0	78.0	30.2	88.3			
Surr: 2-Fluorophenol	130		200.0		66.0	15	101			
Surr: Phenol-d5	100		200.0		51.5	15	84.6			
Surr: 2,4,6-Tribromophenol	160		200.0		80.3	27.8	112			
Surr: Nitrobenzene-d5	91		100.0		91.3	33	113			
Surr: 2-Fluorobiphenyl	81		100.0		81.1	26.6	107			
Surr: 4-Terphenyl-d14	59		100.0		58.7	18.7	148			

Sample ID: **lcsd-48439**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02**	Batch ID: **48439**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194546** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	84	10	100.0	0	84.3	32.2	94	0.709	32.9	
4-Chloro-3-methylphenol	170	10	200.0	0	86.7	37.7	101	1.92	29.9	
2-Chlorophenol	160	10	200.0	0	80.9	32.6	90.1	3.33	28.5	
1,4-Dichlorobenzene	75	10	100.0	0	75.1	15	87.2	5.36	44.9	
2,4-Dinitrotoluene	77	10	100.0	0	77.1	35.9	85.8	6.51	28.5	
N-Nitrosodi-n-propylamine	92	10	100.0	0	92.3	37.1	108	4.97	29.9	
4-Nitrophenol	100	10	200.0	0	50.6	15	86.6	6.96	68	
Pentachlorophenol	140	20	200.0	0	68.3	31.6	91	2.40	39.5	
Phenol	110	10	200.0	0	53.0	15	84.9	7.69	44.2	
Pyrene	78	10	100.0	0	78.3	46.3	103	2.65	23.8	
1,2,4-Trichlorobenzene	75	10	100.0	0	75.4	15.7	88.3	3.31	38	
Surr: 2-Fluorophenol	120		200.0		61.9	15	101	0	0	
Surr: Phenol-d5	93		200.0		46.7	15	84.6	0	0	
Surr: 2,4,6-Tribromophenol	160		200.0		78.3	27.8	112	0	0	
Surr: Nitrobenzene-d5	92		100.0		92.3	33	113	0	0	
Surr: 2-Fluorobiphenyl	81		100.0		80.9	26.6	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **lcsd-48439**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02**	Batch ID: **48439**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194546** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	58		100.0		57.7	18.7	148	0	0	

Sample ID: **MB-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64213**
Prep Date: **10/29/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197264** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	0.85	10								J
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	4.1	10								J
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	3.1	10								J
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64213**
Prep Date: **10/29/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197264** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
3,3′-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64213**
Prep Date: **10/29/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197264** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	140		200.0		68.6	15	101			
Surr: Phenol-d5	100		200.0		50.1	15	84.6			
Surr: 2,4,6-Tribromophenol	160		200.0		80.4	27.8	112			
Surr: Nitrobenzene-d5	84		100.0		84.5	33	113			
Surr: 2-Fluorobiphenyl	73		100.0		73.4	26.6	107			
Surr: 4-Terphenyl-d14	64		100.0		64.4	18.7	148			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48512**	SampType: **MBLK**	TestCode: **EPA Method 7471: Mercury**
Client ID: **PBS**	Batch ID: **48512**	RunNo: **64163**
Prep Date: **10/31/2019**	Analysis Date: **11/1/2019**	SeqNo: **2195447** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0022	0.033								J

Sample ID: **LLLCS-48512**	SampType: **LCSLL**	TestCode: **EPA Method 7471: Mercury**
Client ID: **BatchQC**	Batch ID: **48512**	RunNo: **64163**
Prep Date: **10/31/2019**	Analysis Date: **11/1/2019**	SeqNo: **2195448** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0079	0.033	0.006660	0	118	70	130			J

Sample ID: **LCS-48512**	SampType: **LCS**	TestCode: **EPA Method 7471: Mercury**
Client ID: **LCSS**	Batch ID: **48512**	RunNo: **64163**
Prep Date: **10/31/2019**	Analysis Date: **11/1/2019**	SeqNo: **2195449** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.17	0.033	0.1667	0	103	80	120			

Sample ID: **1910D16-001AMS**	SampType: **MS**	TestCode: **EPA Method 7471: Mercury**
Client ID: **SWMU 13-1 (0-0.5')**	Batch ID: **48512**	RunNo: **64163**
Prep Date: **10/31/2019**	Analysis Date: **11/1/2019**	SeqNo: **2195452** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.19	0.033	0.1665	0.01838	104	80	120			

Sample ID: **1910D16-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 7471: Mercury**
Client ID: **SWMU 13-1 (0-0.5')**	Batch ID: **48512**	RunNo: **64163**
Prep Date: **10/31/2019**	Analysis Date: **11/1/2019**	SeqNo: **2195453** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.18	0.032	0.1606	0.01838	101	80	120	5.44	20	

Sample ID: **MB-48571**	SampType: **MBLK**	TestCode: **EPA Method 7471: Mercury**
Client ID: **PBS**	Batch ID: **48571**	RunNo: **64207**
Prep Date: **11/4/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197008** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**
25-Nov-19

Client: Marathon
Project: SWMU 13

Sample ID: **LCSLL-48571**	SampType: **LCSLL**	TestCode: **EPA Method 7471: Mercury**
Client ID: **BatchQC**	Batch ID: **48571**	RunNo: **64207**
Prep Date: **11/4/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197009** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.033	0.006660	0	75.6	70	130			J

Sample ID: **LCS-48571**	SampType: **LCS**	TestCode: **EPA Method 7471: Mercury**
Client ID: **LCSS**	Batch ID: **48571**	RunNo: **64207**
Prep Date: **11/4/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197010** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.17	0.033	0.1667	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48565**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **48565**	RunNo: **64240**
Prep Date: **11/4/2019**	Analysis Date: **11/5/2019**	SeqNo: **2198291** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00018	0.00020								J

Sample ID: **LCS-48565**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **48565**	RunNo: **64240**
Prep Date: **11/4/2019**	Analysis Date: **11/5/2019**	SeqNo: **2198292** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	98.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48420**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48420**	RunNo: **64060**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2191422** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Barium	ND	0.10								
Beryllium	0.012	0.15								J
Cadmium	0.037	0.10								J
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	2.2	2.5								J
Lead	ND	0.25								
Manganese	0.052	0.10								J
Nickel	ND	0.50								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.87	2.5								J

Sample ID: **LCS-48420**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48420**	RunNo: **64060**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2191424** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	27	2.5	25.00	0	106	80	120			
Barium	24	0.10	25.00	0	95.5	80	120			
Beryllium	25	0.15	25.00	0	99.3	80	120			
Cadmium	24	0.10	25.00	0	95.7	80	120			
Chromium	24	0.30	25.00	0	96.7	80	120			
Cobalt	24	0.30	25.00	0	97.0	80	120			
Iron	29	2.5	25.00	0	114	80	120			
Lead	24	0.25	25.00	0	97.8	80	120			
Manganese	25	0.10	25.00	0	99.3	80	120			
Nickel	24	0.50	25.00	0	95.7	80	120			
Silver	4.8	0.25	5.000	0	95.2	80	120			
Vanadium	25	2.5	25.00	0	101	80	120			
Zinc	24	2.5	25.00	0	97.5	80	120			

Sample ID: **MB-48420**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48420**	RunNo: **64060**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2191520** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48420**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48420**	RunNo: **64060**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2191522** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	24	2.5	25.00	0	96.4	80	120			

Sample ID: **MB-48420**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48420**	RunNo: **64206**
Prep Date: **10/28/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196943** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	2.5								

Sample ID: **LCS-48420**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48420**	RunNo: **64206**
Prep Date: **10/28/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196944** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	27	2.5	25.00	0	106	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64273**
Prep Date: **10/30/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199636** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	0.0012	0.050								J
Zinc	ND	0.020								

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64273**
Prep Date: **10/30/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199638** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.51	0.050	0.5000	0	102	80	120			
Arsenic	0.50	0.020	0.5000	0	99.8	80	120			
Barium	0.48	0.020	0.5000	0	96.6	80	120			
Beryllium	0.52	0.0030	0.5000	0	103	80	120			
Cadmium	0.51	0.0020	0.5000	0	101	80	120			
Chromium	0.50	0.0060	0.5000	0	99.3	80	120			
Cobalt	0.51	0.0060	0.5000	0	101	80	120			
Iron	0.51	0.020	0.5000	0	102	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			
Nickel	0.49	0.010	0.5000	0	98.1	80	120			
Silver	0.095	0.0050	0.1000	0	94.6	80	120			
Vanadium	0.51	0.050	0.5000	0	101	80	120			
Zinc	0.49	0.020	0.5000	0	98.7	80	120			

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64389**
Prep Date: **10/30/2019**	Analysis Date: **11/11/2019**	SeqNo: **2203942** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0043	0.0050								J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64389**
Prep Date: **10/30/2019**	Analysis Date: **11/11/2019**	SeqNo: **2203944** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.51	0.0050	0.5000	0	101	80	120			

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64501**
Prep Date: **10/30/2019**	Analysis Date: **11/13/2019**	SeqNo: **2208275** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64501**
Prep Date: **10/30/2019**	Analysis Date: **11/13/2019**	SeqNo: **2208277** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.51	0.0050	0.5000	0	103	80	120			

Sample ID: **1910D16-017DMS**	SampType: **MS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **EB102219**	Batch ID: **48486**	RunNo: **64501**
Prep Date: **10/30/2019**	Analysis Date: **11/13/2019**	SeqNo: **2208299** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0	102	75	125			
Barium	0.49	0.020	0.5000	0	98.5	75	125			
Beryllium	0.50	0.0030	0.5000	0	101	75	125			
Cadmium	0.50	0.0020	0.5000	0	99.6	75	125			
Chromium	0.50	0.0060	0.5000	0	99.1	75	125			
Iron	0.50	0.020	0.5000	0	100	75	125			
Lead	0.51	0.0050	0.5000	0	102	75	125			
Nickel	0.49	0.010	0.5000	0	97.8	75	125			
Selenium	0.46	0.050	0.5000	0	92.4	75	125			
Silver	0.11	0.0050	0.1000	0	107	75	125			
Vanadium	0.50	0.050	0.5000	0	101	75	125			
Zinc	0.47	0.020	0.5000	0	93.6	75	125			

Sample ID: **1910D16-017DMSD**	SampType: **MSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **EB102219**	Batch ID: **48486**	RunNo: **64501**
Prep Date: **10/30/2019**	Analysis Date: **11/13/2019**	SeqNo: **2208300** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	105	75	125	2.48	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D16**

25-Nov-19

Client: Marathon

Project: SWMU 13

Sample ID: **1910D16-017DMSD**	SampType: **MSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **EB102219**	Batch ID: **48486**	RunNo: **64501**
Prep Date: **10/30/2019**	Analysis Date: **11/13/2019**	SeqNo: **2208300** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.020	0.5000	0	99.6	75	125	1.12	20	
Beryllium	0.51	0.0030	0.5000	0	101	75	125	0.575	20	
Cadmium	0.50	0.0020	0.5000	0	101	75	125	1.27	20	
Chromium	0.50	0.0060	0.5000	0	99.4	75	125	0.333	20	
Iron	0.51	0.020	0.5000	0	101	75	125	1.25	20	
Lead	0.51	0.0050	0.5000	0	101	75	125	0.358	20	
Nickel	0.49	0.010	0.5000	0	98.3	75	125	0.463	20	
Selenium	0.49	0.050	0.5000	0	98.7	75	125	6.58	20	
Silver	0.11	0.0050	0.1000	0	108	75	125	0.716	20	
Vanadium	0.50	0.050	0.5000	0	101	75	125	0.195	20	
Zinc	0.48	0.020	0.5000	0	95.1	75	125	1.54	20	

Sample ID: **1910D16-017DMS**	SampType: **MS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **EB102219**	Batch ID: **48486**	RunNo: **64540**
Prep Date: **10/30/2019**	Analysis Date: **11/14/2019**	SeqNo: **2209887** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.49	0.0060	0.5000	0	97.2	75	125			
Manganese	0.49	0.0020	0.5000	0	97.7	75	125			

Sample ID: **1910D16-017DMSD**	SampType: **MSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **EB102219**	Batch ID: **48486**	RunNo: **64540**
Prep Date: **10/30/2019**	Analysis Date: **11/14/2019**	SeqNo: **2209888** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.49	0.0060	0.5000	0	99.0	75	125	1.79	20	
Manganese	0.49	0.0020	0.5000	0	98.0	75	125	0.285	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

ANALYTICAL REPORT

November 06, 2019

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1154882

Samples Received: 10/29/2019

Project Number:

Description:

Report To:

4901 Hawkins NE

Albuquerque, NM 87109

Entire Report Reviewed By:

Jason Romer

Project Manager

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ONE LAB. NATIONWIDE.

1910D16-001B SWMU 13-1 (0-0.5) L1154882-01 Solid

Collected by | Collected date/time 10/22/19 10:45 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:26	JER	Mt. Juliet, TN

1910D16-002B SWMU 13-1 (1.5-2) L1154882-02 Solid

Collected by | Collected date/time 10/22/19 10:55 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:29	JER	Mt. Juliet, TN

1910D16-003B SWMU13-1 (5-6) L1154882-03 Solid

Collected by | Collected date/time 10/22/19 11:00 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:30	JER	Mt. Juliet, TN

1910D16-004B SWMU 13-1 (8-10) L1154882-04 Solid

Collected by | Collected date/time 10/22/19 11:05 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:31	JER	Mt. Juliet, TN

1910D16-005B SWMU 13-1 (14-16) L1154882-05 Solid

Collected by | Collected date/time 10/22/19 11:15 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:32	JER	Mt. Juliet, TN

1910D16-006B SWMU 13-2 (0-0.5) L1154882-06 Solid

Collected by | Collected date/time 10/22/19 13:35 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:34	JER	Mt. Juliet, TN

1910D16-007B SWMU 13-2 (1.5-2) L1154882-07 Solid

Collected by | Collected date/time 10/22/19 13:45 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:40	JER	Mt. Juliet, TN

1910D16-008B SWMU13-2 (8-10) L1154882-08 Solid

Collected by | Collected date/time 10/22/19 13:50 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:41	JER	Mt. Juliet, TN

1910D16-009B SWMU 13-2 (14-16) L1154882-09 Solid

Collected by | Collected date/time 10/22/19 13:55 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:42	JER	Mt. Juliet, TN

1910D16-010B SWMU 13-3 (1.5-2) L1154882-10 Solid

Collected by | Collected date/time 10/22/19 15:25 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:43	JER	Mt. Juliet, TN

1910D16-011B SWMU 13-3 (1.5-2) L1154882-11 Solid

Collected by | Collected date/time 10/22/19 15:35 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:44	JER	Mt. Juliet, TN

1910D16-012B SMWU 13-3 (8-10) L1154882-12 Solid

Collected by | Collected date/time 10/22/19 16:50 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:45	JER	Mt. Juliet, TN

1910D16-013B SWMU 13-3 (14-15.25) L1154882-13 Solid

Collected by | Collected date/time 10/22/19 16:55 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:46	JER	Mt. Juliet, TN

1910D16-014B SWMU 13-3 (15.25-16) L1154882-14 Solid

Collected by | Collected date/time 10/22/19 17:05 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375050	1	11/05/19 09:25	11/05/19 15:47	JER	Mt. Juliet, TN

1910D16-015B DUP01 L1154882-15 Solid

Collected by | Collected date/time 10/22/19 00:00 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1374859	1	11/05/19 09:00	11/05/19 13:13	JER	Mt. Juliet, TN

1910D16-017E EB102219 L1154882-16 GW

Collected by | Collected date/time 10/22/19 14:15 | Received date/time 10/29/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2011	WG1373010	1	10/31/19 20:09	11/01/19 14:09	JER	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jason Romer
Project Manager

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND	J6	0.250	1	11/05/2019 15:26	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:29	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:30	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:31	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:32	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:34	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:40	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:41	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:42	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	0.521		0.250	1	11/05/2019 15:43	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:44	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:45	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:46	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	11/05/2019 15:47	WG1375050

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	0.587		0.250	1	11/05/2019 13:13	WG1374859

Wet Chemistry by Method 4500CN E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	11/01/2019 14:09	WG1373010

Method Blank (MB)

(MB) R3467499-1 11/01/19 13:41

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

L1153885-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1153885-03 11/01/19 13:54 • (DUP) R3467499-5 11/01/19 13:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

L1154821-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1154821-02 11/01/19 14:05 • (DUP) R3467499-8 11/01/19 14:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.00208	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3467499-2 11/01/19 13:42

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.100	100	85.0-115	

L1153711-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1153711-02 11/01/19 13:48 • (MS) R3467499-3 11/01/19 13:49 • (MSD) R3467499-4 11/01/19 13:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	0.0132	0.0906	0.0867	77.4	73.5	1	75.0-125		J6	4.40	20

L1153928-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1153928-03 11/01/19 13:57 • (MS) R3467499-6 11/01/19 13:58 • (MSD) R3467499-7 11/01/19 13:59

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	0.0140	0.0868	0.0908	72.8	76.8	1	75.0-125	J6		4.50	20

Method Blank (MB)

(MB) R3468562-1 11/05/19 13:08

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0390	0.250

L1154882-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1154882-15 11/05/19 13:13 • (DUP) R3468562-3 11/05/19 13:14

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	0.587	0.531	1	9.93		20

L1155312-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1155312-10 11/05/19 13:39 • (DUP) R3468562-8 11/05/19 13:40

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3468562-2 11/05/19 13:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.57	103	50.0-150	

L1155184-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155184-04 11/05/19 13:22 • (MS) R3468562-4 11/05/19 13:23 • (MSD) R3468562-5 11/05/19 13:24

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.08	1.28	60.3	71.9	1	75.0-125	J6	J6	16.5	20

L1155312-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155312-02 11/05/19 13:27 • (MS) R3468562-6 11/05/19 13:28 • (MSD) R3468562-7 11/05/19 13:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.48	1.49	85.4	86.0	1	75.0-125			0.682	20

Method Blank (MB)

(MB) R3468639-1 11/05/19 15:13

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0390	0.250

L1152519-21 Original Sample (OS) • Duplicate (DUP)

(OS) L1152519-21 11/05/19 15:17 • (DUP) R3468639-3 11/05/19 15:18

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.0942	1	31.3	J P1	20

L1154882-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1154882-05 11/05/19 15:32 • (DUP) R3468639-6 11/05/19 15:33

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3468639-2 11/05/19 15:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.55	102	50.0-150	

L1154882-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1154882-01 11/05/19 15:26 • (MS) R3468639-4 11/05/19 15:27 • (MSD) R3468639-5 11/05/19 15:28

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.35	1.47	71.8	78.9	1	75.0-125	J6		8.46	20

L1154882-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1154882-06 11/05/19 15:34 • (MS) R3468639-7 11/05/19 15:38 • (MSD) R3468639-8 11/05/19 15:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.49	1.42	89.4	85.1	1	75.0-125			4.90	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

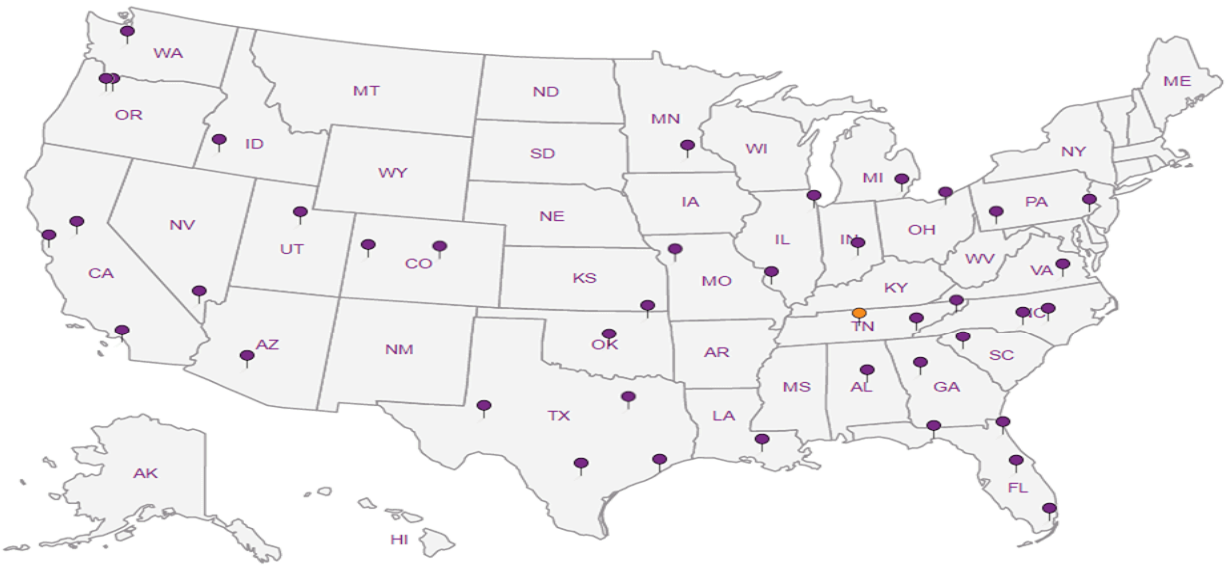
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 2

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

L1154882

SUB CONTRATOR: ESC PACE	COMPANY: ESC PACE	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

M058

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	1910D16-001B	SWMU 13-1 (0-0.5')	4OZGU	MeOH (Soil)	10/22/2019 10:45:00 AM	1	Lv.4 Total Cyanide	-01
2	1910D16-002B	SWMU13-1 (1.5-2')	4OZGU	Soil	10/22/2019 10:55:00 AM	1	Lv.4 Total Cyanide	-02
3	1910D16-003B	SWMU13-1 (5-6')	4OZGU	Soil	10/22/2019 11:00:00 AM	1	Lv.4 Total Cyanide	-03
4	1910D16-004B	SWMU 13-1 (8-10')	4OZGU	MeOH (Soil)	10/22/2019 11:05:00 AM	1	Lv.4 Total Cyanide	-04
5	1910D16-005B	SWMU 13-1 (14-16')	4OZGU	MeOH (Soil)	10/22/2019 11:15:00 AM	1	Lv.4 Total Cyanide	-05
6	1910D16-006B	SWMU 13-2 (0-0.5')	4OZGU	Soil	10/22/2019 1:35:00 PM	1	Lv.4 Total Cyanide	-06
7	1910D16-007B	SWMU 13-2 (1.5-2')	4OZGU	MeOH (Soil)	10/22/2019 1:45:00 PM	1	Lv.4 Total Cyanide	-07
8	1910D16-008B	SWMU 13-2 (8-10')	4OZGU	MeOH (Soil)	10/22/2019 1:50:00 PM	1	Lv.4 Total Cyanide	-08
9	1910D16-009B	SWMU 13-2 (14-15')	4OZGU	MeOH (Soil)	10/22/2019 1:55:00 PM	1	Lv.4 Total Cyanide	-09
10	1910D16-010B	SWMU 13-3 (0-0.5')	4OZGU	MeOH (Soil)	10/22/2019 3:25:00 PM	1	Lv.4 Total Cyanide	-10
11	1910D16-011B	SWMU 13-3 (1.5-2')	4OZGU	MeOH (Soil)	10/22/2019 3:35:00 PM	1	Lv.4 Total Cyanide	-11
12	1910D16-012B	SMWU 13-3 (8-10')	4OZGU	MeOH (Soil)	10/22/2019 4:50:00 PM	1	Lv.4 Total Cyanide	-12
13	1910D16-013B	SWMU 13-3 (14-15.25')	4OZGU	MeOH (Soil)	10/22/2019 4:55:00 PM	1	Lv.4 Total Cyanide	-13

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[signature]	10/24/2019	10:54 AM			
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: [signature]	10-29-19	8:45

TAT: Standard ☐ (circled) RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples 3.1-.1=3.0 °C Attempt to Cool ? ____

Comments: ____

RAD SCREEN: <0.5 mR/hr

COCS I
16 Total

4510 1269 1561 No TB

ok

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 2 OF: 2

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

L1154882

SUB CONTRACTOR: ESC PACE	COMPANY: ESC PACE	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
14	1910D16-014B	SWMU 13-3 (15.25-16')	4OZGU	MeOH (Soil)	10/22/2019 5:05:00 PM	1	Lv.4 Total Cyanide	-14
15	1910D16-015B	DUP01	4OZGU	MeOH (Soil)	10/22/2019	1	Lv.4 Total Cyanide	-15
16	1910D16-017E	EB102219	500AMBHDP E-NAOH	Aqueous	10/22/2019 2:15:00 PM	1	Lv. 4 Total CN	-16

SPECIAL INSTRUCTIONS / COMMENTS:
Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 10/24/2019	Time: 10:54 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 3.1 - 1 = 3.0 °C Attempt to Cool ? _____
Comments: _____

RAD SCREEN: <0.5 mR/hr Cocs I

04

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client:	L1154842	
Cooler Received/Opened On: 10-29-19 Temperature:	3.0	
Received By: MPappas		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

CL

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **MARATHON GALLUP** Work Order Number: **1910D16** RcptNo: 1

Received By: Juan Rojas 10/24/2019 9:15:00 AM

Completed By: Leah Baca 10/24/2019 10:30:35 AM

Reviewed By: ENM 10/25/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? NO
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: DAD 10/25/19

Special Handling (if applicable)

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

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.2	Good	Yes			
2	0.1	Good	Yes			
3	0.2	Good	Yes			
4	0.0	Good	Yes			

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmcore1@marathonpetroleum.com

QA/QC Package:
☐ Standard X Level 4 (Full Validation)
☐ Other _____
X EDD (Type) EXCEL

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: See Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1910D16	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide	Air Bubbles (Y or N)
10/22/19	1045	Soil	SWMU 13-1 (0-0.5')	8 oz Jar - 2	Neat	-001			X							X	X	X	
				Vial - 2	MeOH											X			
				4ozJAR-1	NEAT														
	1055		SWMU 13-1 (1.5-2')	8ozJAR-2	NEAT	-002			X							X	X	X	
				VIAL-2	MeOH											X			
				4ozJAR-1	NEAT													X	
	1100		SWMU 13-1 (5-6')	8ozJAR-2	NEAT	-003			X							X	X	X	
				4ozJAR-1	NEAT													X	

Date	Time	Relinquished by:	Received by:	Date	Time
10/23/19	0700		carrier	10/24/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.4 - 0.2 = 1.2
0.3 - 0.2 = 0.1
0.4 - 0.2 = 0.2
0.2 - 0.2 = 0.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
☐ Other _____
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: See Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910016	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide				Air Bubbles (Y or N)
10/22/19	1105	Soil	SWMU 13-1 (8-10')	8 oz Jar - 2	Neat	-004			X							X	X	X				
				Vial - 2	MeOH											X						
	↓		↓	4oz JAR-1	NEAT	↓												X				
	1115		SWMU 13-1 (14-16')	8oz JAR-2	NEAT	-005			X							X	X	X				
	↓		↓	VIAL-2	MEOH	↓										X						
	↓		↓	4oz JAR-1	NEAT	↓												X				
	1335		SWMU 13-2 (0-0.5')	8oz JAR-2	NEAT	-006			X							X	X	X				
	↓		↓	VIAL-2	MEOH	↓										X						
↓	↓	↓	↓	4oz JAR-1	NEAT	↓												X				

Date	Time	Relinquished by	Received by	Date	Time
10/23/19	0700	[signature]	[signature] courier	10/24/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.4 - 0.2 = 1.2
0.3 - 0.2 = 0.1
0.4 - 0.2 = 0.2
0.2 - 0.2 = 0.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:
☐ Standard X Level 4 (Full Validation)
☐ Other
X EDD (Type) EXCEL

Turn-Around Time:
X Standard ☐ Rush

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: See Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910D16	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide				Air Bubbles (Y or N)
10/22/19	1345	Soil	SWMU 13-2(1.5-2')	8 oz Jar - 2	Neat	-007			X							X	X	X				
				Vial - 2	MeOH											X						
				4 oz JAR-1	NEAT													X				
	1350	SOIL	SWMU 13-2(8-10')	8 oz JAR-2	NEAT	-008			X							X	X	X				
				VIAL-2	MEOH											X						
				4 oz JAR-1	NEAT													X				
	1355	SOIL	SWMU 13-2(14-16')	8 oz JAR-2	NEAT	-009			X							X	X	X				
				VIAL-2	MEOH											X						
				4 oz JAR-1	NEAT													X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/23/19	0700		carrier	10/24/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

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0.4 - 0.2 = 0.2
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Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:
☐ Standard X Level 4 (Full Validation)
☐ Other _____
X EDD (Type) **EXCEL**

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ~~☐~~ Yes ☐ No

Sample Temperature: See Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910016	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide				Air Bubbles (Y or N)
10/22/19	1525	Soil	SWMU 13-3(0-0.5')	8 oz Jar - 2	Neat	-010			X							X	X	X				
				Vial - 2	MeOH											X						
				4oz JAR-1	NEAT													X				
	1535		SWMU 13-3(1.5-2')	8oz JAR-2	NEAT	-011			X							X	X	X				
				VIAL-2	MeOH											X						
				4oz JAR-1	NEAT													X				
	1650		SWMU 13-3(8-10')	8oz JAR-2	NEAT	-012			X							X	X	X				
				VIAL-2	MeOH											X						
				4oz JAR-1	NEAT													X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/23/19	0700		[signature] COURIER	10/24/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.
1.4 - 0.2 = 1.2
0.3 - 0.2 = 0.1
0.4 - 0.2 = 0.2
0.2 - 0.2 = 0.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:
☐ Standard X Level 4 (Full Validation)
☐ Other _____
X EDD (Type) **EXCEL**

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: See Remarks

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4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910D16	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide	Air Bubbles (Y or N)
10/22/19	1655	Soil	SWMU 13-3(14-15.25')	8 oz Jar - 2	Neat	-013			X							X	X	X	
	↓		↓	Vial - 2	MeOH	1										X			
	1705		SWMU 13-3(1525-16')	8oz JAR-1	NEAT	-014			X							X	X	X	
	↓		↓	VIAL-2	MEOH	1										X			
	—		DUP01	8oz JAR-2	NEAT	-015			X							X	X	X	
	↓		↓	VIAL-2	MEOH	1										X			
	↓	↓	↓	4oz JAR-1	NEAT	—												X	
↓	—	MEOH	MEOH BLANK	VIAL-2	MEOH	-016										X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/23/19	0700		carrier	10/24/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.4 - 0.2 = 1.2
0.3 - 0.2 = 0.1
0.4 - 0.2 = 0.2
0.2 - 0.2 = 0.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ~~☐~~ Yes ☐ No

Sample Temperature: See Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910D16	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIM)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals - Total	Cyanide			Air Bubbles (Y or N)
10/22/19	1415	Water	EB102219	40ml voa - 5	HCl	-01			X							X						
				250 ml amber - 1	Neat				X													
				1 liter amber - 1	Neat												X					
				250 ml plastic - 1	HNO_3													X				
				500 ml plastic - 1	NaOH														X			

Date: 10/23/19 Time: 0700 Relinquished by: _____

Received by: _____ Date: 10/24/19 Time: 09:15

Date: _____ Time: _____ Relinquished by: _____

Received by: _____ Date: _____ Time: _____

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.4 - 0.3 = 1.2
0.3 - 0.2 = 0.1
0.4 - 0.2 = 0.2
0.2 - 0.2 = 0.0

SWMU 13 - Soil and Equipment Blank Analytical Requirements

- SW 846 Method 8260 for volatile organic compounds;
- SW-846 Method 8270 for semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline range (C5-C10), diesel range (>C10-C28), and motor oil range (>C28-C36) organics.
- Inorganics (Skinner List Metals + Iron + Manganese)

Inorganic Analytical Methods

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2019

Brian Moore

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: SWMU 13 OrderNo.: 1910D68

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 18 sample(s) on 10/25/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 10:50:00 AM
Lab ID: 1910D68-001
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	1200	19	93		mg/Kg	10	10/30/2019 4:14:28 PM	48409
Motor Oil Range Organics (MRO)	1300	460	460		mg/Kg	10	10/30/2019 4:14:28 PM	48409
Surr: DNOP	0	0	70-130	S	%Rec	10	10/30/2019 4:14:28 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.1	3.6		mg/Kg	1	10/27/2019 3:59:28 PM	G63989
Surr: BFB	90.5	0	77.4-118		%Rec	1	10/27/2019 3:59:28 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	1.7	0.018	0.33		mg/Kg	10	11/1/2019 2:47:40 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.72	4.9		mg/Kg	2	11/20/2019 4:12:38 PM	48433
Arsenic	ND	2.8	4.9		mg/Kg	2	11/7/2019 2:32:41 PM	48433
Barium	300	0.046	0.20		mg/Kg	2	11/20/2019 4:12:38 PM	48433
Beryllium	1.6	0.018	0.30		mg/Kg	2	11/7/2019 2:32:41 PM	48433
Cadmium	ND	0.048	0.20		mg/Kg	2	11/7/2019 2:32:41 PM	48433
Chromium	110	0.16	0.59		mg/Kg	2	11/20/2019 4:12:38 PM	48433
Cobalt	7.9	0.21	0.59		mg/Kg	2	11/7/2019 2:32:41 PM	48433
Iron	26000	140	490		mg/Kg	200	11/20/2019 4:25:12 PM	48433
Lead	5.2	0.48	0.49		mg/Kg	2	11/20/2019 4:12:38 PM	48433
Manganese	440	0.041	0.20		mg/Kg	2	11/20/2019 4:12:38 PM	48433
Nickel	17	0.29	0.98		mg/Kg	2	11/7/2019 2:32:41 PM	48433
Selenium	4.0	2.5	4.9	J	mg/Kg	2	11/7/2019 2:32:41 PM	48433
Silver	ND	0.063	0.49		mg/Kg	2	11/20/2019 4:12:38 PM	48433
Vanadium	36	0.13	4.9		mg/Kg	2	11/7/2019 2:32:41 PM	48433
Zinc	120	0.78	4.9		mg/Kg	2	11/20/2019 4:12:38 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Acenaphthylene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Aniline	ND	1.3	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Anthracene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Azobenzene	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Benz(a)anthracene	ND	0.95	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Benzo(a)pyrene	ND	0.88	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Benzo(b)fluoranthene	ND	0.87	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Benzo(g,h,i)perylene	ND	0.85	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Benzo(k)fluoranthene	ND	0.90	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Benzoic acid	ND	1.0	4.9	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Benzyl alcohol	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 10:50:00 AM
Lab ID: 1910D68-001
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	1.5	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Bis(2-chloroethyl)ether	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Bis(2-chloroisopropyl)ether	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Bis(2-ethylhexyl)phthalate	ND	1.4	4.9	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
4-Bromophenyl phenyl ether	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Butyl benzyl phthalate	ND	1.0	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Carbazole	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
4-Chloro-3-methylphenol	ND	1.5	4.9	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
4-Chloroaniline	ND	1.4	4.9	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2-Chloronaphthalene	ND	1.2	2.5	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2-Chlorophenol	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
4-Chlorophenyl phenyl ether	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Chrysene	ND	0.87	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Di-n-butyl phthalate	ND	1.5	4.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Di-n-octyl phthalate	ND	1.0	4.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Dibenz(a,h)anthracene	ND	0.90	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Dibenzofuran	ND	1.3	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
1,2-Dichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
1,3-Dichlorobenzene	ND	1.0	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
1,4-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
3,3´-Dichlorobenzidine	ND	0.88	2.5	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Diethyl phthalate	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Dimethyl phthalate	ND	1.3	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2,4-Dichlorophenol	ND	1.1	4.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2,4-Dimethylphenol	ND	1.1	3.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
4,6-Dinitro-2-methylphenol	ND	0.91	4.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2,4-Dinitrophenol	ND	0.72	4.9	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2,6-Dinitrotoluene	ND	1.3	4.9	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Fluoranthene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Fluorene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Hexachlorobenzene	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Hexachlorobutadiene	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Hexachloroethane	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Indeno(1,2,3-cd)pyrene	ND	0.98	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Isophorone	ND	1.5	4.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
1-Methylnaphthalene	ND	1.5	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2-Methylnaphthalene	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 10:50:00 AM
Lab ID: 1910D68-001
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	1.2	4.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
3+4-Methylphenol	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
N-Nitrosodi-n-propylamine	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Naphthalene	ND	1.5	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
3-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Nitrobenzene	ND	1.4	4.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2-Nitrophenol	ND	1.3	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
4-Nitrophenol	ND	1.3	2.5	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Pentachlorophenol	ND	1.0	4.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Phenanthrene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Phenol	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Pyrene	ND	0.93	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Pyridine	ND	1.2	4.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
1,2,4-Trichlorobenzene	ND	1.5	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2,4,5-Trichlorophenol	ND	1.3	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
2,4,6-Trichlorophenol	ND	1.0	2.0	D	mg/Kg	1	10/31/2019 7:13:40 PM	48455
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	1	10/31/2019 7:13:40 PM	48455
Surr: Phenol-d5	0		18.5-101	SD	%Rec	1	10/31/2019 7:13:40 PM	48455
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	1	10/31/2019 7:13:40 PM	48455
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	1	10/31/2019 7:13:40 PM	48455
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	1	10/31/2019 7:13:40 PM	48455
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	1	10/31/2019 7:13:40 PM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0030	0.018		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Toluene	ND	0.0035	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Ethylbenzene	ND	0.0021	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0086	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0033	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0035	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0037	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0033	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Naphthalene	ND	0.0072	0.072		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1-Methylnaphthalene	ND	0.021	0.14		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
2-Methylnaphthalene	ND	0.016	0.14		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Acetone	ND	0.030	0.54		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Bromobenzene	ND	0.0035	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 10:50:00 AM
Lab ID: 1910D68-001
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0033	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Bromoform	ND	0.0033	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Bromomethane	ND	0.0087	0.11		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
2-Butanone	0.050	0.042	0.36	J	mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Carbon disulfide	ND	0.012	0.36		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Carbon tetrachloride	ND	0.0034	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Chlorobenzene	ND	0.0046	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Chloroethane	ND	0.0053	0.072		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Chloroform	ND	0.0029	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Chloromethane	ND	0.0035	0.11		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
2-Chlorotoluene	ND	0.0031	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
4-Chlorotoluene	ND	0.0030	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
cis-1,2-DCE	ND	0.0049	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
cis-1,3-Dichloropropene	ND	0.0031	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0037	0.072		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Dibromochloromethane	ND	0.0026	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Dibromomethane	ND	0.0039	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,2-Dichlorobenzene	ND	0.0030	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,3-Dichlorobenzene	ND	0.0031	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,4-Dichlorobenzene	ND	0.0030	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Dichlorodifluoromethane	ND	0.0084	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,1-Dichloroethane	ND	0.0023	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,1-Dichloroethene	ND	0.014	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,2-Dichloropropane	ND	0.0026	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,3-Dichloropropane	ND	0.0039	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
2,2-Dichloropropane	ND	0.012	0.072		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,1-Dichloropropene	ND	0.0033	0.072		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Hexachlorobutadiene	ND	0.0037	0.072		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
2-Hexanone	ND	0.0060	0.36		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Isopropylbenzene	ND	0.0026	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
4-Isopropyltoluene	ND	0.0030	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
4-Methyl-2-pentanone	ND	0.0068	0.36		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Methylene chloride	ND	0.0064	0.11		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
n-Butylbenzene	ND	0.0034	0.11		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
n-Propylbenzene	ND	0.0029	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
sec-Butylbenzene	ND	0.0041	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Styrene	ND	0.0028	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
tert-Butylbenzene	ND	0.0034	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0024	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 10:50:00 AM
Lab ID: 1910D68-001
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0037	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Tetrachloroethene (PCE)	ND	0.0029	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
trans-1,2-DCE	ND	0.0033	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
trans-1,3-Dichloropropene	ND	0.0038	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0032	0.072		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0037	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,1,1-Trichloroethane	ND	0.0033	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,1,2-Trichloroethane	ND	0.0026	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Trichloroethene (TCE)	ND	0.0042	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Trichlorofluoromethane	ND	0.012	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
1,2,3-Trichloropropane	ND	0.0059	0.072		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Vinyl chloride	ND	0.0024	0.036		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Xylenes, Total	ND	0.0091	0.072		mg/Kg	1	10/28/2019 2:47:24 PM	S64028
Surr: Dibromofluoromethane	107		70-130		%Rec	1	10/28/2019 2:47:24 PM	S64028
Surr: 1,2-Dichloroethane-d4	95.8		70-130		%Rec	1	10/28/2019 2:47:24 PM	S64028
Surr: Toluene-d8	105		70-130		%Rec	1	10/28/2019 2:47:24 PM	S64028
Surr: 4-Bromofluorobenzene	94.2		70-130		%Rec	1	10/28/2019 2:47:24 PM	S64028

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 11:05:00 AM
Lab ID: 1910D68-002
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	16	1.9	9.6		mg/Kg	1	10/30/2019 4:32:32 PM	48409
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/30/2019 4:32:32 PM	48409
Surr: DNOP	126	0	70-130		%Rec	1	10/30/2019 4:32:32 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.0	3.4		mg/Kg	1	10/27/2019 4:22:16 PM	G63989
Surr: BFB	90.4	0	77.4-118		%Rec	1	10/27/2019 4:22:16 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.031	0.0018	0.032	J	mg/Kg	1	11/1/2019 1:04:12 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.73	5.0		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Arsenic	ND	2.8	5.0		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Barium	270	0.046	0.20		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Beryllium	1.3	0.018	0.30		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Cadmium	ND	0.048	0.20		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Chromium	14	0.16	0.60		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Cobalt	5.5	0.21	0.60		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Iron	18000	72	250		mg/Kg	100	11/18/2019 6:42:31 PM	48433
Lead	3.4	0.48	0.50		mg/Kg	2	11/18/2019 6:40:57 PM	48433
Manganese	380	0.041	0.20		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Nickel	12	0.30	0.99		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Selenium	ND	2.5	5.0		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Vanadium	21	0.13	5.0		mg/Kg	2	11/7/2019 2:37:39 PM	48433
Zinc	20	0.79	5.0		mg/Kg	2	11/7/2019 2:37:39 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Acenaphthylene	ND	0.11	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Aniline	ND	0.13	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Anthracene	ND	0.11	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Azobenzene	ND	0.14	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Benz(a)anthracene	ND	0.099	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Benzo(a)pyrene	ND	0.091	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Benzo(b)fluoranthene	ND	0.091	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Benzo(g,h,i)perylene	ND	0.088	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Benzo(k)fluoranthene	ND	0.093	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Benzoic acid	ND	0.11	0.51		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Benzyl alcohol	ND	0.13	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455

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Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 11:05:00 AM
Lab ID: 1910D68-002
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Bis(2-chloroethyl)ether	ND	0.13	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Bis(2-chloroisopropyl)ether	ND	0.12	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Bis(2-ethylhexyl)phthalate	ND	0.15	0.51		mg/Kg	1	10/31/2019 7:42:21 PM	48455
4-Bromophenyl phenyl ether	ND	0.12	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Butyl benzyl phthalate	ND	0.10	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Carbazole	ND	0.12	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
4-Chloro-3-methylphenol	ND	0.16	0.51		mg/Kg	1	10/31/2019 7:42:21 PM	48455
4-Chloroaniline	ND	0.15	0.51		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2-Chloronaphthalene	ND	0.13	0.26		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2-Chlorophenol	ND	0.13	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
4-Chlorophenyl phenyl ether	ND	0.11	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Chrysene	ND	0.091	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Di-n-butyl phthalate	0.26	0.15	0.41	J	mg/Kg	1	10/31/2019 7:42:21 PM	48455
Di-n-octyl phthalate	ND	0.10	0.41		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Dibenz(a,h)anthracene	ND	0.093	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Dibenzofuran	ND	0.13	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
1,2-Dichlorobenzene	ND	0.12	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
1,3-Dichlorobenzene	ND	0.11	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
1,4-Dichlorobenzene	ND	0.11	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
3,3´-Dichlorobenzidine	ND	0.091	0.26		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Diethyl phthalate	ND	0.15	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Dimethyl phthalate	ND	0.14	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2,4-Dichlorophenol	ND	0.12	0.41		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2,4-Dimethylphenol	ND	0.11	0.31		mg/Kg	1	10/31/2019 7:42:21 PM	48455
4,6-Dinitro-2-methylphenol	ND	0.095	0.41		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2,4-Dinitrophenol	ND	0.075	0.51		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2,4-Dinitrotoluene	ND	0.12	0.51		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2,6-Dinitrotoluene	ND	0.14	0.51		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Fluoranthene	ND	0.12	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Fluorene	ND	0.12	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Hexachlorobenzene	ND	0.13	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Hexachlorobutadiene	ND	0.14	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Hexachlorocyclopentadiene	ND	0.12	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Hexachloroethane	ND	0.11	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Indeno(1,2,3-cd)pyrene	ND	0.10	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Isophorone	ND	0.15	0.41		mg/Kg	1	10/31/2019 7:42:21 PM	48455
1-Methylnaphthalene	ND	0.15	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2-Methylnaphthalene	ND	0.15	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 11:05:00 AM
Lab ID: 1910D68-002
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.41		mg/Kg	1	10/31/2019 7:42:21 PM	48455
3+4-Methylphenol	ND	0.13	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
N-Nitrosodi-n-propylamine	ND	0.15	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
N-Nitrosodiphenylamine	ND	0.11	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Naphthalene	ND	0.16	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2-Nitroaniline	ND	0.15	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
3-Nitroaniline	ND	0.14	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
4-Nitroaniline	ND	0.13	0.41		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Nitrobenzene	ND	0.14	0.41		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2-Nitrophenol	ND	0.14	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
4-Nitrophenol	ND	0.14	0.26		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Pentachlorophenol	ND	0.11	0.41		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Phenanthrene	ND	0.11	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Phenol	ND	0.13	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Pyrene	ND	0.096	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Pyridine	ND	0.12	0.41		mg/Kg	1	10/31/2019 7:42:21 PM	48455
1,2,4-Trichlorobenzene	ND	0.16	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2,4,5-Trichlorophenol	ND	0.13	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
2,4,6-Trichlorophenol	ND	0.11	0.21		mg/Kg	1	10/31/2019 7:42:21 PM	48455
Surr: 2-Fluorophenol	66.6		26.7-85.9		%Rec	1	10/31/2019 7:42:21 PM	48455
Surr: Phenol-d5	71.9		18.5-101		%Rec	1	10/31/2019 7:42:21 PM	48455
Surr: 2,4,6-Tribromophenol	66.2		35.8-85.6		%Rec	1	10/31/2019 7:42:21 PM	48455
Surr: Nitrobenzene-d5	78.8		40.8-95.2		%Rec	1	10/31/2019 7:42:21 PM	48455
Surr: 2-Fluorobiphenyl	70.2		34.7-85.2		%Rec	1	10/31/2019 7:42:21 PM	48455
Surr: 4-Terphenyl-d14	79.3		37.4-91.3		%Rec	1	10/31/2019 7:42:21 PM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0028	0.017		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Toluene	ND	0.0033	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Ethylbenzene	ND	0.0020	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0081	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0031	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0033	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0035	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0031	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Naphthalene	ND	0.0069	0.068		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1-Methylnaphthalene	ND	0.020	0.14		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
2-Methylnaphthalene	ND	0.015	0.14		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Acetone	ND	0.028	0.51		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Bromobenzene	ND	0.0033	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 11:05:00 AM
Lab ID: 1910D68-002
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0031	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Bromoform	ND	0.0031	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Bromomethane	ND	0.0083	0.10		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
2-Butanone	0.045	0.040	0.34	J	mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Carbon disulfide	ND	0.011	0.34		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Carbon tetrachloride	ND	0.0032	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Chlorobenzene	ND	0.0044	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Chloroethane	ND	0.0050	0.068		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Chloroform	ND	0.0028	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Chloromethane	ND	0.0033	0.10		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
2-Chlorotoluene	ND	0.0030	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
4-Chlorotoluene	ND	0.0028	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
cis-1,2-DCE	ND	0.0047	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
cis-1,3-Dichloropropene	ND	0.0029	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0035	0.068		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Dibromochloromethane	ND	0.0024	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Dibromomethane	ND	0.0037	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,2-Dichlorobenzene	ND	0.0028	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,3-Dichlorobenzene	ND	0.0030	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,4-Dichlorobenzene	ND	0.0029	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Dichlorodifluoromethane	ND	0.0079	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,1-Dichloroethane	ND	0.0022	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,1-Dichloroethene	ND	0.014	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,2-Dichloropropane	ND	0.0025	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,3-Dichloropropane	ND	0.0037	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
2,2-Dichloropropane	ND	0.011	0.068		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,1-Dichloropropene	ND	0.0031	0.068		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Hexachlorobutadiene	ND	0.0035	0.068		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
2-Hexanone	ND	0.0057	0.34		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Isopropylbenzene	ND	0.0025	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
4-Isopropyltoluene	ND	0.0028	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
4-Methyl-2-pentanone	ND	0.0065	0.34		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Methylene chloride	ND	0.0060	0.10		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
n-Butylbenzene	ND	0.0032	0.10		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
n-Propylbenzene	ND	0.0027	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
sec-Butylbenzene	ND	0.0039	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Styrene	ND	0.0027	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
tert-Butylbenzene	ND	0.0032	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0023	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 11:05:00 AM
Lab ID: 1910D68-002
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0035	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Tetrachloroethene (PCE)	ND	0.0027	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
trans-1,2-DCE	ND	0.0031	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
trans-1,3-Dichloropropene	ND	0.0036	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0030	0.068		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0035	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,1,1-Trichloroethane	ND	0.0031	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,1,2-Trichloroethane	ND	0.0024	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Trichloroethene (TCE)	ND	0.0040	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Trichlorofluoromethane	ND	0.012	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
1,2,3-Trichloropropane	ND	0.0055	0.068		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Vinyl chloride	ND	0.0022	0.034		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Xylenes, Total	ND	0.0086	0.068		mg/Kg	1	10/28/2019 4:14:41 PM	S64028
Surr: Dibromofluoromethane	109		70-130		%Rec	1	10/28/2019 4:14:41 PM	S64028
Surr: 1,2-Dichloroethane-d4	93.8		70-130		%Rec	1	10/28/2019 4:14:41 PM	S64028
Surr: Toluene-d8	103		70-130		%Rec	1	10/28/2019 4:14:41 PM	S64028
Surr: 4-Bromofluorobenzene	96.1		70-130		%Rec	1	10/28/2019 4:14:41 PM	S64028

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (8-10')
Project: SWMU 13
Collection Date: 10/23/2019 11:15:00 AM
Lab ID: 1910D68-003
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.8	9.2		mg/Kg	1	11/7/2019 11:35:45 PM	48616
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	11/7/2019 11:35:45 PM	48616
Surr: DNOP	96.8	0	70-130		%Rec	1	11/7/2019 11:35:45 PM	48616
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.87	2.9		mg/Kg	1	10/27/2019 4:45:02 PM	G63989
Surr: BFB	90.8	0	77.4-118		%Rec	1	10/27/2019 4:45:02 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0059	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:01:35 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.72	4.9		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Arsenic	ND	2.8	4.9		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Barium	190	0.045	0.20		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Beryllium	1.6	0.018	0.29		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Cadmium	ND	0.047	0.20		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Chromium	16	0.16	0.59		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Cobalt	6.4	0.21	0.59		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Iron	21000	71	240		mg/Kg	100	11/18/2019 6:45:45 PM	48651
Lead	2.1	0.47	0.49		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Manganese	310	0.041	0.20		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Nickel	15	0.29	0.98		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Selenium	ND	2.5	4.9		mg/Kg	2	11/19/2019 6:13:47 PM	48651
Silver	ND	0.063	0.49		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Vanadium	24	0.13	4.9		mg/Kg	2	11/18/2019 6:44:05 PM	48651
Zinc	21	0.77	4.9		mg/Kg	2	11/18/2019 6:44:05 PM	48651
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Aniline	ND	0.13	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Anthracene	ND	0.10	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Azobenzene	ND	0.14	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Benz(a)anthracene	ND	0.094	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Benzo(a)pyrene	ND	0.087	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Benzo(b)fluoranthene	ND	0.086	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Benzo(g,h,i)perylene	ND	0.084	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Benzo(k)fluoranthene	ND	0.089	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Benzoic acid	ND	0.10	0.49		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (8-10')
Project: SWMU 13
Collection Date: 10/23/2019 11:15:00 AM
Lab ID: 1910D68-003
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	10/31/2019 8:11:08 PM	48455
4-Bromophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Carbazole	ND	0.11	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	10/31/2019 8:11:08 PM	48455
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Chrysene	ND	0.086	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Di-n-butyl phthalate	0.18	0.15	0.39	J	mg/Kg	1	10/31/2019 8:11:08 PM	48455
Di-n-octyl phthalate	ND	0.099	0.39		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Dibenz(a,h)anthracene	ND	0.089	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
1,4-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
3,3´-Dichlorobenzidine	ND	0.087	0.24		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	10/31/2019 8:11:08 PM	48455
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2,4-Dinitrotoluene	ND	0.11	0.49		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Fluoranthene	ND	0.11	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Fluorene	ND	0.11	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Indeno(1,2,3-cd)pyrene	ND	0.097	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Isophorone	ND	0.14	0.39		mg/Kg	1	10/31/2019 8:11:08 PM	48455
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (8-10')
Project: SWMU 13
Collection Date: 10/23/2019 11:15:00 AM
Lab ID: 1910D68-003
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	10/31/2019 8:11:08 PM	48455
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Naphthalene	ND	0.15	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
3-Nitroaniline	ND	0.13	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Nitrobenzene	ND	0.13	0.39		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Phenanthrene	ND	0.11	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Phenol	ND	0.12	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Pyrene	ND	0.092	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Pyridine	ND	0.12	0.39		mg/Kg	1	10/31/2019 8:11:08 PM	48455
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	10/31/2019 8:11:08 PM	48455
Surr: 2-Fluorophenol	53.0		26.7-85.9		%Rec	1	10/31/2019 8:11:08 PM	48455
Surr: Phenol-d5	65.9		18.5-101		%Rec	1	10/31/2019 8:11:08 PM	48455
Surr: 2,4,6-Tribromophenol	58.4		35.8-85.6		%Rec	1	10/31/2019 8:11:08 PM	48455
Surr: Nitrobenzene-d5	62.8		40.8-95.2		%Rec	1	10/31/2019 8:11:08 PM	48455
Surr: 2-Fluorobiphenyl	55.5		34.7-85.2		%Rec	1	10/31/2019 8:11:08 PM	48455
Surr: 4-Terphenyl-d14	74.4		37.4-91.3		%Rec	1	10/31/2019 8:11:08 PM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0023	0.014		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Toluene	ND	0.0027	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Ethylbenzene	ND	0.0017	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0068	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0026	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0028	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0029	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0026	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Naphthalene	ND	0.0058	0.057		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1-Methylnaphthalene	ND	0.017	0.11		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
2-Methylnaphthalene	ND	0.013	0.11		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Acetone	ND	0.024	0.43		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Bromobenzene	ND	0.0028	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (8-10')
Project: SWMU 13
Collection Date: 10/23/2019 11:15:00 AM
Lab ID: 1910D68-003
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0026	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Bromoform	ND	0.0026	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Bromomethane	ND	0.0069	0.086		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
2-Butanone	0.039	0.033	0.29	J	mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Carbon disulfide	ND	0.0095	0.29		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Carbon tetrachloride	ND	0.0027	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Chlorobenzene	ND	0.0037	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Chloroethane	ND	0.0042	0.057		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Chloroform	ND	0.0023	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Chloromethane	ND	0.0027	0.086		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
2-Chlorotoluene	ND	0.0025	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
4-Chlorotoluene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
cis-1,2-DCE	ND	0.0039	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
cis-1,3-Dichloropropene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0029	0.057		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Dibromochloromethane	ND	0.0020	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Dibromomethane	ND	0.0031	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,2-Dichlorobenzene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,3-Dichlorobenzene	ND	0.0025	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,4-Dichlorobenzene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Dichlorodifluoromethane	ND	0.0067	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,1-Dichloroethane	ND	0.0018	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,1-Dichloroethene	ND	0.011	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,2-Dichloropropane	ND	0.0021	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,3-Dichloropropane	ND	0.0031	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
2,2-Dichloropropane	ND	0.0093	0.057		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,1-Dichloropropene	ND	0.0026	0.057		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Hexachlorobutadiene	ND	0.0029	0.057		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
2-Hexanone	ND	0.0048	0.29		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Isopropylbenzene	ND	0.0021	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
4-Isopropyltoluene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
4-Methyl-2-pentanone	ND	0.0054	0.29		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Methylene chloride	ND	0.0051	0.086		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
n-Butylbenzene	ND	0.0027	0.086		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
n-Propylbenzene	ND	0.0023	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
sec-Butylbenzene	ND	0.0032	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Styrene	ND	0.0023	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
tert-Butylbenzene	ND	0.0027	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0019	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (8-10')
Project: SWMU 13
Collection Date: 10/23/2019 11:15:00 AM
Lab ID: 1910D68-003
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0029	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Tetrachloroethene (PCE)	ND	0.0023	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
trans-1,2-DCE	ND	0.0026	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
trans-1,3-Dichloropropene	ND	0.0030	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0025	0.057		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0029	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,1,1-Trichloroethane	ND	0.0026	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,1,2-Trichloroethane	ND	0.0020	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Trichloroethene (TCE)	ND	0.0033	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Trichlorofluoromethane	ND	0.0097	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
1,2,3-Trichloropropane	ND	0.0046	0.057		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Vinyl chloride	ND	0.0019	0.029		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Xylenes, Total	ND	0.0072	0.057		mg/Kg	1	10/28/2019 4:43:38 PM	S64028
Surr: Dibromofluoromethane	103		70-130		%Rec	1	10/28/2019 4:43:38 PM	S64028
Surr: 1,2-Dichloroethane-d4	94.8		70-130		%Rec	1	10/28/2019 4:43:38 PM	S64028
Surr: Toluene-d8	100		70-130		%Rec	1	10/28/2019 4:43:38 PM	S64028
Surr: 4-Bromofluorobenzene	97.8		70-130		%Rec	1	10/28/2019 4:43:38 PM	S64028

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (14-15.5')
Project: SWMU 13
Collection Date: 10/23/2019 11:25:00 AM
Lab ID: 1910D68-004
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	3.1	1.9	9.7	J	mg/Kg	1	10/29/2019 4:05:50 PM	48409
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/29/2019 4:05:50 PM	48409
Surr: DNOP	138	0	70-130	S	%Rec	1	10/29/2019 4:05:50 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.83	2.8		mg/Kg	1	10/27/2019 5:07:46 PM	G63989
Surr: BFB	98.7	0	77.4-118		%Rec	1	10/27/2019 5:07:46 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0082	0.0018	0.033	J	mg/Kg	1	11/1/2019 1:06:14 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Arsenic	ND	2.9	5.1		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Barium	240	0.047	0.20		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Beryllium	1.2	0.019	0.31		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Cadmium	ND	0.050	0.20		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Chromium	12	0.16	0.61		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Cobalt	4.8	0.22	0.61		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Iron	17000	74	250		mg/Kg	100	11/18/2019 6:48:49 PM	48433
Lead	2.8	0.50	0.51		mg/Kg	2	11/18/2019 6:47:16 PM	48433
Manganese	260	0.042	0.20		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Nickel	10	0.30	1.0		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Selenium	ND	2.6	5.1		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Silver	ND	0.065	0.51		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Vanadium	21	0.14	5.1		mg/Kg	2	11/7/2019 2:41:20 PM	48433
Zinc	17	0.81	5.1		mg/Kg	2	11/7/2019 2:41:20 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.11	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Acenaphthylene	ND	0.10	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Aniline	ND	0.12	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Anthracene	ND	0.10	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Azobenzene	ND	0.13	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Benz(a)anthracene	ND	0.092	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Benzo(a)pyrene	ND	0.084	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Benzo(b)fluoranthene	ND	0.084	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Benzo(g,h,i)perylene	ND	0.082	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Benzo(k)fluoranthene	ND	0.086	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Benzoic acid	ND	0.098	0.48		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455

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Qualifiers:

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (14-15.5')
Project: SWMU 13
Collection Date: 10/23/2019 11:25:00 AM
Lab ID: 1910D68-004
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Bis(2-ethylhexyl)phthalate	ND	0.14	0.48		mg/Kg	1	10/31/2019 8:39:52 PM	48455
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Butyl benzyl phthalate	ND	0.097	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Carbazole	ND	0.11	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
4-Chloro-3-methylphenol	ND	0.15	0.48		mg/Kg	1	10/31/2019 8:39:52 PM	48455
4-Chloroaniline	ND	0.13	0.48		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
4-Chlorophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Chrysene	ND	0.084	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Di-n-butyl phthalate	0.16	0.14	0.38	J	mg/Kg	1	10/31/2019 8:39:52 PM	48455
Di-n-octyl phthalate	ND	0.097	0.38		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Dibenz(a,h)anthracene	ND	0.086	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Dibenzofuran	ND	0.12	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
1,2-Dichlorobenzene	ND	0.11	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
3,3´-Dichlorobenzidine	ND	0.085	0.24		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2,4-Dichlorophenol	ND	0.11	0.38		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2,4-Dimethylphenol	ND	0.10	0.29		mg/Kg	1	10/31/2019 8:39:52 PM	48455
4,6-Dinitro-2-methylphenol	ND	0.088	0.38		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2,4-Dinitrophenol	ND	0.069	0.48		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2,4-Dinitrotoluene	ND	0.11	0.48		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2,6-Dinitrotoluene	ND	0.13	0.48		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Fluoranthene	ND	0.11	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Fluorene	ND	0.11	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Hexachlorobutadiene	ND	0.13	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Indeno(1,2,3-cd)pyrene	ND	0.095	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Isophorone	ND	0.14	0.38		mg/Kg	1	10/31/2019 8:39:52 PM	48455
1-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (14-15.5')
Project: SWMU 13
Collection Date: 10/23/2019 11:25:00 AM
Lab ID: 1910D68-004
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.11	0.38		mg/Kg	1	10/31/2019 8:39:52 PM	48455
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Naphthalene	ND	0.14	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Nitrobenzene	ND	0.13	0.38		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Pentachlorophenol	ND	0.098	0.38		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Phenanthrene	ND	0.10	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Phenol	ND	0.12	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Pyrene	ND	0.089	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Pyridine	ND	0.11	0.38		mg/Kg	1	10/31/2019 8:39:52 PM	48455
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2,4,5-Trichlorophenol	ND	0.12	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	10/31/2019 8:39:52 PM	48455
Surr: 2-Fluorophenol	64.1		26.7-85.9		%Rec	1	10/31/2019 8:39:52 PM	48455
Surr: Phenol-d5	73.0		18.5-101		%Rec	1	10/31/2019 8:39:52 PM	48455
Surr: 2,4,6-Tribromophenol	70.8		35.8-85.6		%Rec	1	10/31/2019 8:39:52 PM	48455
Surr: Nitrobenzene-d5	72.1		40.8-95.2		%Rec	1	10/31/2019 8:39:52 PM	48455
Surr: 2-Fluorobiphenyl	67.4		34.7-85.2		%Rec	1	10/31/2019 8:39:52 PM	48455
Surr: 4-Terphenyl-d14	85.7		37.4-91.3		%Rec	1	10/31/2019 8:39:52 PM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0023	0.014		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Toluene	ND	0.0026	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Ethylbenzene	ND	0.0016	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0065	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0025	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0027	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0028	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0025	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Naphthalene	ND	0.0055	0.055		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1-Methylnaphthalene	ND	0.016	0.11		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Acetone	ND	0.023	0.41		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Bromobenzene	ND	0.0026	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (14-15.5')
Project: SWMU 13
Collection Date: 10/23/2019 11:25:00 AM
Lab ID: 1910D68-004
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0025	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Bromoform	ND	0.0025	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Bromomethane	ND	0.0067	0.083		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
2-Butanone	ND	0.032	0.28		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Carbon disulfide	ND	0.0091	0.28		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Carbon tetrachloride	ND	0.0026	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Chlorobenzene	ND	0.0035	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Chloroethane	ND	0.0041	0.055		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Chloroform	ND	0.0022	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Chloromethane	ND	0.0026	0.083		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
2-Chlorotoluene	ND	0.0024	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
4-Chlorotoluene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
cis-1,2-DCE	ND	0.0038	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
cis-1,3-Dichloropropene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0028	0.055		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Dibromochloromethane	ND	0.0020	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Dibromomethane	ND	0.0030	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,2-Dichlorobenzene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,3-Dichlorobenzene	ND	0.0024	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,4-Dichlorobenzene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Dichlorodifluoromethane	ND	0.0064	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,1-Dichloroethane	ND	0.0018	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,1-Dichloroethene	ND	0.011	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,2-Dichloropropane	ND	0.0020	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,3-Dichloropropane	ND	0.0030	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
2,2-Dichloropropane	ND	0.0090	0.055		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,1-Dichloropropene	ND	0.0025	0.055		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Hexachlorobutadiene	ND	0.0028	0.055		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
2-Hexanone	ND	0.0046	0.28		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Isopropylbenzene	ND	0.0020	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
4-Isopropyltoluene	ND	0.0023	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
4-Methyl-2-pentanone	ND	0.0052	0.28		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Methylene chloride	ND	0.0049	0.083		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
n-Butylbenzene	ND	0.0026	0.083		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
n-Propylbenzene	ND	0.0022	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
sec-Butylbenzene	ND	0.0031	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Styrene	ND	0.0022	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
tert-Butylbenzene	ND	0.0026	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0019	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (14-15.5')
Project: SWMU 13
Collection Date: 10/23/2019 11:25:00 AM
Lab ID: 1910D68-004
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0028	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Tetrachloroethene (PCE)	ND	0.0022	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
trans-1,2-DCE	ND	0.0025	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
trans-1,3-Dichloropropene	ND	0.0029	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0024	0.055		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0028	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,1,1-Trichloroethane	ND	0.0025	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,1,2-Trichloroethane	ND	0.0019	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Trichloroethene (TCE)	ND	0.0032	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Trichlorofluoromethane	ND	0.0094	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
1,2,3-Trichloropropane	ND	0.0045	0.055		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Vinyl chloride	ND	0.0018	0.028		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Xylenes, Total	ND	0.0070	0.055		mg/Kg	1	10/28/2019 5:12:42 PM	S64028
Surr: Dibromofluoromethane	101		70-130		%Rec	1	10/28/2019 5:12:42 PM	S64028
Surr: 1,2-Dichloroethane-d4	91.4		70-130		%Rec	1	10/28/2019 5:12:42 PM	S64028
Surr: Toluene-d8	103		70-130		%Rec	1	10/28/2019 5:12:42 PM	S64028
Surr: 4-Bromofluorobenzene	93.1		70-130		%Rec	1	10/28/2019 5:12:42 PM	S64028

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (15.5-16')
Project: SWMU 13
Collection Date: 10/23/2019 11:35:00 AM
Lab ID: 1910D68-005
Matrix: SOIL
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.8	9.0		mg/Kg	1	10/30/2019 9:40:54 AM	48457
Motor Oil Range Organics (MRO)	ND	45	45		mg/Kg	1	10/30/2019 9:40:54 AM	48457
Surr: DNOP	84.0	0	70-130		%Rec	1	10/30/2019 9:40:54 AM	48457
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.5	4.9		mg/Kg	1	10/30/2019 11:50:33 A	48446
Surr: BFB	101	0	77.4-118		%Rec	1	10/30/2019 11:50:33 A	48446
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0033	0.0018	0.033	J	mg/Kg	1	11/1/2019 1:08:18 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.72	4.9		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Arsenic	ND	2.8	4.9		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Barium	400	0.046	0.20		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Beryllium	0.59	0.018	0.29		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Cadmium	ND	0.048	0.20		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Chromium	5.4	0.16	0.59		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Cobalt	2.6	0.21	0.59		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Iron	8600	71	250		mg/Kg	100	11/18/2019 7:00:06 PM	48519
Lead	2.6	0.48	0.49		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Manganese	210	0.041	0.20		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Nickel	4.8	0.29	0.98		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Selenium	ND	2.5	4.9		mg/Kg	2	11/19/2019 6:15:21 PM	48519
Silver	ND	0.063	0.49		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Vanadium	13	0.13	4.9		mg/Kg	2	11/18/2019 6:56:27 PM	48519
Zinc	8.6	0.78	4.9		mg/Kg	2	11/18/2019 6:56:27 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.15	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Acenaphthylene	ND	0.14	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Aniline	ND	0.16	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Anthracene	ND	0.14	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Azobenzene	ND	0.18	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Benz(a)anthracene	ND	0.12	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Benzo(a)pyrene	ND	0.11	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Benzo(b)fluoranthene	ND	0.11	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Benzo(g,h,i)perylene	ND	0.11	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Benzo(k)fluoranthene	ND	0.12	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Benzoic acid	ND	0.13	0.64		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Benzyl alcohol	ND	0.16	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455

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Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (15.5-16')
Project: SWMU 13
Collection Date: 10/23/2019 11:35:00 AM
Lab ID: 1910D68-005
Matrix: SOIL
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.19	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Bis(2-chloroethyl)ether	ND	0.16	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Bis(2-chloroisopropyl)ether	ND	0.15	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Bis(2-ethylhexyl)phthalate	ND	0.18	0.64		mg/Kg	1	10/31/2019 9:08:30 PM	48455
4-Bromophenyl phenyl ether	ND	0.15	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Butyl benzyl phthalate	ND	0.13	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Carbazole	ND	0.15	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
4-Chloro-3-methylphenol	ND	0.20	0.64		mg/Kg	1	10/31/2019 9:08:30 PM	48455
4-Chloroaniline	ND	0.18	0.64		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2-Chloronaphthalene	ND	0.16	0.32		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2-Chlorophenol	ND	0.16	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
4-Chlorophenyl phenyl ether	ND	0.14	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Chrysene	ND	0.11	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Di-n-butyl phthalate	ND	0.19	0.51		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Di-n-octyl phthalate	ND	0.13	0.51		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Dibenz(a,h)anthracene	ND	0.12	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Dibenzofuran	ND	0.17	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
1,2-Dichlorobenzene	ND	0.15	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
1,3-Dichlorobenzene	ND	0.13	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
1,4-Dichlorobenzene	ND	0.14	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
3,3´-Dichlorobenzidine	ND	0.11	0.32		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Diethyl phthalate	ND	0.18	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Dimethyl phthalate	ND	0.17	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2,4-Dichlorophenol	ND	0.15	0.51		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2,4-Dimethylphenol	ND	0.14	0.38		mg/Kg	1	10/31/2019 9:08:30 PM	48455
4,6-Dinitro-2-methylphenol	ND	0.12	0.51		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2,4-Dinitrophenol	ND	0.093	0.64		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2,4-Dinitrotoluene	ND	0.15	0.64		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2,6-Dinitrotoluene	ND	0.17	0.64		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Fluoranthene	ND	0.14	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Fluorene	ND	0.15	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Hexachlorobenzene	ND	0.16	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Hexachlorobutadiene	ND	0.18	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Hexachlorocyclopentadiene	ND	0.15	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Hexachloroethane	ND	0.14	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Indeno(1,2,3-cd)pyrene	ND	0.13	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Isophorone	ND	0.19	0.51		mg/Kg	1	10/31/2019 9:08:30 PM	48455
1-Methylnaphthalene	ND	0.19	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2-Methylnaphthalene	ND	0.19	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (15.5-16')
Project: SWMU 13
Collection Date: 10/23/2019 11:35:00 AM
Lab ID: 1910D68-005
Matrix: SOIL
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.15	0.51		mg/Kg	1	10/31/2019 9:08:30 PM	48455
3+4-Methylphenol	ND	0.16	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
N-Nitrosodi-n-propylamine	ND	0.18	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
N-Nitrosodiphenylamine	ND	0.13	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Naphthalene	ND	0.19	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2-Nitroaniline	ND	0.18	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
3-Nitroaniline	ND	0.18	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
4-Nitroaniline	ND	0.16	0.51		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Nitrobenzene	ND	0.18	0.51		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2-Nitrophenol	ND	0.17	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
4-Nitrophenol	ND	0.17	0.32		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Pentachlorophenol	ND	0.13	0.51		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Phenanthrene	ND	0.14	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Phenol	ND	0.16	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Pyrene	ND	0.12	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Pyridine	ND	0.15	0.51		mg/Kg	1	10/31/2019 9:08:30 PM	48455
1,2,4-Trichlorobenzene	ND	0.20	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2,4,5-Trichlorophenol	ND	0.17	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
2,4,6-Trichlorophenol	ND	0.13	0.26		mg/Kg	1	10/31/2019 9:08:30 PM	48455
Surr: 2-Fluorophenol	57.8		26.7-85.9		%Rec	1	10/31/2019 9:08:30 PM	48455
Surr: Phenol-d5	65.7		18.5-101		%Rec	1	10/31/2019 9:08:30 PM	48455
Surr: 2,4,6-Tribromophenol	67.9		35.8-85.6		%Rec	1	10/31/2019 9:08:30 PM	48455
Surr: Nitrobenzene-d5	62.4		40.8-95.2		%Rec	1	10/31/2019 9:08:30 PM	48455
Surr: 2-Fluorobiphenyl	60.4		34.7-85.2		%Rec	1	10/31/2019 9:08:30 PM	48455
Surr: 4-Terphenyl-d14	80.7		37.4-91.3		%Rec	1	10/31/2019 9:08:30 PM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0040	0.024		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Toluene	ND	0.0046	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Ethylbenzene	ND	0.0028	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Methyl tert-butyl ether (MTBE)	ND	0.012	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,2,4-Trimethylbenzene	ND	0.0044	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,3,5-Trimethylbenzene	ND	0.0047	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,2-Dichloroethane (EDC)	ND	0.0050	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,2-Dibromoethane (EDB)	ND	0.0044	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Naphthalene	ND	0.0097	0.097		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1-Methylnaphthalene	ND	0.028	0.19		mg/Kg	1	10/30/2019 2:07:33 PM	48446
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Acetone	ND	0.040	0.73		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Bromobenzene	ND	0.0047	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446

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Qualifiers:

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D	Sample Diluted Due to Matrix
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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
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E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (15.5-16')
Project: SWMU 13
Collection Date: 10/23/2019 11:35:00 AM
Lab ID: 1910D68-005
Matrix: SOIL
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0044	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Bromoform	ND	0.0044	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Bromomethane	ND	0.012	0.15		mg/Kg	1	10/30/2019 2:07:33 PM	48446
2-Butanone	ND	0.056	0.49		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Carbon disulfide	ND	0.016	0.49		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Carbon tetrachloride	ND	0.0046	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Chlorobenzene	ND	0.0062	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Chloroethane	ND	0.0072	0.097		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Chloroform	ND	0.0039	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Chloromethane	ND	0.0047	0.15		mg/Kg	1	10/30/2019 2:07:33 PM	48446
2-Chlorotoluene	ND	0.0042	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
4-Chlorotoluene	ND	0.0040	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
cis-1,2-DCE	ND	0.0067	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
cis-1,3-Dichloropropene	ND	0.0041	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,2-Dibromo-3-chloropropane	ND	0.0050	0.097		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Dibromochloromethane	ND	0.0035	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Dibromomethane	ND	0.0052	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,2-Dichlorobenzene	ND	0.0040	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,3-Dichlorobenzene	ND	0.0042	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,4-Dichlorobenzene	ND	0.0041	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Dichlorodifluoromethane	ND	0.011	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,1-Dichloroethane	ND	0.0031	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,1-Dichloroethene	ND	0.019	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,2-Dichloropropane	ND	0.0035	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,3-Dichloropropane	ND	0.0053	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
2,2-Dichloropropane	ND	0.016	0.097		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,1-Dichloropropene	ND	0.0044	0.097		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Hexachlorobutadiene	ND	0.0049	0.097		mg/Kg	1	10/30/2019 2:07:33 PM	48446
2-Hexanone	ND	0.0081	0.49		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Isopropylbenzene	ND	0.0035	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
4-Isopropyltoluene	ND	0.0040	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
4-Methyl-2-pentanone	ND	0.0092	0.49		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Methylene chloride	ND	0.0086	0.15		mg/Kg	1	10/30/2019 2:07:33 PM	48446
n-Butylbenzene	ND	0.0045	0.15		mg/Kg	1	10/30/2019 2:07:33 PM	48446
n-Propylbenzene	ND	0.0039	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
sec-Butylbenzene	ND	0.0055	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Styrene	ND	0.0038	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
tert-Butylbenzene	ND	0.0046	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,1,1,2-Tetrachloroethane	ND	0.0033	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446

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J	Analyte detected below quantitation limits
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4 (15.5-16')
Project: SWMU 13
Collection Date: 10/23/2019 11:35:00 AM
Lab ID: 1910D68-005
Matrix: SOIL
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0049	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Tetrachloroethene (PCE)	ND	0.0039	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
trans-1,2-DCE	ND	0.0044	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
trans-1,3-Dichloropropene	ND	0.0051	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,2,3-Trichlorobenzene	ND	0.0043	0.097		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,2,4-Trichlorobenzene	ND	0.0049	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,1,1-Trichloroethane	ND	0.0044	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,1,2-Trichloroethane	ND	0.0034	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Trichloroethene (TCE)	ND	0.0056	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Trichlorofluoromethane	ND	0.017	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
1,2,3-Trichloropropane	ND	0.0079	0.097		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Vinyl chloride	ND	0.0032	0.049		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Xylenes, Total	ND	0.012	0.097		mg/Kg	1	10/30/2019 2:07:33 PM	48446
Surr: Dibromofluoromethane	108		70-130		%Rec	1	10/30/2019 2:07:33 PM	48446
Surr: 1,2-Dichloroethane-d4	96.3		70-130		%Rec	1	10/30/2019 2:07:33 PM	48446
Surr: Toluene-d8	99.3		70-130		%Rec	1	10/30/2019 2:07:33 PM	48446
Surr: 4-Bromofluorobenzene	88.6		70-130		%Rec	1	10/30/2019 2:07:33 PM	48446

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 1:55:00 PM
Lab ID: 1910D68-006
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **JME**	
Diesel Range Organics (DRO)	87	2.0	9.9		mg/Kg	1	10/30/2019 4:50:38 PM	48409
Motor Oil Range Organics (MRO)	120	49	49		mg/Kg	1	10/30/2019 4:50:38 PM	48409
Surr: DNOP	87.7	0	70-130		%Rec	1	10/30/2019 4:50:38 PM	48409
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.2	3.9		mg/Kg	1	10/27/2019 5:53:21 PM	G63989
Surr: BFB	90.2	0	77.4-118		%Rec	1	10/27/2019 5:53:21 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.15	0.0017	0.031		mg/Kg	1	11/1/2019 1:46:25 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.71	4.8		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Arsenic	ND	2.7	4.8		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Barium	270	0.045	0.19		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Beryllium	1.5	0.018	0.29		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Cadmium	ND	0.047	0.19		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Chromium	62	0.15	0.58		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Cobalt	7.1	0.20	0.58		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Iron	24000	70	240		mg/Kg	100	11/18/2019 7:03:23 PM	48433
Lead	1.2	0.47	0.48		mg/Kg	2	11/18/2019 7:01:42 PM	48433
Manganese	320	0.040	0.19		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Nickel	15	0.29	0.96		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Selenium	ND	2.4	4.8		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Silver	ND	0.062	0.48		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Vanadium	33	0.13	4.8		mg/Kg	2	11/7/2019 2:44:56 PM	48433
Zinc	65	0.76	4.8		mg/Kg	2	11/7/2019 2:44:56 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Acenaphthylene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Aniline	ND	1.3	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Anthracene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Azobenzene	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Benz(a)anthracene	ND	0.96	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Benzo(a)pyrene	ND	0.89	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Benzo(b)fluoranthene	ND	0.88	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Benzo(g,h,i)perylene	ND	0.86	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Benzo(k)fluoranthene	ND	0.91	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Benzoic acid	ND	1.0	5.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Benzyl alcohol	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 1:55:00 PM
Lab ID: 1910D68-006
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	1.5	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Bis(2-chloroethyl)ether	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Bis(2-chloroisopropyl)ether	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Bis(2-ethylhexyl)phthalate	ND	1.4	5.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
4-Bromophenyl phenyl ether	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Butyl benzyl phthalate	ND	1.0	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Carbazole	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
4-Chloro-3-methylphenol	ND	1.5	5.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
4-Chloroaniline	ND	1.4	5.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2-Chloronaphthalene	ND	1.2	2.5	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2-Chlorophenol	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
4-Chlorophenyl phenyl ether	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Chrysene	ND	0.88	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Di-n-butyl phthalate	ND	1.5	4.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Di-n-octyl phthalate	ND	1.0	4.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Dibenz(a,h)anthracene	ND	0.91	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Dibenzofuran	ND	1.3	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
1,2-Dichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
1,3-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
1,4-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
3,3´-Dichlorobenzidine	ND	0.89	2.5	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Diethyl phthalate	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Dimethyl phthalate	ND	1.3	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2,4-Dichlorophenol	ND	1.2	4.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2,4-Dimethylphenol	ND	1.1	3.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
4,6-Dinitro-2-methylphenol	ND	0.92	4.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2,4-Dinitrophenol	ND	0.73	5.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2,4-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2,6-Dinitrotoluene	ND	1.3	5.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Fluoranthene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Fluorene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Hexachlorobenzene	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Hexachlorobutadiene	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Hexachloroethane	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Indeno(1,2,3-cd)pyrene	ND	1.0	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Isophorone	ND	1.5	4.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
1-Methylnaphthalene	ND	1.5	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2-Methylnaphthalene	ND	1.5	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 1:55:00 PM
Lab ID: 1910D68-006
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	1.2	4.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
3+4-Methylphenol	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
N-Nitrosodi-n-propylamine	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
N-Nitrosodiphenylamine	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Naphthalene	ND	1.5	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
3-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Nitrobenzene	ND	1.4	4.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2-Nitrophenol	ND	1.4	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
4-Nitrophenol	ND	1.4	2.5	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Pentachlorophenol	ND	1.0	4.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Phenanthrene	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Phenol	ND	1.2	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Pyrene	ND	0.94	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Pyridine	ND	1.2	4.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
1,2,4-Trichlorobenzene	ND	1.6	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2,4,5-Trichlorophenol	ND	1.3	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
2,4,6-Trichlorophenol	ND	1.1	2.0	D	mg/Kg	1	10/31/2019 9:37:36 PM	48455
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	1	10/31/2019 9:37:36 PM	48455
Surr: Phenol-d5	0		18.5-101	SD	%Rec	1	10/31/2019 9:37:36 PM	48455
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	1	10/31/2019 9:37:36 PM	48455
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	1	10/31/2019 9:37:36 PM	48455
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	1	10/31/2019 9:37:36 PM	48455
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	1	10/31/2019 9:37:36 PM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0032	0.020		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Toluene	ND	0.0038	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Ethylbenzene	ND	0.0023	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0093	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0036	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0038	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0040	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0036	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Naphthalene	ND	0.0079	0.079		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1-Methylnaphthalene	ND	0.023	0.16		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
2-Methylnaphthalene	ND	0.017	0.16		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Acetone	ND	0.033	0.59		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Bromobenzene	ND	0.0038	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 1:55:00 PM
Lab ID: 1910D68-006
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0036	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Bromoform	ND	0.0035	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Bromomethane	ND	0.0095	0.12		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
2-Butanone	ND	0.045	0.39		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Carbon disulfide	ND	0.013	0.39		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Carbon tetrachloride	ND	0.0037	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Chlorobenzene	ND	0.0050	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Chloroethane	ND	0.0058	0.079		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Chloroform	ND	0.0032	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Chloromethane	ND	0.0038	0.12		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
2-Chlorotoluene	ND	0.0034	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
4-Chlorotoluene	ND	0.0032	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
cis-1,2-DCE	ND	0.0054	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
cis-1,3-Dichloropropene	ND	0.0033	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0040	0.079		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Dibromochloromethane	ND	0.0028	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Dibromomethane	ND	0.0042	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,2-Dichlorobenzene	ND	0.0032	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,3-Dichlorobenzene	ND	0.0034	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,4-Dichlorobenzene	ND	0.0033	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Dichlorodifluoromethane	ND	0.0091	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,1-Dichloroethane	ND	0.0025	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,1-Dichloroethene	ND	0.016	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,2-Dichloropropane	ND	0.0029	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,3-Dichloropropane	ND	0.0042	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
2,2-Dichloropropane	ND	0.013	0.079		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,1-Dichloropropene	ND	0.0036	0.079		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Hexachlorobutadiene	ND	0.0040	0.079		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
2-Hexanone	ND	0.0065	0.39		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Isopropylbenzene	ND	0.0028	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
4-Isopropyltoluene	ND	0.0033	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
4-Methyl-2-pentanone	ND	0.0074	0.39		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Methylene chloride	ND	0.0069	0.12		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
n-Butylbenzene	ND	0.0037	0.12		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
n-Propylbenzene	ND	0.0031	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
sec-Butylbenzene	ND	0.0044	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Styrene	ND	0.0031	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
tert-Butylbenzene	ND	0.0037	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0027	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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B	Analyte detected in the associated Method Blank
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J	Analyte detected below quantitation limits
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 1:55:00 PM
Lab ID: 1910D68-006
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0040	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Tetrachloroethene (PCE)	ND	0.0031	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
trans-1,2-DCE	ND	0.0036	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
trans-1,3-Dichloropropene	ND	0.0042	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0034	0.079		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0040	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,1,1-Trichloroethane	ND	0.0035	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,1,2-Trichloroethane	ND	0.0028	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Trichloroethene (TCE)	ND	0.0045	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Trichlorofluoromethane	ND	0.013	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
1,2,3-Trichloropropane	ND	0.0064	0.079		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Vinyl chloride	ND	0.0026	0.039		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Xylenes, Total	ND	0.0099	0.079		mg/Kg	1	10/28/2019 5:41:51 PM	S64028
Surr: Dibromofluoromethane	107		70-130		%Rec	1	10/28/2019 5:41:51 PM	S64028
Surr: 1,2-Dichloroethane-d4	95.1		70-130		%Rec	1	10/28/2019 5:41:51 PM	S64028
Surr: Toluene-d8	98.4		70-130		%Rec	1	10/28/2019 5:41:51 PM	S64028
Surr: 4-Bromofluorobenzene	91.5		70-130		%Rec	1	10/28/2019 5:41:51 PM	S64028

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 2:15:00 PM
Lab ID: 1910D68-007
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	20	1.9	9.6		mg/Kg	1	10/31/2019 3:48:40 PM	48457
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/31/2019 3:48:40 PM	48457
Surr: DNOP	92.7	0	70-130		%Rec	1	10/31/2019 3:48:40 PM	48457
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.1	3.7		mg/Kg	1	10/27/2019 6:16:13 PM	G63989
Surr: BFB	88.9	0	77.4-118		%Rec	1	10/27/2019 6:16:13 PM	G63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.011	0.0018	0.033	J	mg/Kg	1	11/1/2019 1:12:27 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.73	5.0		mg/Kg	2	11/7/2019 2:52:16 PM	48433
Arsenic	ND	2.8	5.0		mg/Kg	2	11/7/2019 2:52:16 PM	48433
Barium	250	0.046	0.20		mg/Kg	2	11/7/2019 2:52:16 PM	48433
Beryllium	0.99	0.018	0.30		mg/Kg	2	11/7/2019 2:52:16 PM	48433
Cadmium	ND	0.048	0.20		mg/Kg	2	11/7/2019 2:52:16 PM	48433
Chromium	8.8	0.16	0.59		mg/Kg	2	11/7/2019 2:52:16 PM	48433
Cobalt	4.8	0.21	0.59		mg/Kg	2	11/7/2019 2:52:16 PM	48433
Iron	14000	72	250		mg/Kg	100	11/18/2019 7:06:36 PM	48433
Lead	5.0	0.48	0.50		mg/Kg	2	11/18/2019 7:05:00 PM	48433
Manganese	630	2.1	9.9		mg/Kg	100	11/18/2019 7:06:36 PM	48433
Nickel	9.6	0.30	0.99		mg/Kg	2	11/7/2019 2:52:16 PM	48433
Selenium	ND	2.5	5.0		mg/Kg	2	11/7/2019 2:52:16 PM	48433
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 2:52:16 PM	48433
Vanadium	16	0.13	5.0		mg/Kg	2	11/7/2019 2:52:16 PM	48433
Zinc	15	0.78	5.0		mg/Kg	2	11/7/2019 2:52:16 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Aniline	ND	0.13	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Anthracene	ND	0.10	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Azobenzene	ND	0.14	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Benz(a)anthracene	ND	0.094	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Benzo(a)pyrene	ND	0.087	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Benzo(b)fluoranthene	ND	0.087	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Benzo(g,h,i)perylene	ND	0.084	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Benzo(k)fluoranthene	ND	0.089	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Benzoic acid	ND	0.10	0.49		mg/Kg	1	10/31/2019 10:06:36 P	48455
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455

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Lab ID: 1910D68-007
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Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	10/31/2019 10:06:36 P	48455
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Carbazole	ND	0.11	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	10/31/2019 10:06:36 P	48455
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	10/31/2019 10:06:36 P	48455
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	10/31/2019 10:06:36 P	48455
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Chrysene	ND	0.086	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Di-n-butyl phthalate	ND	0.15	0.39		mg/Kg	1	10/31/2019 10:06:36 P	48455
Di-n-octyl phthalate	ND	0.10	0.39		mg/Kg	1	10/31/2019 10:06:36 P	48455
Dibenz(a,h)anthracene	ND	0.089	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
1,4-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
3,3´-Dichlorobenzidine	ND	0.087	0.24		mg/Kg	1	10/31/2019 10:06:36 P	48455
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	10/31/2019 10:06:36 P	48455
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	10/31/2019 10:06:36 P	48455
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	10/31/2019 10:06:36 P	48455
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	10/31/2019 10:06:36 P	48455
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	10/31/2019 10:06:36 P	48455
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	10/31/2019 10:06:36 P	48455
Fluoranthene	ND	0.11	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Fluorene	ND	0.11	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Indeno(1,2,3-cd)pyrene	ND	0.097	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Isophorone	ND	0.14	0.39		mg/Kg	1	10/31/2019 10:06:36 P	48455
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
2-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 2:15:00 PM
Lab ID: 1910D68-007
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	10/31/2019 10:06:36 P	48455
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Naphthalene	ND	0.15	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	10/31/2019 10:06:36 P	48455
Nitrobenzene	ND	0.14	0.39		mg/Kg	1	10/31/2019 10:06:36 P	48455
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	10/31/2019 10:06:36 P	48455
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	10/31/2019 10:06:36 P	48455
Phenanthrene	ND	0.11	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Phenol	ND	0.12	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Pyrene	ND	0.092	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Pyridine	ND	0.12	0.39		mg/Kg	1	10/31/2019 10:06:36 P	48455
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	10/31/2019 10:06:36 P	48455
Surr: 2-Fluorophenol	64.7		26.7-85.9		%Rec	1	10/31/2019 10:06:36 P	48455
Surr: Phenol-d5	67.2		18.5-101		%Rec	1	10/31/2019 10:06:36 P	48455
Surr: 2,4,6-Tribromophenol	68.8		35.8-85.6		%Rec	1	10/31/2019 10:06:36 P	48455
Surr: Nitrobenzene-d5	71.5		40.8-95.2		%Rec	1	10/31/2019 10:06:36 P	48455
Surr: 2-Fluorobiphenyl	72.2		34.7-85.2		%Rec	1	10/31/2019 10:06:36 P	48455
Surr: 4-Terphenyl-d14	84.0		37.4-91.3		%Rec	1	10/31/2019 10:06:36 P	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0031	0.019		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Toluene	ND	0.0036	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Ethylbenzene	ND	0.0022	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0089	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0034	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0036	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0038	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0034	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Naphthalene	ND	0.0075	0.075		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1-Methylnaphthalene	ND	0.022	0.15		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
2-Methylnaphthalene	ND	0.016	0.15		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Acetone	ND	0.031	0.56		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Bromobenzene	ND	0.0036	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028

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Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 2:15:00 PM
Lab ID: 1910D68-007
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0034	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Bromoform	ND	0.0034	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Bromomethane	ND	0.0090	0.11		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
2-Butanone	0.049	0.043	0.37	J	mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Carbon disulfide	ND	0.012	0.37		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Carbon tetrachloride	ND	0.0035	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Chlorobenzene	ND	0.0048	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Chloroethane	ND	0.0055	0.075		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Chloroform	ND	0.0030	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Chloromethane	ND	0.0036	0.11		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
2-Chlorotoluene	ND	0.0033	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
4-Chlorotoluene	ND	0.0031	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
cis-1,2-DCE	ND	0.0051	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
cis-1,3-Dichloropropene	ND	0.0032	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0038	0.075		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Dibromochloromethane	ND	0.0027	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Dibromomethane	ND	0.0040	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,2-Dichlorobenzene	ND	0.0031	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,3-Dichlorobenzene	ND	0.0032	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,4-Dichlorobenzene	ND	0.0031	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Dichlorodifluoromethane	ND	0.0087	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,1-Dichloroethane	ND	0.0024	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,1-Dichloroethene	ND	0.015	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,2-Dichloropropane	ND	0.0027	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,3-Dichloropropane	ND	0.0040	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
2,2-Dichloropropane	ND	0.012	0.075		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,1-Dichloropropene	ND	0.0034	0.075		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Hexachlorobutadiene	ND	0.0038	0.075		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
2-Hexanone	ND	0.0062	0.37		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Isopropylbenzene	ND	0.0027	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
4-Isopropyltoluene	ND	0.0031	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
4-Methyl-2-pentanone	ND	0.0071	0.37		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Methylene chloride	0.011	0.0066	0.11	J	mg/Kg	1	10/28/2019 6:11:07 PM	S64028
n-Butylbenzene	ND	0.0035	0.11		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
n-Propylbenzene	ND	0.0030	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
sec-Butylbenzene	ND	0.0042	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Styrene	ND	0.0029	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
tert-Butylbenzene	ND	0.0035	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0025	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028

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Qualifiers:

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D	Sample Diluted Due to Matrix
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PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 2:15:00 PM
Lab ID: 1910D68-007
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0038	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Tetrachloroethene (PCE)	ND	0.0030	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
trans-1,2-DCE	ND	0.0034	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
trans-1,3-Dichloropropene	ND	0.0040	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0033	0.075		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0038	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,1,1-Trichloroethane	ND	0.0034	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,1,2-Trichloroethane	ND	0.0026	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Trichloroethene (TCE)	ND	0.0043	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Trichlorofluoromethane	ND	0.013	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
1,2,3-Trichloropropane	ND	0.0061	0.075		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Vinyl chloride	ND	0.0024	0.037		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Xylenes, Total	ND	0.0094	0.075		mg/Kg	1	10/28/2019 6:11:07 PM	S64028
Surr: Dibromofluoromethane	104		70-130		%Rec	1	10/28/2019 6:11:07 PM	S64028
Surr: 1,2-Dichloroethane-d4	94.2		70-130		%Rec	1	10/28/2019 6:11:07 PM	S64028
Surr: Toluene-d8	105		70-130		%Rec	1	10/28/2019 6:11:07 PM	S64028
Surr: 4-Bromofluorobenzene	96.3		70-130		%Rec	1	10/28/2019 6:11:07 PM	S64028

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (8-10')
Project: SWMU 13
Collection Date: 10/23/2019 2:30:00 PM
Lab ID: 1910D68-008
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	2.0	9.8		mg/Kg	1	10/30/2019 10:24:42 A	48457
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	10/30/2019 10:24:42 A	48457
Surr: DNOP	85.8	0	70-130		%Rec	1	10/30/2019 10:24:42 A	48457
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.89	2.9		mg/Kg	1	10/27/2019 7:25:07 PM	A63989
Surr: BFB	88.5	0	77.4-118		%Rec	1	10/27/2019 7:25:07 PM	A63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0057	0.0018	0.032	J	mg/Kg	1	11/1/2019 1:14:25 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.77	5.2		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Arsenic	ND	3.0	5.2		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Barium	220	0.048	0.21		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Beryllium	1.4	0.019	0.31		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Cadmium	ND	0.051	0.21		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Chromium	14	0.17	0.62		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Cobalt	5.7	0.22	0.62		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Iron	20000	76	260		mg/Kg	100	11/18/2019 7:09:52 PM	48433
Lead	2.3	0.51	0.52		mg/Kg	2	11/18/2019 7:08:10 PM	48433
Manganese	330	0.043	0.21		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Nickel	13	0.31	1.0		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Selenium	ND	2.6	5.2		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Silver	ND	0.067	0.52		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Vanadium	22	0.14	5.2		mg/Kg	2	11/7/2019 2:53:52 PM	48433
Zinc	19	0.82	5.2		mg/Kg	2	11/7/2019 2:53:52 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.11	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Acenaphthylene	ND	0.10	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Aniline	ND	0.12	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Anthracene	ND	0.10	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Azobenzene	ND	0.13	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Benz(a)anthracene	ND	0.092	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Benzo(a)pyrene	ND	0.085	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Benzo(b)fluoranthene	ND	0.084	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Benzo(g,h,i)perylene	ND	0.082	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Benzo(k)fluoranthene	ND	0.087	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Benzoic acid	ND	0.099	0.48		mg/Kg	1	10/31/2019 10:35:22 P	48455
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (8-10')
Project: SWMU 13
Collection Date: 10/23/2019 2:30:00 PM
Lab ID: 1910D68-008
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Bis(2-ethylhexyl)phthalate	ND	0.14	0.48		mg/Kg	1	10/31/2019 10:35:22 P	48455
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Butyl benzyl phthalate	ND	0.098	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Carbazole	ND	0.11	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
4-Chloro-3-methylphenol	ND	0.15	0.48		mg/Kg	1	10/31/2019 10:35:22 P	48455
4-Chloroaniline	ND	0.14	0.48		mg/Kg	1	10/31/2019 10:35:22 P	48455
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	10/31/2019 10:35:22 P	48455
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
4-Chlorophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Chrysene	ND	0.084	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Di-n-butyl phthalate	ND	0.14	0.38		mg/Kg	1	10/31/2019 10:35:22 P	48455
Di-n-octyl phthalate	ND	0.097	0.38		mg/Kg	1	10/31/2019 10:35:22 P	48455
Dibenz(a,h)anthracene	ND	0.087	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Dibenzofuran	ND	0.13	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
1,2-Dichlorobenzene	ND	0.11	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
3,3´-Dichlorobenzidine	ND	0.085	0.24		mg/Kg	1	10/31/2019 10:35:22 P	48455
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
2,4-Dichlorophenol	ND	0.11	0.38		mg/Kg	1	10/31/2019 10:35:22 P	48455
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	10/31/2019 10:35:22 P	48455
4,6-Dinitro-2-methylphenol	ND	0.088	0.38		mg/Kg	1	10/31/2019 10:35:22 P	48455
2,4-Dinitrophenol	ND	0.069	0.48		mg/Kg	1	10/31/2019 10:35:22 P	48455
2,4-Dinitrotoluene	ND	0.11	0.48		mg/Kg	1	10/31/2019 10:35:22 P	48455
2,6-Dinitrotoluene	ND	0.13	0.48		mg/Kg	1	10/31/2019 10:35:22 P	48455
Fluoranthene	ND	0.11	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Fluorene	ND	0.11	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Hexachlorobutadiene	ND	0.13	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Indeno(1,2,3-cd)pyrene	ND	0.095	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Isophorone	ND	0.14	0.38		mg/Kg	1	10/31/2019 10:35:22 P	48455
1-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (8-10')
Project: SWMU 13
Collection Date: 10/23/2019 2:30:00 PM
Lab ID: 1910D68-008
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.11	0.38		mg/Kg	1	10/31/2019 10:35:22 P	48455
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Naphthalene	ND	0.14	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	10/31/2019 10:35:22 P	48455
Nitrobenzene	ND	0.13	0.38		mg/Kg	1	10/31/2019 10:35:22 P	48455
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	10/31/2019 10:35:22 P	48455
Pentachlorophenol	ND	0.098	0.38		mg/Kg	1	10/31/2019 10:35:22 P	48455
Phenanthrene	ND	0.10	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Phenol	ND	0.12	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Pyrene	ND	0.090	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Pyridine	ND	0.11	0.38		mg/Kg	1	10/31/2019 10:35:22 P	48455
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
2,4,5-Trichlorophenol	ND	0.12	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	10/31/2019 10:35:22 P	48455
Surr: 2-Fluorophenol	56.7		26.7-85.9		%Rec	1	10/31/2019 10:35:22 P	48455
Surr: Phenol-d5	61.9		18.5-101		%Rec	1	10/31/2019 10:35:22 P	48455
Surr: 2,4,6-Tribromophenol	64.7		35.8-85.6		%Rec	1	10/31/2019 10:35:22 P	48455
Surr: Nitrobenzene-d5	65.2		40.8-95.2		%Rec	1	10/31/2019 10:35:22 P	48455
Surr: 2-Fluorobiphenyl	58.5		34.7-85.2		%Rec	1	10/31/2019 10:35:22 P	48455
Surr: 4-Terphenyl-d14	87.0		37.4-91.3		%Rec	1	10/31/2019 10:35:22 P	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0024	0.015		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Toluene	ND	0.0028	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Ethylbenzene	ND	0.0017	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0069	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0027	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0028	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0030	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0027	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Naphthalene	ND	0.0059	0.059		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1-Methylnaphthalene	ND	0.017	0.12		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
2-Methylnaphthalene	ND	0.013	0.12		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Acetone	ND	0.024	0.44		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Bromobenzene	ND	0.0028	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (8-10')
Project: SWMU 13
Collection Date: 10/23/2019 2:30:00 PM
Lab ID: 1910D68-008
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0027	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Bromoform	ND	0.0026	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Bromomethane	ND	0.0071	0.088		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
2-Butanone	ND	0.034	0.29		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Carbon disulfide	ND	0.0097	0.29		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Carbon tetrachloride	ND	0.0028	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Chlorobenzene	ND	0.0037	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Chloroethane	ND	0.0043	0.059		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Chloroform	ND	0.0024	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Chloromethane	ND	0.0028	0.088		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
2-Chlorotoluene	ND	0.0025	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
4-Chlorotoluene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
cis-1,2-DCE	ND	0.0040	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
cis-1,3-Dichloropropene	ND	0.0025	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0030	0.059		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Dibromochloromethane	ND	0.0021	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Dibromomethane	ND	0.0031	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,2-Dichlorobenzene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,3-Dichlorobenzene	ND	0.0025	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,4-Dichlorobenzene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Dichlorodifluoromethane	ND	0.0068	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,1-Dichloroethane	ND	0.0019	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,1-Dichloroethene	ND	0.012	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,2-Dichloropropane	ND	0.0021	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,3-Dichloropropane	ND	0.0032	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
2,2-Dichloropropane	ND	0.0095	0.059		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,1-Dichloropropene	ND	0.0027	0.059		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Hexachlorobutadiene	ND	0.0030	0.059		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
2-Hexanone	ND	0.0049	0.29		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Isopropylbenzene	ND	0.0021	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
4-Isopropyltoluene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
4-Methyl-2-pentanone	ND	0.0055	0.29		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Methylene chloride	ND	0.0052	0.088		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
n-Butylbenzene	ND	0.0027	0.088		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
n-Propylbenzene	ND	0.0023	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
sec-Butylbenzene	ND	0.0033	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Styrene	ND	0.0023	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
tert-Butylbenzene	ND	0.0028	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0020	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
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PQL	Practical Quanitative Limit
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B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (8-10')
Project: SWMU 13
Collection Date: 10/23/2019 2:30:00 PM
Lab ID: 1910D68-008
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0030	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Tetrachloroethene (PCE)	ND	0.0023	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
trans-1,2-DCE	ND	0.0027	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
trans-1,3-Dichloropropene	ND	0.0031	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0026	0.059		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0030	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,1,1-Trichloroethane	ND	0.0026	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,1,2-Trichloroethane	ND	0.0021	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Trichloroethene (TCE)	ND	0.0034	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Trichlorofluoromethane	ND	0.0099	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
1,2,3-Trichloropropane	ND	0.0047	0.059		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Vinyl chloride	ND	0.0019	0.029		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Xylenes, Total	ND	0.0074	0.059		mg/Kg	1	10/28/2019 6:40:18 PM	S64028
Surr: Dibromofluoromethane	107		70-130		%Rec	1	10/28/2019 6:40:18 PM	S64028
Surr: 1,2-Dichloroethane-d4	95.0		70-130		%Rec	1	10/28/2019 6:40:18 PM	S64028
Surr: Toluene-d8	99.1		70-130		%Rec	1	10/28/2019 6:40:18 PM	S64028
Surr: 4-Bromofluorobenzene	91.6		70-130		%Rec	1	10/28/2019 6:40:18 PM	S64028

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (10-10.5')
Project: SWMU 13
Collection Date: 10/23/2019 2:35:00 PM
Lab ID: 1910D68-009
Matrix: SOIL
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.9	9.5		mg/Kg	1	10/30/2019 10:46:33 A	48457
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/30/2019 10:46:33 A	48457
Surr: DNOP	93.3	0	70-130		%Rec	1	10/30/2019 10:46:33 A	48457
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.5	4.9		mg/Kg	1	10/30/2019 1:00:53 PM	48446
Surr: BFB	102	0	77.4-118		%Rec	1	10/30/2019 1:00:53 PM	48446
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0073	0.0018	0.032	J	mg/Kg	1	11/1/2019 1:16:22 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.73	5.0		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Arsenic	ND	2.8	5.0		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Barium	310	0.046	0.20		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Beryllium	1.2	0.018	0.30		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Cadmium	ND	0.048	0.20		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Chromium	13	0.16	0.60		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Cobalt	5.4	0.21	0.60		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Iron	17000	72	250		mg/Kg	100	11/18/2019 7:13:01 PM	48519
Lead	3.0	0.48	0.50		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Manganese	350	0.041	0.20		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Nickel	11	0.30	1.0		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Selenium	ND	2.5	5.0		mg/Kg	2	11/19/2019 6:22:07 PM	48519
Silver	ND	0.064	0.50		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Vanadium	22	0.13	5.0		mg/Kg	2	11/18/2019 7:11:26 PM	48519
Zinc	18	0.79	5.0		mg/Kg	2	11/18/2019 7:11:26 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Aniline	ND	0.13	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Anthracene	ND	0.11	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Azobenzene	ND	0.14	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Benz(a)anthracene	ND	0.097	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Benzo(a)pyrene	ND	0.090	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Benzo(b)fluoranthene	ND	0.089	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Benzo(g,h,i)perylene	ND	0.087	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Benzo(k)fluoranthene	ND	0.092	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Benzoic acid	ND	0.10	0.51		mg/Kg	1	10/31/2019 11:04:32 P	48455
Benzyl alcohol	ND	0.13	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (10-10.5')
Project: SWMU 13
Collection Date: 10/23/2019 2:35:00 PM
Lab ID: 1910D68-009
Matrix: SOIL
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Bis(2-chloroisopropyl)ether	ND	0.12	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Bis(2-ethylhexyl)phthalate	ND	0.15	0.51		mg/Kg	1	10/31/2019 11:04:32 P	48455
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Carbazole	ND	0.12	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
4-Chloro-3-methylphenol	ND	0.16	0.51		mg/Kg	1	10/31/2019 11:04:32 P	48455
4-Chloroaniline	ND	0.14	0.51		mg/Kg	1	10/31/2019 11:04:32 P	48455
2-Chloronaphthalene	ND	0.13	0.25		mg/Kg	1	10/31/2019 11:04:32 P	48455
2-Chlorophenol	ND	0.13	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Chrysene	ND	0.089	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Di-n-butyl phthalate	0.17	0.15	0.40	J	mg/Kg	1	10/31/2019 11:04:32 P	48455
Di-n-octyl phthalate	ND	0.10	0.40		mg/Kg	1	10/31/2019 11:04:32 P	48455
Dibenz(a,h)anthracene	ND	0.092	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
1,3-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
3,3´-Dichlorobenzidine	ND	0.090	0.25		mg/Kg	1	10/31/2019 11:04:32 P	48455
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
2,4-Dichlorophenol	ND	0.12	0.40		mg/Kg	1	10/31/2019 11:04:32 P	48455
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	10/31/2019 11:04:32 P	48455
4,6-Dinitro-2-methylphenol	ND	0.093	0.40		mg/Kg	1	10/31/2019 11:04:32 P	48455
2,4-Dinitrophenol	ND	0.073	0.51		mg/Kg	1	10/31/2019 11:04:32 P	48455
2,4-Dinitrotoluene	ND	0.12	0.51		mg/Kg	1	10/31/2019 11:04:32 P	48455
2,6-Dinitrotoluene	ND	0.13	0.51		mg/Kg	1	10/31/2019 11:04:32 P	48455
Fluoranthene	ND	0.11	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Fluorene	ND	0.12	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Hexachlorobenzene	ND	0.13	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Hexachlorocyclopentadiene	ND	0.12	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Indeno(1,2,3-cd)pyrene	ND	0.10	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Isophorone	ND	0.15	0.40		mg/Kg	1	10/31/2019 11:04:32 P	48455
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
2-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (10-10.5')
Project: SWMU 13
Collection Date: 10/23/2019 2:35:00 PM
Lab ID: 1910D68-009
Matrix: SOIL
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.40		mg/Kg	1	10/31/2019 11:04:32 P	48455
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
N-Nitrosodiphenylamine	ND	0.11	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Naphthalene	ND	0.15	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	10/31/2019 11:04:32 P	48455
Nitrobenzene	ND	0.14	0.40		mg/Kg	1	10/31/2019 11:04:32 P	48455
2-Nitrophenol	ND	0.14	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
4-Nitrophenol	ND	0.14	0.25		mg/Kg	1	10/31/2019 11:04:32 P	48455
Pentachlorophenol	ND	0.10	0.40		mg/Kg	1	10/31/2019 11:04:32 P	48455
Phenanthrene	ND	0.11	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Phenol	ND	0.13	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Pyrene	ND	0.095	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Pyridine	ND	0.12	0.40		mg/Kg	1	10/31/2019 11:04:32 P	48455
1,2,4-Trichlorobenzene	ND	0.16	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
2,4,6-Trichlorophenol	ND	0.11	0.20		mg/Kg	1	10/31/2019 11:04:32 P	48455
Surr: 2-Fluorophenol	66.7		26.7-85.9		%Rec	1	10/31/2019 11:04:32 P	48455
Surr: Phenol-d5	70.2		18.5-101		%Rec	1	10/31/2019 11:04:32 P	48455
Surr: 2,4,6-Tribromophenol	70.4		35.8-85.6		%Rec	1	10/31/2019 11:04:32 P	48455
Surr: Nitrobenzene-d5	76.1		40.8-95.2		%Rec	1	10/31/2019 11:04:32 P	48455
Surr: 2-Fluorobiphenyl	68.6		34.7-85.2		%Rec	1	10/31/2019 11:04:32 P	48455
Surr: 4-Terphenyl-d14	88.7		37.4-91.3		%Rec	1	10/31/2019 11:04:32 P	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0040	0.025		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Toluene	ND	0.0047	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Ethylbenzene	ND	0.0028	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Methyl tert-butyl ether (MTBE)	ND	0.012	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,2,4-Trimethylbenzene	ND	0.0045	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,3,5-Trimethylbenzene	ND	0.0047	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,2-Dichloroethane (EDC)	ND	0.0050	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,2-Dibromoethane (EDB)	ND	0.0045	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Naphthalene	ND	0.0098	0.098		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1-Methylnaphthalene	ND	0.028	0.20		mg/Kg	1	10/30/2019 2:36:27 PM	48446
2-Methylnaphthalene	ND	0.021	0.20		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Acetone	ND	0.041	0.74		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Bromobenzene	ND	0.0047	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446

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Qualifiers:

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (10-10.5')
Project: SWMU 13
Collection Date: 10/23/2019 2:35:00 PM
Lab ID: 1910D68-009
Matrix: SOIL
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0045	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Bromoform	ND	0.0044	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Bromomethane	ND	0.012	0.15		mg/Kg	1	10/30/2019 2:36:27 PM	48446
2-Butanone	0.071	0.057	0.49	J	mg/Kg	1	10/30/2019 2:36:27 PM	48446
Carbon disulfide	ND	0.016	0.49		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Carbon tetrachloride	ND	0.0046	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Chlorobenzene	ND	0.0063	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Chloroethane	ND	0.0072	0.098		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Chloroform	ND	0.0039	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Chloromethane	ND	0.0047	0.15		mg/Kg	1	10/30/2019 2:36:27 PM	48446
2-Chlorotoluene	ND	0.0043	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
4-Chlorotoluene	ND	0.0040	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
cis-1,2-DCE	ND	0.0067	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
cis-1,3-Dichloropropene	ND	0.0041	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,2-Dibromo-3-chloropropane	ND	0.0050	0.098		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Dibromochloromethane	ND	0.0035	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Dibromomethane	ND	0.0053	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,2-Dichlorobenzene	ND	0.0040	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,3-Dichlorobenzene	ND	0.0043	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,4-Dichlorobenzene	ND	0.0041	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Dichlorodifluoromethane	ND	0.011	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,1-Dichloroethane	ND	0.0031	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,1-Dichloroethene	ND	0.020	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,2-Dichloropropane	ND	0.0036	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,3-Dichloropropane	ND	0.0053	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
2,2-Dichloropropane	ND	0.016	0.098		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,1-Dichloropropene	ND	0.0045	0.098		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Hexachlorobutadiene	ND	0.0050	0.098		mg/Kg	1	10/30/2019 2:36:27 PM	48446
2-Hexanone	ND	0.0081	0.49		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Isopropylbenzene	ND	0.0035	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
4-Isopropyltoluene	ND	0.0041	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
4-Methyl-2-pentanone	ND	0.0093	0.49		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Methylene chloride	ND	0.0087	0.15		mg/Kg	1	10/30/2019 2:36:27 PM	48446
n-Butylbenzene	ND	0.0046	0.15		mg/Kg	1	10/30/2019 2:36:27 PM	48446
n-Propylbenzene	ND	0.0039	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
sec-Butylbenzene	ND	0.0055	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Styrene	ND	0.0038	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
tert-Butylbenzene	ND	0.0046	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,1,1,2-Tetrachloroethane	ND	0.0033	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (10-10.5')
Project: SWMU 13
Collection Date: 10/23/2019 2:35:00 PM
Lab ID: 1910D68-009
Matrix: SOIL
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0050	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Tetrachloroethene (PCE)	ND	0.0039	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
trans-1,2-DCE	ND	0.0045	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
trans-1,3-Dichloropropene	ND	0.0052	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,2,3-Trichlorobenzene	ND	0.0043	0.098		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,2,4-Trichlorobenzene	ND	0.0050	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,1,1-Trichloroethane	ND	0.0044	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,1,2-Trichloroethane	ND	0.0035	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Trichloroethene (TCE)	ND	0.0057	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Trichlorofluoromethane	ND	0.017	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
1,2,3-Trichloropropane	ND	0.0079	0.098		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Vinyl chloride	ND	0.0032	0.049		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Xylenes, Total	ND	0.012	0.098		mg/Kg	1	10/30/2019 2:36:27 PM	48446
Surr: Dibromofluoromethane	103		70-130		%Rec	1	10/30/2019 2:36:27 PM	48446
Surr: 1,2-Dichloroethane-d4	91.9		70-130		%Rec	1	10/30/2019 2:36:27 PM	48446
Surr: Toluene-d8	98.8		70-130		%Rec	1	10/30/2019 2:36:27 PM	48446
Surr: 4-Bromofluorobenzene	92.8		70-130		%Rec	1	10/30/2019 2:36:27 PM	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (14-16')
Project: SWMU 13
Collection Date: 10/23/2019 2:45:00 PM
Lab ID: 1910D68-010
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.9	9.6		mg/Kg	1	10/30/2019 11:08:37 A	48457
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/30/2019 11:08:37 A	48457
Surr: DNOP	85.5	0	70-130		%Rec	1	10/30/2019 11:08:37 A	48457
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.87	2.9		mg/Kg	1	10/27/2019 9:19:43 PM	A63989
Surr: BFB	107	0	77.4-118		%Rec	1	10/27/2019 9:19:43 PM	A63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0060	0.0017	0.032	J	mg/Kg	1	11/1/2019 1:18:21 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.72	4.9		mg/Kg	2	11/7/2019 2:57:26 PM	48433
Arsenic	ND	2.8	4.9		mg/Kg	2	11/7/2019 2:57:26 PM	48433
Barium	180	0.045	0.19		mg/Kg	2	11/7/2019 2:57:26 PM	48433
Beryllium	1.3	0.018	0.29		mg/Kg	2	11/7/2019 2:57:26 PM	48433
Cadmium	ND	0.047	0.19		mg/Kg	2	11/7/2019 2:57:26 PM	48433
Chromium	13	0.15	0.58		mg/Kg	2	11/7/2019 2:57:26 PM	48433
Cobalt	4.7	0.21	0.58		mg/Kg	2	11/7/2019 2:57:26 PM	48433
Iron	19000	71	240		mg/Kg	100	11/18/2019 7:22:19 PM	48433
Lead	1.3	0.47	0.49		mg/Kg	2	11/18/2019 7:18:41 PM	48433
Manganese	230	0.040	0.19		mg/Kg	2	11/7/2019 2:57:26 PM	48433
Nickel	11	0.29	0.97		mg/Kg	2	11/7/2019 2:57:26 PM	48433
Selenium	2.5	2.4	4.9	J	mg/Kg	2	11/7/2019 2:57:26 PM	48433
Silver	ND	0.062	0.49		mg/Kg	2	11/7/2019 2:57:26 PM	48433
Vanadium	21	0.13	4.9		mg/Kg	2	11/7/2019 2:57:26 PM	48433
Zinc	18	0.77	4.9		mg/Kg	2	11/7/2019 2:57:26 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Acenaphthylene	ND	0.11	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Aniline	ND	0.13	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Anthracene	ND	0.11	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Azobenzene	ND	0.14	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Benz(a)anthracene	ND	0.099	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Benzo(a)pyrene	ND	0.091	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Benzo(b)fluoranthene	ND	0.091	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Benzo(g,h,i)perylene	ND	0.088	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Benzo(k)fluoranthene	ND	0.093	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Benzoic acid	ND	0.11	0.51		mg/Kg	1	10/31/2019 11:33:10 P	48455
Benzyl alcohol	ND	0.13	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (14-16')
Project: SWMU 13
Collection Date: 10/23/2019 2:45:00 PM
Lab ID: 1910D68-010
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Bis(2-chloroethyl)ether	ND	0.12	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Bis(2-chloroisopropyl)ether	ND	0.12	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Bis(2-ethylhexyl)phthalate	0.17	0.15	0.51	J	mg/Kg	1	10/31/2019 11:33:10 P	48455
4-Bromophenyl phenyl ether	ND	0.12	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Butyl benzyl phthalate	ND	0.10	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Carbazole	ND	0.12	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
4-Chloro-3-methylphenol	ND	0.16	0.51		mg/Kg	1	10/31/2019 11:33:10 P	48455
4-Chloroaniline	ND	0.15	0.51		mg/Kg	1	10/31/2019 11:33:10 P	48455
2-Chloronaphthalene	ND	0.13	0.26		mg/Kg	1	10/31/2019 11:33:10 P	48455
2-Chlorophenol	ND	0.13	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
4-Chlorophenyl phenyl ether	ND	0.11	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Chrysene	ND	0.090	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Di-n-butyl phthalate	0.19	0.15	0.41	J	mg/Kg	1	10/31/2019 11:33:10 P	48455
Di-n-octyl phthalate	ND	0.10	0.41		mg/Kg	1	10/31/2019 11:33:10 P	48455
Dibenz(a,h)anthracene	ND	0.093	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Dibenzofuran	ND	0.13	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
1,2-Dichlorobenzene	ND	0.12	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
1,3-Dichlorobenzene	ND	0.11	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
1,4-Dichlorobenzene	ND	0.11	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
3,3´-Dichlorobenzidine	ND	0.091	0.26		mg/Kg	1	10/31/2019 11:33:10 P	48455
Diethyl phthalate	ND	0.15	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Dimethyl phthalate	ND	0.14	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
2,4-Dichlorophenol	ND	0.12	0.41		mg/Kg	1	10/31/2019 11:33:10 P	48455
2,4-Dimethylphenol	ND	0.11	0.31		mg/Kg	1	10/31/2019 11:33:10 P	48455
4,6-Dinitro-2-methylphenol	ND	0.095	0.41		mg/Kg	1	10/31/2019 11:33:10 P	48455
2,4-Dinitrophenol	ND	0.074	0.51		mg/Kg	1	10/31/2019 11:33:10 P	48455
2,4-Dinitrotoluene	ND	0.12	0.51		mg/Kg	1	10/31/2019 11:33:10 P	48455
2,6-Dinitrotoluene	ND	0.13	0.51		mg/Kg	1	10/31/2019 11:33:10 P	48455
Fluoranthene	ND	0.11	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Fluorene	ND	0.12	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Hexachlorobenzene	ND	0.13	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Hexachlorobutadiene	ND	0.14	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Hexachlorocyclopentadiene	ND	0.12	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Hexachloroethane	ND	0.11	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Indeno(1,2,3-cd)pyrene	ND	0.10	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Isophorone	ND	0.15	0.41		mg/Kg	1	10/31/2019 11:33:10 P	48455
1-Methylnaphthalene	ND	0.15	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
2-Methylnaphthalene	ND	0.15	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (14-16')
Project: SWMU 13
Collection Date: 10/23/2019 2:45:00 PM
Lab ID: 1910D68-010
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.41		mg/Kg	1	10/31/2019 11:33:10 P	48455
3+4-Methylphenol	ND	0.13	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
N-Nitrosodi-n-propylamine	ND	0.15	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
N-Nitrosodiphenylamine	ND	0.11	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Naphthalene	ND	0.16	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
2-Nitroaniline	ND	0.15	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
3-Nitroaniline	ND	0.14	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
4-Nitroaniline	ND	0.13	0.41		mg/Kg	1	10/31/2019 11:33:10 P	48455
Nitrobenzene	ND	0.14	0.41		mg/Kg	1	10/31/2019 11:33:10 P	48455
2-Nitrophenol	ND	0.14	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
4-Nitrophenol	ND	0.14	0.26		mg/Kg	1	10/31/2019 11:33:10 P	48455
Pentachlorophenol	ND	0.11	0.41		mg/Kg	1	10/31/2019 11:33:10 P	48455
Phenanthrene	ND	0.11	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Phenol	ND	0.13	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Pyrene	ND	0.096	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Pyridine	ND	0.12	0.41		mg/Kg	1	10/31/2019 11:33:10 P	48455
1,2,4-Trichlorobenzene	ND	0.16	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
2,4,5-Trichlorophenol	ND	0.13	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
2,4,6-Trichlorophenol	ND	0.11	0.21		mg/Kg	1	10/31/2019 11:33:10 P	48455
Surr: 2-Fluorophenol	64.0		26.7-85.9		%Rec	1	10/31/2019 11:33:10 P	48455
Surr: Phenol-d5	60.7		18.5-101		%Rec	1	10/31/2019 11:33:10 P	48455
Surr: 2,4,6-Tribromophenol	62.5		35.8-85.6		%Rec	1	10/31/2019 11:33:10 P	48455
Surr: Nitrobenzene-d5	64.6		40.8-95.2		%Rec	1	10/31/2019 11:33:10 P	48455
Surr: 2-Fluorobiphenyl	57.9		34.7-85.2		%Rec	1	10/31/2019 11:33:10 P	48455
Surr: 4-Terphenyl-d14	35.9		37.4-91.3	S	%Rec	1	10/31/2019 11:33:10 P	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0024	0.014		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Toluene	ND	0.0028	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Ethylbenzene	ND	0.0017	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0069	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0026	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0028	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0029	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0026	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Naphthalene	ND	0.0058	0.058		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1-Methylnaphthalene	ND	0.017	0.12		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
2-Methylnaphthalene	ND	0.013	0.12		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Acetone	ND	0.024	0.43		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Bromobenzene	ND	0.0028	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (14-16')
Project: SWMU 13
Collection Date: 10/23/2019 2:45:00 PM
Lab ID: 1910D68-010
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0026	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Bromoform	ND	0.0026	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Bromomethane	ND	0.0070	0.087		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
2-Butanone	ND	0.033	0.29		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Carbon disulfide	ND	0.0095	0.29		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Carbon tetrachloride	ND	0.0027	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Chlorobenzene	ND	0.0037	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Chloroethane	ND	0.0043	0.058		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Chloroform	ND	0.0023	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Chloromethane	ND	0.0028	0.087		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
2-Chlorotoluene	ND	0.0025	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
4-Chlorotoluene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
cis-1,2-DCE	ND	0.0040	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
cis-1,3-Dichloropropene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0030	0.058		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Dibromochloromethane	ND	0.0021	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Dibromomethane	ND	0.0031	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,2-Dichlorobenzene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,3-Dichlorobenzene	ND	0.0025	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,4-Dichlorobenzene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Dichlorodifluoromethane	ND	0.0067	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,1-Dichloroethane	ND	0.0018	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,1-Dichloroethene	ND	0.012	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,2-Dichloropropane	ND	0.0021	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,3-Dichloropropane	ND	0.0031	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
2,2-Dichloropropane	ND	0.0094	0.058		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,1-Dichloropropene	ND	0.0026	0.058		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Hexachlorobutadiene	ND	0.0029	0.058		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
2-Hexanone	ND	0.0048	0.29		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Isopropylbenzene	ND	0.0021	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
4-Isopropyltoluene	ND	0.0024	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
4-Methyl-2-pentanone	ND	0.0055	0.29		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Methylene chloride	0.0077	0.0051	0.087	J	mg/Kg	1	10/28/2019 7:09:33 PM	S64028
n-Butylbenzene	ND	0.0027	0.087		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
n-Propylbenzene	ND	0.0023	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
sec-Butylbenzene	ND	0.0033	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Styrene	ND	0.0023	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
tert-Butylbenzene	ND	0.0027	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0020	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-5 (14-16')
Project: SWMU 13
Collection Date: 10/23/2019 2:45:00 PM
Lab ID: 1910D68-010
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0029	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Tetrachloroethene (PCE)	ND	0.0023	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
trans-1,2-DCE	ND	0.0026	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
trans-1,3-Dichloropropene	ND	0.0031	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0025	0.058		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0029	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,1,1-Trichloroethane	ND	0.0026	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,1,2-Trichloroethane	ND	0.0020	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Trichloroethene (TCE)	ND	0.0033	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Trichlorofluoromethane	ND	0.0098	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
1,2,3-Trichloropropane	ND	0.0047	0.058		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Vinyl chloride	ND	0.0019	0.029		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Xylenes, Total	ND	0.0073	0.058		mg/Kg	1	10/28/2019 7:09:33 PM	S64028
Surr: Dibromofluoromethane	104		70-130		%Rec	1	10/28/2019 7:09:33 PM	S64028
Surr: 1,2-Dichloroethane-d4	89.9		70-130		%Rec	1	10/28/2019 7:09:33 PM	S64028
Surr: Toluene-d8	103		70-130		%Rec	1	10/28/2019 7:09:33 PM	S64028
Surr: 4-Bromofluorobenzene	91.9		70-130		%Rec	1	10/28/2019 7:09:33 PM	S64028

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 4:50:00 PM
Lab ID: 1910D68-011
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	20	1.9	9.4		mg/Kg	1	10/31/2019 4:12:57 PM	48457
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	10/31/2019 4:12:57 PM	48457
Surr: DNOP	91.1	0	70-130		%Rec	1	10/31/2019 4:12:57 PM	48457
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.0	3.3		mg/Kg	1	10/27/2019 10:06:00 P	A63989
Surr: BFB	95.0	0	77.4-118		%Rec	1	10/27/2019 10:06:00 P	A63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.019	0.0018	0.032	J	mg/Kg	1	11/1/2019 1:20:20 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Arsenic	ND	2.9	5.1		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Barium	390	0.047	0.20		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Beryllium	0.97	0.019	0.30		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Chromium	12	0.16	0.61		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Cobalt	4.4	0.21	0.61		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Iron	15000	74	250		mg/Kg	100	11/18/2019 7:25:30 PM	48433
Lead	2.8	0.49	0.51		mg/Kg	2	11/18/2019 7:23:55 PM	48433
Manganese	360	0.042	0.20		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Nickel	9.6	0.30	1.0		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Selenium	ND	2.5	5.1		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Silver	ND	0.065	0.51		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Vanadium	20	0.14	5.1		mg/Kg	2	11/7/2019 2:59:04 PM	48433
Zinc	18	0.80	5.1		mg/Kg	2	11/7/2019 2:59:04 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Acenaphthylene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Aniline	ND	1.3	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Anthracene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Azobenzene	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Benz(a)anthracene	ND	0.95	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Benzo(a)pyrene	ND	0.87	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Benzo(b)fluoranthene	ND	0.87	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Benzo(g,h,i)perylene	ND	0.84	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Benzo(k)fluoranthene	ND	0.89	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Benzoic acid	ND	1.0	4.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Benzyl alcohol	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 4:50:00 PM
Lab ID: 1910D68-011
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	1.5	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Bis(2-chloroethyl)ether	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Bis(2-chloroisopropyl)ether	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Bis(2-ethylhexyl)phthalate	ND	1.4	4.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
4-Bromophenyl phenyl ether	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Butyl benzyl phthalate	ND	1.0	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Carbazole	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
4-Chloro-3-methylphenol	ND	1.5	4.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
4-Chloroaniline	ND	1.4	4.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2-Chloronaphthalene	ND	1.2	2.5	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2-Chlorophenol	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
4-Chlorophenyl phenyl ether	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Chrysene	ND	0.87	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Di-n-butyl phthalate	ND	1.5	3.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Di-n-octyl phthalate	ND	1.0	3.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Dibenz(a,h)anthracene	ND	0.89	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Dibenzofuran	ND	1.3	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
1,2-Dichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
1,3-Dichlorobenzene	ND	1.0	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
1,4-Dichlorobenzene	ND	1.0	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
3,3´-Dichlorobenzidine	ND	0.87	2.5	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Diethyl phthalate	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Dimethyl phthalate	ND	1.3	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2,4-Dichlorophenol	ND	1.1	3.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2,4-Dimethylphenol	ND	1.1	3.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
4,6-Dinitro-2-methylphenol	ND	0.91	3.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2,4-Dinitrophenol	ND	0.71	4.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2,6-Dinitrotoluene	ND	1.3	4.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Fluoranthene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Fluorene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Hexachlorobenzene	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Hexachlorobutadiene	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Hexachloroethane	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Indeno(1,2,3-cd)pyrene	ND	0.98	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Isophorone	ND	1.4	3.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
1-Methylnaphthalene	ND	1.5	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2-Methylnaphthalene	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 4:50:00 PM
Lab ID: 1910D68-011
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	1.2	3.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
3+4-Methylphenol	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
N-Nitrosodi-n-propylamine	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Naphthalene	ND	1.5	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
3-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
4-Nitroaniline	ND	1.3	3.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Nitrobenzene	ND	1.4	3.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2-Nitrophenol	ND	1.3	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
4-Nitrophenol	ND	1.3	2.5	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Pentachlorophenol	ND	1.0	3.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Phenanthrene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Phenol	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Pyrene	ND	0.92	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Pyridine	ND	1.2	3.9	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
1,2,4-Trichlorobenzene	ND	1.5	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2,4,5-Trichlorophenol	ND	1.3	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
2,4,6-Trichlorophenol	ND	1.0	2.0	D	mg/Kg	1	11/1/2019 12:02:15 AM	48455
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	1	11/1/2019 12:02:15 AM	48455
Surr: Phenol-d5	0		18.5-101	SD	%Rec	1	11/1/2019 12:02:15 AM	48455
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	1	11/1/2019 12:02:15 AM	48455
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	1	11/1/2019 12:02:15 AM	48455
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	1	11/1/2019 12:02:15 AM	48455
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	1	11/1/2019 12:02:15 AM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0027	0.016		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Toluene	ND	0.0031	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Ethylbenzene	ND	0.0019	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0078	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0030	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0032	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0034	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0030	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Naphthalene	ND	0.0066	0.066		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1-Methylnaphthalene	ND	0.019	0.13		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
2-Methylnaphthalene	ND	0.014	0.13		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Acetone	ND	0.027	0.49		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Bromobenzene	ND	0.0032	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028

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Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 4:50:00 PM
Lab ID: 1910D68-011
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0030	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Bromoform	ND	0.0030	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Bromomethane	ND	0.0079	0.099		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
2-Butanone	ND	0.038	0.33		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Carbon disulfide	ND	0.011	0.33		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Carbon tetrachloride	ND	0.0031	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Chlorobenzene	ND	0.0042	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Chloroethane	ND	0.0049	0.066		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Chloroform	ND	0.0026	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Chloromethane	ND	0.0032	0.099		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
2-Chlorotoluene	ND	0.0029	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
4-Chlorotoluene	ND	0.0027	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
cis-1,2-DCE	ND	0.0045	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
cis-1,3-Dichloropropene	ND	0.0028	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0034	0.066		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Dibromochloromethane	ND	0.0023	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Dibromomethane	ND	0.0035	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,2-Dichlorobenzene	ND	0.0027	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,3-Dichlorobenzene	ND	0.0029	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,4-Dichlorobenzene	ND	0.0028	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Dichlorodifluoromethane	ND	0.0076	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,1-Dichloroethane	ND	0.0021	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,1-Dichloroethene	ND	0.013	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,2-Dichloropropane	ND	0.0024	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,3-Dichloropropane	ND	0.0036	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
2,2-Dichloropropane	ND	0.011	0.066		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,1-Dichloropropene	ND	0.0030	0.066		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Hexachlorobutadiene	ND	0.0034	0.066		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
2-Hexanone	ND	0.0055	0.33		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Isopropylbenzene	ND	0.0024	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
4-Isopropyltoluene	ND	0.0027	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
4-Methyl-2-pentanone	ND	0.0062	0.33		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Methylene chloride	ND	0.0058	0.099		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
n-Butylbenzene	ND	0.0031	0.099		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
n-Propylbenzene	ND	0.0026	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
sec-Butylbenzene	ND	0.0037	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Styrene	ND	0.0026	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
tert-Butylbenzene	ND	0.0031	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0022	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (0-0.5')
Project: SWMU 13
Collection Date: 10/23/2019 4:50:00 PM
Lab ID: 1910D68-011
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0033	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Tetrachloroethene (PCE)	ND	0.0026	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
trans-1,2-DCE	ND	0.0030	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
trans-1,3-Dichloropropene	ND	0.0035	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0029	0.066		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0033	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,1,1-Trichloroethane	ND	0.0030	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,1,2-Trichloroethane	ND	0.0023	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Trichloroethene (TCE)	ND	0.0038	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Trichlorofluoromethane	ND	0.011	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
1,2,3-Trichloropropane	ND	0.0053	0.066		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Vinyl chloride	ND	0.0022	0.033		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Xylenes, Total	ND	0.0083	0.066		mg/Kg	1	10/28/2019 7:38:45 PM	S64028
Surr: Dibromofluoromethane	110		70-130		%Rec	1	10/28/2019 7:38:45 PM	S64028
Surr: 1,2-Dichloroethane-d4	99.1		70-130		%Rec	1	10/28/2019 7:38:45 PM	S64028
Surr: Toluene-d8	100		70-130		%Rec	1	10/28/2019 7:38:45 PM	S64028
Surr: 4-Bromofluorobenzene	92.8		70-130		%Rec	1	10/28/2019 7:38:45 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 5:00:00 PM
Lab ID: 1910D68-012
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	11	1.9	9.3		mg/Kg	1	10/31/2019 5:25:33 PM	48457
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	10/31/2019 5:25:33 PM	48457
Surr: DNOP	98.3	0	70-130		%Rec	1	10/31/2019 5:25:33 PM	48457
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.73	2.4		mg/Kg	1	10/27/2019 10:29:09 P	A63989
Surr: BFB	103	0	77.4-118		%Rec	1	10/27/2019 10:29:09 P	A63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0083	0.0017	0.031	J	mg/Kg	1	11/1/2019 1:22:23 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Arsenic	ND	2.9	5.1		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Barium	410	0.047	0.20		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Beryllium	0.78	0.019	0.31		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Cadmium	ND	0.050	0.20		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Chromium	9.3	0.16	0.61		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Cobalt	3.8	0.22	0.61		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Iron	13000	74	250		mg/Kg	100	11/18/2019 7:28:40 PM	48433
Lead	3.1	0.50	0.51		mg/Kg	2	11/18/2019 7:27:05 PM	48433
Manganese	350	0.042	0.20		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Nickel	7.5	0.30	1.0		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Selenium	ND	2.6	5.1		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Silver	ND	0.065	0.51		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Vanadium	17	0.14	5.1		mg/Kg	2	11/7/2019 3:00:38 PM	48433
Zinc	16	0.81	5.1		mg/Kg	2	11/7/2019 3:00:38 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Acenaphthylene	ND	0.11	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Aniline	ND	0.12	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Anthracene	ND	0.10	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Azobenzene	ND	0.14	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Benz(a)anthracene	ND	0.094	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Benzo(a)pyrene	ND	0.086	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Benzo(b)fluoranthene	ND	0.086	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Benzo(g,h,i)perylene	ND	0.083	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Benzo(k)fluoranthene	ND	0.088	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Benzoic acid	ND	0.10	0.49		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 5:00:00 PM
Lab ID: 1910D68-012
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	11/1/2019 12:30:55 AM	48455
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Butyl benzyl phthalate	ND	0.099	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Carbazole	ND	0.11	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	11/1/2019 12:30:55 AM	48455
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
4-Chlorophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Chrysene	ND	0.086	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Di-n-butyl phthalate	0.15	0.15	0.39	J	mg/Kg	1	11/1/2019 12:30:55 AM	48455
Di-n-octyl phthalate	ND	0.099	0.39		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Dibenz(a,h)anthracene	ND	0.088	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Dibenzofuran	ND	0.13	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
1,2-Dichlorobenzene	ND	0.12	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
3,3´-Dichlorobenzidine	ND	0.086	0.24		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	11/1/2019 12:30:55 AM	48455
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2,4-Dinitrotoluene	ND	0.11	0.49		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Fluoranthene	ND	0.11	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Fluorene	ND	0.11	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Hexachlorobutadiene	ND	0.14	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Indeno(1,2,3-cd)pyrene	ND	0.097	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Isophorone	ND	0.14	0.39		mg/Kg	1	11/1/2019 12:30:55 AM	48455
1-Methylnaphthalene	ND	0.15	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 5:00:00 PM
Lab ID: 1910D68-012
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	11/1/2019 12:30:55 AM	48455
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Naphthalene	ND	0.15	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Nitrobenzene	ND	0.13	0.39		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Phenanthrene	ND	0.11	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Phenol	ND	0.12	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Pyrene	ND	0.091	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Pyridine	ND	0.12	0.39		mg/Kg	1	11/1/2019 12:30:55 AM	48455
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2,4,5-Trichlorophenol	ND	0.13	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	11/1/2019 12:30:55 AM	48455
Surr: 2-Fluorophenol	60.9		26.7-85.9		%Rec	1	11/1/2019 12:30:55 AM	48455
Surr: Phenol-d5	64.0		18.5-101		%Rec	1	11/1/2019 12:30:55 AM	48455
Surr: 2,4,6-Tribromophenol	60.0		35.8-85.6		%Rec	1	11/1/2019 12:30:55 AM	48455
Surr: Nitrobenzene-d5	65.6		40.8-95.2		%Rec	1	11/1/2019 12:30:55 AM	48455
Surr: 2-Fluorobiphenyl	62.5		34.7-85.2		%Rec	1	11/1/2019 12:30:55 AM	48455
Surr: 4-Terphenyl-d14	38.5		37.4-91.3		%Rec	1	11/1/2019 12:30:55 AM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0020	0.012		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Toluene	ND	0.0023	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Ethylbenzene	ND	0.0014	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0057	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0022	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0023	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0025	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0022	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Naphthalene	ND	0.0048	0.048		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1-Methylnaphthalene	ND	0.014	0.097		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
2-Methylnaphthalene	ND	0.011	0.097		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Acetone	ND	0.020	0.36		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Bromobenzene	ND	0.0023	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 5:00:00 PM
Lab ID: 1910D68-012
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0022	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Bromoform	ND	0.0022	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Bromomethane	ND	0.0058	0.073		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
2-Butanone	ND	0.028	0.24		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Carbon disulfide	ND	0.0080	0.24		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Carbon tetrachloride	ND	0.0023	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Chlorobenzene	ND	0.0031	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Chloroethane	ND	0.0036	0.048		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Chloroform	ND	0.0019	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Chloromethane	ND	0.0023	0.073		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
2-Chlorotoluene	ND	0.0021	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
4-Chlorotoluene	ND	0.0020	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
cis-1,2-DCE	ND	0.0033	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
cis-1,3-Dichloropropene	ND	0.0020	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0025	0.048		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Dibromochloromethane	ND	0.0017	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Dibromomethane	ND	0.0026	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,2-Dichlorobenzene	ND	0.0020	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,3-Dichlorobenzene	ND	0.0021	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,4-Dichlorobenzene	ND	0.0020	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Dichlorodifluoromethane	ND	0.0056	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,1-Dichloroethane	ND	0.0015	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,1-Dichloroethene	ND	0.0097	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,2-Dichloropropane	ND	0.0018	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,3-Dichloropropane	ND	0.0026	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
2,2-Dichloropropane	ND	0.0079	0.048		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,1-Dichloropropene	ND	0.0022	0.048		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Hexachlorobutadiene	ND	0.0025	0.048		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
2-Hexanone	ND	0.0040	0.24		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Isopropylbenzene	ND	0.0017	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
4-Isopropyltoluene	ND	0.0020	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
4-Methyl-2-pentanone	ND	0.0046	0.24		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Methylene chloride	ND	0.0043	0.073		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
n-Butylbenzene	ND	0.0023	0.073		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
n-Propylbenzene	ND	0.0019	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
sec-Butylbenzene	ND	0.0027	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Styrene	ND	0.0019	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
tert-Butylbenzene	ND	0.0023	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0016	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (1.5-2')
Project: SWMU 13
Collection Date: 10/23/2019 5:00:00 PM
Lab ID: 1910D68-012
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0025	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Tetrachloroethene (PCE)	ND	0.0019	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
trans-1,2-DCE	ND	0.0022	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
trans-1,3-Dichloropropene	ND	0.0026	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0021	0.048		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0024	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,1,1-Trichloroethane	ND	0.0022	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,1,2-Trichloroethane	ND	0.0017	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Trichloroethene (TCE)	ND	0.0028	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Trichlorofluoromethane	ND	0.0082	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
1,2,3-Trichloropropane	ND	0.0039	0.048		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Vinyl chloride	ND	0.0016	0.024		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Xylenes, Total	ND	0.0061	0.048		mg/Kg	1	10/28/2019 8:07:36 PM	S64028
Surr: Dibromofluoromethane	106		70-130		%Rec	1	10/28/2019 8:07:36 PM	S64028
Surr: 1,2-Dichloroethane-d4	95.1		70-130		%Rec	1	10/28/2019 8:07:36 PM	S64028
Surr: Toluene-d8	99.1		70-130		%Rec	1	10/28/2019 8:07:36 PM	S64028
Surr: 4-Bromofluorobenzene	93.2		70-130		%Rec	1	10/28/2019 8:07:36 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (2-3')
Project: SWMU 13
Collection Date: 10/23/2019 5:10:00 PM
Lab ID: 1910D68-013
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.8	9.0		mg/Kg	1	10/30/2019 12:14:12 P	48457
Motor Oil Range Organics (MRO)	ND	45	45		mg/Kg	1	10/30/2019 12:14:12 P	48457
Surr: DNOP	85.2	0	70-130		%Rec	1	10/30/2019 12:14:12 P	48457
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.78	2.6		mg/Kg	1	10/27/2019 10:52:16 P	A63989
Surr: BFB	104	0	77.4-118		%Rec	1	10/27/2019 10:52:16 P	A63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0050	0.0018	0.033	J	mg/Kg	1	11/1/2019 1:32:53 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.71	4.8		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Arsenic	ND	2.8	4.8		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Barium	310	0.045	0.19		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Beryllium	0.81	0.018	0.29		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Cadmium	ND	0.047	0.19		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Chromium	7.6	0.15	0.58		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Cobalt	4.0	0.20	0.58		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Iron	12000	70	240		mg/Kg	100	11/18/2019 7:31:50 PM	48433
Lead	3.7	0.47	0.48		mg/Kg	2	11/18/2019 7:30:14 PM	48433
Manganese	410	0.040	0.19		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Nickel	7.9	0.29	0.97		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Selenium	ND	2.4	4.8		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Silver	ND	0.062	0.48		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Vanadium	17	0.13	4.8		mg/Kg	2	11/7/2019 3:02:12 PM	48433
Zinc	13	0.77	4.8		mg/Kg	2	11/7/2019 3:02:12 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Aniline	ND	0.13	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Anthracene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Azobenzene	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Benz(a)anthracene	ND	0.098	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Benzo(a)pyrene	ND	0.090	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Benzo(b)fluoranthene	ND	0.090	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Benzo(g,h,i)perylene	ND	0.087	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Benzo(k)fluoranthene	ND	0.092	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Benzoic acid	ND	0.10	0.51		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Benzyl alcohol	ND	0.13	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (2-3')
Project: SWMU 13
Collection Date: 10/23/2019 5:10:00 PM
Lab ID: 1910D68-013
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Bis(2-chloroisopropyl)ether	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Bis(2-ethylhexyl)phthalate	ND	0.15	0.51		mg/Kg	1	11/1/2019 8:13:24 AM	48455
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Carbazole	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
4-Chloro-3-methylphenol	ND	0.16	0.51		mg/Kg	1	11/1/2019 8:13:24 AM	48455
4-Chloroaniline	ND	0.14	0.51		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2-Chloronaphthalene	ND	0.13	0.25		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2-Chlorophenol	ND	0.13	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Chrysene	ND	0.090	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Di-n-butyl phthalate	ND	0.15	0.41		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Di-n-octyl phthalate	ND	0.10	0.41		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Dibenz(a,h)anthracene	ND	0.092	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
1,3-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
3,3´-Dichlorobenzidine	ND	0.090	0.25		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Dimethyl phthalate	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2,4-Dichlorophenol	ND	0.12	0.41		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	11/1/2019 8:13:24 AM	48455
4,6-Dinitro-2-methylphenol	ND	0.094	0.41		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2,4-Dinitrophenol	ND	0.074	0.51		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2,4-Dinitrotoluene	ND	0.12	0.51		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2,6-Dinitrotoluene	ND	0.13	0.51		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Fluoranthene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Fluorene	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Hexachlorobenzene	ND	0.13	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Hexachlorocyclopentadiene	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Indeno(1,2,3-cd)pyrene	ND	0.10	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Isophorone	ND	0.15	0.41		mg/Kg	1	11/1/2019 8:13:24 AM	48455
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (2-3')
Project: SWMU 13
Collection Date: 10/23/2019 5:10:00 PM
Lab ID: 1910D68-013
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.41		mg/Kg	1	11/1/2019 8:13:24 AM	48455
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
N-Nitrosodiphenylamine	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Naphthalene	ND	0.15	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
4-Nitroaniline	ND	0.13	0.41		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Nitrobenzene	ND	0.14	0.41		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2-Nitrophenol	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
4-Nitrophenol	ND	0.14	0.25		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Pentachlorophenol	ND	0.10	0.41		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Phenanthrene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Phenol	ND	0.13	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Pyrene	ND	0.095	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Pyridine	ND	0.12	0.41		mg/Kg	1	11/1/2019 8:13:24 AM	48455
1,2,4-Trichlorobenzene	ND	0.16	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
2,4,6-Trichlorophenol	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:13:24 AM	48455
Surr: 2-Fluorophenol	61.8		26.7-85.9		%Rec	1	11/1/2019 8:13:24 AM	48455
Surr: Phenol-d5	64.3		18.5-101		%Rec	1	11/1/2019 8:13:24 AM	48455
Surr: 2,4,6-Tribromophenol	64.4		35.8-85.6		%Rec	1	11/1/2019 8:13:24 AM	48455
Surr: Nitrobenzene-d5	65.2		40.8-95.2		%Rec	1	11/1/2019 8:13:24 AM	48455
Surr: 2-Fluorobiphenyl	56.4		34.7-85.2		%Rec	1	11/1/2019 8:13:24 AM	48455
Surr: 4-Terphenyl-d14	41.4		37.4-91.3		%Rec	1	11/1/2019 8:13:24 AM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0021	0.013		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Toluene	ND	0.0025	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Ethylbenzene	ND	0.0015	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0061	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0024	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0025	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0026	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0024	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Naphthalene	ND	0.0052	0.052		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1-Methylnaphthalene	ND	0.015	0.10		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
2-Methylnaphthalene	ND	0.011	0.10		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Acetone	ND	0.021	0.39		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Bromobenzene	ND	0.0025	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028

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PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (2-3')
Project: SWMU 13
Collection Date: 10/23/2019 5:10:00 PM
Lab ID: 1910D68-013
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0024	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Bromoform	ND	0.0023	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Bromomethane	ND	0.0062	0.078		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
2-Butanone	ND	0.030	0.26		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Carbon disulfide	ND	0.0086	0.26		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Carbon tetrachloride	ND	0.0025	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Chlorobenzene	ND	0.0033	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Chloroethane	ND	0.0038	0.052		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Chloroform	ND	0.0021	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Chloromethane	ND	0.0025	0.078		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
2-Chlorotoluene	ND	0.0023	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
4-Chlorotoluene	ND	0.0021	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
cis-1,2-DCE	ND	0.0035	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
cis-1,3-Dichloropropene	ND	0.0022	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0027	0.052		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Dibromochloromethane	ND	0.0018	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Dibromomethane	ND	0.0028	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,2-Dichlorobenzene	ND	0.0021	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,3-Dichlorobenzene	ND	0.0023	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,4-Dichlorobenzene	ND	0.0022	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Dichlorodifluoromethane	ND	0.0060	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,1-Dichloroethane	ND	0.0017	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,1-Dichloroethene	ND	0.010	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,2-Dichloropropane	ND	0.0019	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,3-Dichloropropane	ND	0.0028	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
2,2-Dichloropropane	ND	0.0084	0.052		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,1-Dichloropropene	ND	0.0024	0.052		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Hexachlorobutadiene	ND	0.0026	0.052		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
2-Hexanone	ND	0.0043	0.26		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Isopropylbenzene	ND	0.0019	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
4-Isopropyltoluene	ND	0.0021	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
4-Methyl-2-pentanone	ND	0.0049	0.26		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Methylene chloride	0.0050	0.0046	0.078	J	mg/Kg	1	10/28/2019 8:36:50 PM	S64028
n-Butylbenzene	ND	0.0024	0.078		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
n-Propylbenzene	ND	0.0021	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
sec-Butylbenzene	ND	0.0029	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Styrene	ND	0.0020	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
tert-Butylbenzene	ND	0.0024	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0017	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (2-3')
Project: SWMU 13
Collection Date: 10/23/2019 5:10:00 PM
Lab ID: 1910D68-013
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0026	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Tetrachloroethene (PCE)	ND	0.0021	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
trans-1,2-DCE	ND	0.0024	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
trans-1,3-Dichloropropene	ND	0.0027	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0023	0.052		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0026	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,1,1-Trichloroethane	ND	0.0023	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,1,2-Trichloroethane	ND	0.0018	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Trichloroethene (TCE)	ND	0.0030	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Trichlorofluoromethane	ND	0.0088	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
1,2,3-Trichloropropane	ND	0.0042	0.052		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Vinyl chloride	ND	0.0017	0.026		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Xylenes, Total	ND	0.0065	0.052		mg/Kg	1	10/28/2019 8:36:50 PM	S64028
Surr: Dibromofluoromethane	108		70-130		%Rec	1	10/28/2019 8:36:50 PM	S64028
Surr: 1,2-Dichloroethane-d4	100		70-130		%Rec	1	10/28/2019 8:36:50 PM	S64028
Surr: Toluene-d8	104		70-130		%Rec	1	10/28/2019 8:36:50 PM	S64028
Surr: 4-Bromofluorobenzene	96.4		70-130		%Rec	1	10/28/2019 8:36:50 PM	S64028

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Qualifiers:

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D	Sample Diluted Due to Matrix
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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (6-8')
Project: SWMU 13
Collection Date: 10/23/2019 5:15:00 PM
Lab ID: 1910D68-014
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.9	9.7		mg/Kg	1	10/30/2019 12:36:13 P	48457
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/30/2019 12:36:13 P	48457
Surr: DNOP	89.6	0	70-130		%Rec	1	10/30/2019 12:36:13 P	48457
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.73	2.4		mg/Kg	1	10/28/2019 12:10:34 P	A63989
Surr: BFB	130	0	77.4-118	S	%Rec	1	10/28/2019 12:10:34 P	A63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.017	0.0017	0.031	J	mg/Kg	1	11/1/2019 2:37:53 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.76	5.1		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Arsenic	ND	2.9	5.1		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Barium	290	0.048	0.21		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Beryllium	1.3	0.019	0.31		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Cadmium	ND	0.050	0.21		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Chromium	12	0.16	0.62		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Cobalt	5.1	0.22	0.62		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Iron	18000	75	260		mg/Kg	100	11/18/2019 7:35:00 PM	48433
Lead	3.8	0.50	0.51		mg/Kg	2	11/18/2019 7:33:26 PM	48433
Manganese	320	0.043	0.21		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Nickel	12	0.31	1.0		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Selenium	ND	2.6	5.1		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Silver	ND	0.066	0.51		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Vanadium	20	0.14	5.1		mg/Kg	2	11/7/2019 3:03:44 PM	48433
Zinc	17	0.81	5.1		mg/Kg	2	11/7/2019 3:03:44 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Aniline	ND	0.13	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Anthracene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Azobenzene	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Benz(a)anthracene	ND	0.096	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Benzo(a)pyrene	ND	0.088	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Benzo(b)fluoranthene	ND	0.088	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Benzo(g,h,i)perylene	ND	0.085	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Benzo(k)fluoranthene	ND	0.090	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Benzoic acid	ND	0.10	0.50		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (6-8')
Project: SWMU 13
Collection Date: 10/23/2019 5:15:00 PM
Lab ID: 1910D68-014
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Bis(2-ethylhexyl)phthalate	ND	0.14	0.50		mg/Kg	1	11/1/2019 8:42:16 AM	48455
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Carbazole	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
4-Chloro-3-methylphenol	ND	0.15	0.50		mg/Kg	1	11/1/2019 8:42:16 AM	48455
4-Chloroaniline	ND	0.14	0.50		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2-Chloronaphthalene	ND	0.12	0.25		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Chrysene	ND	0.088	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Di-n-butyl phthalate	ND	0.15	0.40		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Di-n-octyl phthalate	ND	0.10	0.40		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Dibenz(a,h)anthracene	ND	0.090	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
3,3´-Dichlorobenzidine	ND	0.088	0.25		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2,4-Dichlorophenol	ND	0.12	0.40		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	11/1/2019 8:42:16 AM	48455
4,6-Dinitro-2-methylphenol	ND	0.092	0.40		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2,4-Dinitrophenol	ND	0.072	0.50		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2,6-Dinitrotoluene	ND	0.13	0.50		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Fluoranthene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Fluorene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Indeno(1,2,3-cd)pyrene	ND	0.099	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Isophorone	ND	0.15	0.40		mg/Kg	1	11/1/2019 8:42:16 AM	48455
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (6-8')
Project: SWMU 13
Collection Date: 10/23/2019 5:15:00 PM
Lab ID: 1910D68-014
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.40		mg/Kg	1	11/1/2019 8:42:16 AM	48455
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Naphthalene	ND	0.15	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Nitrobenzene	ND	0.14	0.40		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2-Nitrophenol	ND	0.14	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
4-Nitrophenol	ND	0.13	0.25		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Pentachlorophenol	ND	0.10	0.40		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Phenanthrene	ND	0.11	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Phenol	ND	0.12	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Pyrene	ND	0.093	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Pyridine	ND	0.12	0.40		mg/Kg	1	11/1/2019 8:42:16 AM	48455
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	11/1/2019 8:42:16 AM	48455
Surr: 2-Fluorophenol	56.3		26.7-85.9		%Rec	1	11/1/2019 8:42:16 AM	48455
Surr: Phenol-d5	63.4		18.5-101		%Rec	1	11/1/2019 8:42:16 AM	48455
Surr: 2,4,6-Tribromophenol	74.6		35.8-85.6		%Rec	1	11/1/2019 8:42:16 AM	48455
Surr: Nitrobenzene-d5	60.9		40.8-95.2		%Rec	1	11/1/2019 8:42:16 AM	48455
Surr: 2-Fluorobiphenyl	62.7		34.7-85.2		%Rec	1	11/1/2019 8:42:16 AM	48455
Surr: 4-Terphenyl-d14	44.4		37.4-91.3		%Rec	1	11/1/2019 8:42:16 AM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0020	0.012		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Toluene	ND	0.0023	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Ethylbenzene	ND	0.0014	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0057	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0022	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0023	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0024	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0022	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Naphthalene	ND	0.0048	0.048		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1-Methylnaphthalene	ND	0.014	0.096		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
2-Methylnaphthalene	ND	0.010	0.096		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Acetone	ND	0.020	0.36		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Bromobenzene	ND	0.0023	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (6-8')
Project: SWMU 13
Collection Date: 10/23/2019 5:15:00 PM
Lab ID: 1910D68-014
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0022	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Bromoform	ND	0.0022	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Bromomethane	ND	0.0058	0.072		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
2-Butanone	ND	0.028	0.24		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Carbon disulfide	ND	0.0079	0.24		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Carbon tetrachloride	ND	0.0023	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Chlorobenzene	ND	0.0031	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Chloroethane	ND	0.0035	0.048		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Chloroform	ND	0.0019	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Chloromethane	ND	0.0023	0.072		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
2-Chlorotoluene	ND	0.0021	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
4-Chlorotoluene	ND	0.0020	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
cis-1,2-DCE	ND	0.0033	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
cis-1,3-Dichloropropene	ND	0.0020	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0025	0.048		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Dibromochloromethane	ND	0.0017	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Dibromomethane	ND	0.0026	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,2-Dichlorobenzene	ND	0.0020	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,3-Dichlorobenzene	ND	0.0021	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,4-Dichlorobenzene	ND	0.0020	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Dichlorodifluoromethane	ND	0.0056	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,1-Dichloroethane	ND	0.0015	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,1-Dichloroethene	ND	0.0096	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,2-Dichloropropane	ND	0.0017	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,3-Dichloropropane	ND	0.0026	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
2,2-Dichloropropane	ND	0.0078	0.048		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,1-Dichloropropene	ND	0.0022	0.048		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Hexachlorobutadiene	ND	0.0024	0.048		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
2-Hexanone	ND	0.0040	0.24		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Isopropylbenzene	ND	0.0017	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
4-Isopropyltoluene	ND	0.0020	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
4-Methyl-2-pentanone	ND	0.0045	0.24		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Methylene chloride	ND	0.0042	0.072		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
n-Butylbenzene	ND	0.0022	0.072		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
n-Propylbenzene	ND	0.0019	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
sec-Butylbenzene	ND	0.0027	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Styrene	ND	0.0019	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
tert-Butylbenzene	ND	0.0023	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0016	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (6-8')
Project: SWMU 13
Collection Date: 10/23/2019 5:15:00 PM
Lab ID: 1910D68-014
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0024	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Tetrachloroethene (PCE)	ND	0.0019	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
trans-1,2-DCE	ND	0.0022	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
trans-1,3-Dichloropropene	ND	0.0025	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0021	0.048		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0024	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,1,1-Trichloroethane	ND	0.0022	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,1,2-Trichloroethane	ND	0.0017	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Trichloroethene (TCE)	ND	0.0028	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Trichlorofluoromethane	ND	0.0081	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
1,2,3-Trichloropropane	ND	0.0039	0.048		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Vinyl chloride	ND	0.0016	0.024		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Xylenes, Total	ND	0.0060	0.048		mg/Kg	1	10/28/2019 9:05:49 PM	S64028
Surr: Dibromofluoromethane	111		70-130		%Rec	1	10/28/2019 9:05:49 PM	S64028
Surr: 1,2-Dichloroethane-d4	99.4		70-130		%Rec	1	10/28/2019 9:05:49 PM	S64028
Surr: Toluene-d8	103		70-130		%Rec	1	10/28/2019 9:05:49 PM	S64028
Surr: 4-Bromofluorobenzene	95.2		70-130		%Rec	1	10/28/2019 9:05:49 PM	S64028

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (10-11')
Project: SWMU 13
Collection Date: 10/23/2019 5:20:00 PM
Lab ID: 1910D68-015
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	2.0	9.8		mg/Kg	1	10/30/2019 12:58:00 P	48457
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	10/30/2019 12:58:00 P	48457
Surr: DNOP	85.3	0	70-130		%Rec	1	10/30/2019 12:58:00 P	48457
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.76	2.5		mg/Kg	1	10/28/2019 12:24:20 A	A63989
Surr: BFB	121	0	77.4-118	S	%Rec	1	10/28/2019 12:24:20 A	A63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0044	0.0018	0.033	J	mg/Kg	1	11/1/2019 2:39:54 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Arsenic	ND	2.9	5.1		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Barium	280	0.047	0.20		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Beryllium	1.3	0.019	0.30		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Chromium	12	0.16	0.61		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Cobalt	5.8	0.21	0.61		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Iron	19000	74	250		mg/Kg	100	11/18/2019 7:44:22 PM	48433
Lead	2.9	0.49	0.51		mg/Kg	2	11/18/2019 7:40:42 PM	48433
Manganese	330	0.042	0.20		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Nickel	13	0.30	1.0		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Selenium	ND	2.6	5.1		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Silver	ND	0.065	0.51		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Vanadium	20	0.14	5.1		mg/Kg	2	11/7/2019 3:05:19 PM	48433
Zinc	18	0.80	5.1		mg/Kg	2	11/7/2019 3:05:19 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Aniline	ND	0.13	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Anthracene	ND	0.11	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Azobenzene	ND	0.14	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Benz(a)anthracene	ND	0.095	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Benzo(a)pyrene	ND	0.088	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Benzo(b)fluoranthene	ND	0.087	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Benzo(g,h,i)perylene	ND	0.085	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Benzo(k)fluoranthene	ND	0.090	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Benzoic acid	ND	0.10	0.49		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (10-11')
Project: SWMU 13
Collection Date: 10/23/2019 5:20:00 PM
Lab ID: 1910D68-015
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	11/1/2019 9:11:14 AM	48455
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Carbazole	ND	0.12	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	11/1/2019 9:11:14 AM	48455
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2-Chloronaphthalene	ND	0.12	0.25		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Chrysene	ND	0.087	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Di-n-butyl phthalate	ND	0.15	0.40		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Di-n-octyl phthalate	ND	0.10	0.40		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Dibenz(a,h)anthracene	ND	0.090	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
3,3´-Dichlorobenzidine	ND	0.088	0.25		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2,4-Dichlorophenol	ND	0.11	0.40		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	11/1/2019 9:11:14 AM	48455
4,6-Dinitro-2-methylphenol	ND	0.091	0.40		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2,4-Dinitrophenol	ND	0.072	0.49		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Fluoranthene	ND	0.11	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Fluorene	ND	0.11	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Indeno(1,2,3-cd)pyrene	ND	0.098	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Isophorone	ND	0.15	0.40		mg/Kg	1	11/1/2019 9:11:14 AM	48455
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (10-11')
Project: SWMU 13
Collection Date: 10/23/2019 5:20:00 PM
Lab ID: 1910D68-015
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.40		mg/Kg	1	11/1/2019 9:11:14 AM	48455
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Naphthalene	ND	0.15	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Nitrobenzene	ND	0.14	0.40		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
4-Nitrophenol	ND	0.13	0.25		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Pentachlorophenol	ND	0.10	0.40		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Phenanthrene	ND	0.11	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Phenol	ND	0.12	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Pyrene	ND	0.093	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Pyridine	ND	0.12	0.40		mg/Kg	1	11/1/2019 9:11:14 AM	48455
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	11/1/2019 9:11:14 AM	48455
Surr: 2-Fluorophenol	58.2		26.7-85.9		%Rec	1	11/1/2019 9:11:14 AM	48455
Surr: Phenol-d5	61.0		18.5-101		%Rec	1	11/1/2019 9:11:14 AM	48455
Surr: 2,4,6-Tribromophenol	62.3		35.8-85.6		%Rec	1	11/1/2019 9:11:14 AM	48455
Surr: Nitrobenzene-d5	62.0		40.8-95.2		%Rec	1	11/1/2019 9:11:14 AM	48455
Surr: 2-Fluorobiphenyl	55.4		34.7-85.2		%Rec	1	11/1/2019 9:11:14 AM	48455
Surr: 4-Terphenyl-d14	39.2		37.4-91.3		%Rec	1	11/1/2019 9:11:14 AM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0021	0.013		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Toluene	ND	0.0024	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Ethylbenzene	ND	0.0015	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Methyl tert-butyl ether (MTBE)	ND	0.0060	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,2,4-Trimethylbenzene	ND	0.0023	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,3,5-Trimethylbenzene	ND	0.0024	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,2-Dichloroethane (EDC)	ND	0.0026	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,2-Dibromoethane (EDB)	ND	0.0023	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Naphthalene	ND	0.0051	0.051		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1-Methylnaphthalene	ND	0.015	0.10		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
2-Methylnaphthalene	ND	0.011	0.10		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Acetone	ND	0.021	0.38		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Bromobenzene	ND	0.0024	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028

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Lab ID: 1910D68-015
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Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0023	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Bromoform	ND	0.0023	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Bromomethane	ND	0.0061	0.076		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
2-Butanone	ND	0.029	0.25		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Carbon disulfide	ND	0.0083	0.25		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Carbon tetrachloride	ND	0.0024	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Chlorobenzene	ND	0.0032	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Chloroethane	ND	0.0037	0.051		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Chloroform	ND	0.0020	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Chloromethane	ND	0.0024	0.076		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
2-Chlorotoluene	ND	0.0022	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
4-Chlorotoluene	ND	0.0021	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
cis-1,2-DCE	ND	0.0035	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
cis-1,3-Dichloropropene	ND	0.0021	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,2-Dibromo-3-chloropropane	ND	0.0026	0.051		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Dibromochloromethane	ND	0.0018	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Dibromomethane	ND	0.0027	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,2-Dichlorobenzene	ND	0.0021	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,3-Dichlorobenzene	ND	0.0022	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,4-Dichlorobenzene	ND	0.0021	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Dichlorodifluoromethane	ND	0.0059	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,1-Dichloroethane	ND	0.0016	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,1-Dichloroethene	ND	0.010	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,2-Dichloropropane	ND	0.0018	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,3-Dichloropropane	ND	0.0027	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
2,2-Dichloropropane	ND	0.0082	0.051		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,1-Dichloropropene	ND	0.0023	0.051		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Hexachlorobutadiene	ND	0.0026	0.051		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
2-Hexanone	ND	0.0042	0.25		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Isopropylbenzene	ND	0.0018	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
4-Isopropyltoluene	ND	0.0021	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
4-Methyl-2-pentanone	ND	0.0048	0.25		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Methylene chloride	ND	0.0045	0.076		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
n-Butylbenzene	ND	0.0024	0.076		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
n-Propylbenzene	ND	0.0020	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
sec-Butylbenzene	ND	0.0028	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Styrene	ND	0.0020	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
tert-Butylbenzene	ND	0.0024	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,1,1,2-Tetrachloroethane	ND	0.0017	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028

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*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (10-11')
Project: SWMU 13
Collection Date: 10/23/2019 5:20:00 PM
Lab ID: 1910D68-015
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0026	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Tetrachloroethene (PCE)	ND	0.0020	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
trans-1,2-DCE	ND	0.0023	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
trans-1,3-Dichloropropene	ND	0.0027	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,2,3-Trichlorobenzene	ND	0.0022	0.051		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,2,4-Trichlorobenzene	ND	0.0026	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,1,1-Trichloroethane	ND	0.0023	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,1,2-Trichloroethane	ND	0.0018	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Trichloroethene (TCE)	ND	0.0029	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Trichlorofluoromethane	ND	0.0086	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
1,2,3-Trichloropropane	ND	0.0041	0.051		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Vinyl chloride	ND	0.0016	0.025		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Xylenes, Total	ND	0.0064	0.051		mg/Kg	1	10/28/2019 9:34:59 PM	S64028
Surr: Dibromofluoromethane	108		70-130		%Rec	1	10/28/2019 9:34:59 PM	S64028
Surr: 1,2-Dichloroethane-d4	95.8		70-130		%Rec	1	10/28/2019 9:34:59 PM	S64028
Surr: Toluene-d8	100		70-130		%Rec	1	10/28/2019 9:34:59 PM	S64028
Surr: 4-Bromofluorobenzene	93.5		70-130		%Rec	1	10/28/2019 9:34:59 PM	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP02
Project: SWMU 13
Collection Date: 10/23/2019
Lab ID: 1910D68-016
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	120	1.9	9.7		mg/Kg	1	10/31/2019 5:49:50 PM	48457
Motor Oil Range Organics (MRO)	130	48	48		mg/Kg	1	10/31/2019 5:49:50 PM	48457
Surr: DNOP	90.1	0	70-130		%Rec	1	10/31/2019 5:49:50 PM	48457
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.3	4.3		mg/Kg	1	10/28/2019 12:47:22 A	A63989
Surr: BFB	90.9	0	77.4-118		%Rec	1	10/28/2019 12:47:22 A	A63989
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.16	0.0018	0.032		mg/Kg	1	11/1/2019 2:41:55 PM	48513
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/7/2019 3:06:59 PM	48433
Arsenic	ND	2.9	5.1		mg/Kg	2	11/7/2019 3:06:59 PM	48433
Barium	280	0.047	0.20		mg/Kg	2	11/7/2019 3:06:59 PM	48433
Beryllium	1.5	0.019	0.31		mg/Kg	2	11/7/2019 3:06:59 PM	48433
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 3:06:59 PM	48433
Chromium	57	0.16	0.61		mg/Kg	2	11/7/2019 3:06:59 PM	48433
Cobalt	7.1	0.22	0.61		mg/Kg	2	11/7/2019 3:06:59 PM	48433
Iron	23000	74	250		mg/Kg	100	11/18/2019 7:47:41 PM	48433
Lead	1.3	0.49	0.51		mg/Kg	2	11/18/2019 7:45:59 PM	48433
Manganese	340	0.042	0.20		mg/Kg	2	11/7/2019 3:06:59 PM	48433
Nickel	15	0.30	1.0		mg/Kg	2	11/7/2019 3:06:59 PM	48433
Selenium	3.3	2.6	5.1	J	mg/Kg	2	11/7/2019 3:06:59 PM	48433
Silver	ND	0.065	0.51		mg/Kg	2	11/7/2019 3:06:59 PM	48433
Vanadium	35	0.14	5.1		mg/Kg	2	11/7/2019 3:06:59 PM	48433
Zinc	59	0.81	5.1		mg/Kg	2	11/7/2019 3:06:59 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Acenaphthylene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Aniline	ND	1.3	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Anthracene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Azobenzene	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Benz(a)anthracene	ND	0.97	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Benzo(a)pyrene	ND	0.89	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Benzo(b)fluoranthene	ND	0.89	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Benzo(g,h,i)perylene	ND	0.86	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Benzo(k)fluoranthene	ND	0.91	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Benzoic acid	ND	1.0	5.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Benzyl alcohol	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP02
Project: SWMU 13
Collection Date: 10/23/2019
Lab ID: 1910D68-016
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	1.5	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Bis(2-chloroethyl)ether	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Bis(2-chloroisopropyl)ether	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Bis(2-ethylhexyl)phthalate	ND	1.4	5.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
4-Bromophenyl phenyl ether	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Butyl benzyl phthalate	ND	1.0	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Carbazole	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
4-Chloro-3-methylphenol	ND	1.5	5.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
4-Chloroaniline	ND	1.4	5.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2-Chloronaphthalene	ND	1.3	2.5	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2-Chlorophenol	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
4-Chlorophenyl phenyl ether	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Chrysene	ND	0.89	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Di-n-butyl phthalate	ND	1.5	4.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Di-n-octyl phthalate	ND	1.0	4.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Dibenz(a,h)anthracene	ND	0.91	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Dibenzofuran	ND	1.3	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
1,2-Dichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
1,3-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
1,4-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
3,3´-Dichlorobenzidine	ND	0.89	2.5	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Diethyl phthalate	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Dimethyl phthalate	ND	1.3	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2,4-Dichlorophenol	ND	1.2	4.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2,4-Dimethylphenol	ND	1.1	3.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
4,6-Dinitro-2-methylphenol	ND	0.93	4.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2,4-Dinitrophenol	ND	0.73	5.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2,4-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2,6-Dinitrotoluene	ND	1.3	5.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Fluoranthene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Fluorene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Hexachlorobenzene	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Hexachlorobutadiene	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Hexachloroethane	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Indeno(1,2,3-cd)pyrene	ND	1.0	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Isophorone	ND	1.5	4.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
1-Methylnaphthalene	ND	1.5	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2-Methylnaphthalene	ND	1.5	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP02
Project: SWMU 13
Collection Date: 10/23/2019
Lab ID: 1910D68-016
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	1.2	4.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
3+4-Methylphenol	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
N-Nitrosodi-n-propylamine	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
N-Nitrosodiphenylamine	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Naphthalene	ND	1.5	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
3-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Nitrobenzene	ND	1.4	4.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2-Nitrophenol	ND	1.4	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
4-Nitrophenol	ND	1.4	2.5	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Pentachlorophenol	ND	1.0	4.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Phenanthrene	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Phenol	ND	1.2	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Pyrene	ND	0.94	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Pyridine	ND	1.2	4.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
1,2,4-Trichlorobenzene	ND	1.6	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2,4,5-Trichlorophenol	ND	1.3	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
2,4,6-Trichlorophenol	ND	1.1	2.0	D	mg/Kg	1	11/1/2019 9:40:06 AM	48455
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	1	11/1/2019 9:40:06 AM	48455
Surr: Phenol-d5	0		18.5-101	SD	%Rec	1	11/1/2019 9:40:06 AM	48455
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	1	11/1/2019 9:40:06 AM	48455
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	1	11/1/2019 9:40:06 AM	48455
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	1	11/1/2019 9:40:06 AM	48455
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	1	11/1/2019 9:40:06 AM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0035	0.022		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Toluene	ND	0.0041	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Ethylbenzene	ND	0.0025	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Methyl tert-butyl ether (MTBE)	ND	0.010	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,2,4-Trimethylbenzene	ND	0.0040	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,3,5-Trimethylbenzene	ND	0.0042	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,2-Dichloroethane (EDC)	ND	0.0044	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,2-Dibromoethane (EDB)	ND	0.0040	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Naphthalene	ND	0.0087	0.087		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1-Methylnaphthalene	ND	0.025	0.17		mg/Kg	1	10/28/2019 10:04:09 P	S64028
2-Methylnaphthalene	ND	0.019	0.17		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Acetone	ND	0.036	0.65		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Bromobenzene	ND	0.0042	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP02
Project: SWMU 13
Collection Date: 10/23/2019
Lab ID: 1910D68-016
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0040	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Bromoform	ND	0.0039	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Bromomethane	ND	0.010	0.13		mg/Kg	1	10/28/2019 10:04:09 P	S64028
2-Butanone	ND	0.050	0.43		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Carbon disulfide	ND	0.014	0.43		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Carbon tetrachloride	ND	0.0041	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Chlorobenzene	ND	0.0056	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Chloroethane	ND	0.0064	0.087		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Chloroform	ND	0.0035	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Chloromethane	ND	0.0041	0.13		mg/Kg	1	10/28/2019 10:04:09 P	S64028
2-Chlorotoluene	ND	0.0038	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
4-Chlorotoluene	ND	0.0036	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
cis-1,2-DCE	ND	0.0059	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
cis-1,3-Dichloropropene	ND	0.0037	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,2-Dibromo-3-chloropropane	ND	0.0044	0.087		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Dibromochloromethane	ND	0.0031	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Dibromomethane	ND	0.0047	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,2-Dichlorobenzene	ND	0.0036	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,3-Dichlorobenzene	ND	0.0038	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,4-Dichlorobenzene	ND	0.0036	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Dichlorodifluoromethane	ND	0.010	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,1-Dichloroethane	ND	0.0028	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,1-Dichloroethene	ND	0.017	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,2-Dichloropropane	ND	0.0032	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,3-Dichloropropane	ND	0.0047	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
2,2-Dichloropropane	ND	0.014	0.087		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,1-Dichloropropene	ND	0.0039	0.087		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Hexachlorobutadiene	ND	0.0044	0.087		mg/Kg	1	10/28/2019 10:04:09 P	S64028
2-Hexanone	ND	0.0072	0.43		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Isopropylbenzene	ND	0.0031	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
4-Isopropyltoluene	ND	0.0036	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
4-Methyl-2-pentanone	ND	0.0082	0.43		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Methylene chloride	0.013	0.0077	0.13	J	mg/Kg	1	10/28/2019 10:04:09 P	S64028
n-Butylbenzene	ND	0.0040	0.13		mg/Kg	1	10/28/2019 10:04:09 P	S64028
n-Propylbenzene	ND	0.0035	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
sec-Butylbenzene	ND	0.0049	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Styrene	ND	0.0034	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
tert-Butylbenzene	ND	0.0041	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,1,1,2-Tetrachloroethane	ND	0.0029	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP02
Project: SWMU 13
Collection Date: 10/23/2019
Lab ID: 1910D68-016
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0044	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Tetrachloroethene (PCE)	ND	0.0035	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
trans-1,2-DCE	ND	0.0040	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
trans-1,3-Dichloropropene	ND	0.0046	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,2,3-Trichlorobenzene	ND	0.0038	0.087		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,2,4-Trichlorobenzene	ND	0.0044	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,1,1-Trichloroethane	ND	0.0039	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,1,2-Trichloroethane	ND	0.0031	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Trichloroethene (TCE)	ND	0.0050	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Trichlorofluoromethane	ND	0.015	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
1,2,3-Trichloropropane	ND	0.0070	0.087		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Vinyl chloride	ND	0.0028	0.043		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Xylenes, Total	ND	0.011	0.087		mg/Kg	1	10/28/2019 10:04:09 P	S64028
Surr: Dibromofluoromethane	107		70-130		%Rec	1	10/28/2019 10:04:09 P	S64028
Surr: 1,2-Dichloroethane-d4	94.9		70-130		%Rec	1	10/28/2019 10:04:09 P	S64028
Surr: Toluene-d8	102		70-130		%Rec	1	10/28/2019 10:04:09 P	S64028
Surr: 4-Bromofluorobenzene	89.7		70-130		%Rec	1	10/28/2019 10:04:09 P	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank
Project: SWMU 13
Collection Date: 10/23/2019
Lab ID: 1910D68-017
Matrix: MEOH BLAN
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0041	0.025		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Toluene	ND	0.0048	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Ethylbenzene	ND	0.0029	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Methyl tert-butyl ether (MTBE)	ND	0.012	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,2,4-Trimethylbenzene	ND	0.0046	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,3,5-Trimethylbenzene	ND	0.0048	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,2-Dichloroethane (EDC)	ND	0.0051	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,2-Dibromoethane (EDB)	ND	0.0046	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Naphthalene	ND	0.010	0.10		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1-Methylnaphthalene	ND	0.029	0.20		mg/Kg	1	10/28/2019 10:33:14 P	S64028
2-Methylnaphthalene	ND	0.022	0.20		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Acetone	ND	0.041	0.75		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Bromobenzene	ND	0.0048	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Bromodichloromethane	ND	0.0046	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Bromoform	ND	0.0045	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Bromomethane	ND	0.012	0.15		mg/Kg	1	10/28/2019 10:33:14 P	S64028
2-Butanone	ND	0.058	0.50		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Carbon disulfide	ND	0.017	0.50		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Carbon tetrachloride	ND	0.0047	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Chlorobenzene	ND	0.0064	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Chloroethane	ND	0.0074	0.10		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Chloroform	ND	0.0040	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Chloromethane	ND	0.0048	0.15		mg/Kg	1	10/28/2019 10:33:14 P	S64028
2-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
4-Chlorotoluene	ND	0.0041	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
cis-1,2-DCE	ND	0.0068	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
cis-1,3-Dichloropropene	ND	0.0042	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,2-Dibromo-3-chloropropane	ND	0.0051	0.10		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Dibromochloromethane	ND	0.0035	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Dibromomethane	ND	0.0054	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,2-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,3-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,4-Dichlorobenzene	ND	0.0042	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Dichlorodifluoromethane	ND	0.012	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,1-Dichloroethane	ND	0.0032	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,3-Dichloropropane	ND	0.0054	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
2,2-Dichloropropane	ND	0.016	0.10		mg/Kg	1	10/28/2019 10:33:14 P	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank
Project: SWMU 13
Collection Date: 10/23/2019
Lab ID: 1910D68-017
Matrix: MEOH BLAN
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1-Dichloropropene	ND	0.0046	0.10		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Hexachlorobutadiene	ND	0.0051	0.10		mg/Kg	1	10/28/2019 10:33:14 P	S64028
2-Hexanone	ND	0.0083	0.50		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Isopropylbenzene	ND	0.0036	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
4-Isopropyltoluene	ND	0.0041	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
4-Methyl-2-pentanone	ND	0.0094	0.50		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Methylene chloride	ND	0.0088	0.15		mg/Kg	1	10/28/2019 10:33:14 P	S64028
n-Butylbenzene	ND	0.0047	0.15		mg/Kg	1	10/28/2019 10:33:14 P	S64028
n-Propylbenzene	ND	0.0040	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
sec-Butylbenzene	ND	0.0056	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Styrene	ND	0.0039	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
tert-Butylbenzene	ND	0.0047	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,1,1,2-Tetrachloroethane	ND	0.0034	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,1,2,2-Tetrachloroethane	ND	0.0051	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
trans-1,2-DCE	ND	0.0046	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
trans-1,3-Dichloropropene	ND	0.0053	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,2,3-Trichlorobenzene	ND	0.0044	0.10		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,2,4-Trichlorobenzene	ND	0.0051	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,1,1-Trichloroethane	ND	0.0045	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,1,2-Trichloroethane	ND	0.0035	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Trichloroethene (TCE)	ND	0.0058	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Trichlorofluoromethane	ND	0.017	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
1,2,3-Trichloropropane	ND	0.0081	0.10		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Vinyl chloride	ND	0.0033	0.050		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Xylenes, Total	ND	0.013	0.10		mg/Kg	1	10/28/2019 10:33:14 P	S64028
Surr: Dibromofluoromethane	112		70-130		%Rec	1	10/28/2019 10:33:14 P	S64028
Surr: 1,2-Dichloroethane-d4	103		70-130		%Rec	1	10/28/2019 10:33:14 P	S64028
Surr: Toluene-d8	99.7		70-130		%Rec	1	10/28/2019 10:33:14 P	S64028
Surr: 4-Bromofluorobenzene	86.5		70-130		%Rec	1	10/28/2019 10:33:14 P	S64028

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102319
Project: SWMU 13
Collection Date: 10/23/2019 6:40:00 PM
Lab ID: 1910D68-018
Matrix: AQUEOUS
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	0.35	1.0		mg/L	1	10/30/2019 9:38:45 AM	48464
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	10/30/2019 9:38:45 AM	48464
Surr: DNOP	103	0	70-130		%Rec	1	10/30/2019 9:38:45 AM	48464
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/1/2019 5:18:15 PM	R64171
Surr: BFB	98.8	0	65.8-143		%Rec	1	11/1/2019 5:18:15 PM	R64171
EPA METHOD 7470: MERCURY							Analyst: **pmf**	
Mercury	0.00017	0.000038	0.00020	J	mg/L	1	11/5/2019 2:28:54 PM	48565
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Antimony	ND	0.0081	0.050		mg/L	1	11/14/2019 5:22:39 PM	48486
Arsenic	ND	0.015	0.020		mg/L	1	11/25/2019 4:12:51 PM	48486
Barium	ND	0.0012	0.020		mg/L	1	11/13/2019 8:02:24 PM	48486
Beryllium	ND	0.00025	0.0030		mg/L	1	11/13/2019 8:02:24 PM	48486
Cadmium	ND	0.00055	0.0020		mg/L	1	11/13/2019 8:02:24 PM	48486
Chromium	ND	0.00086	0.0060		mg/L	1	11/13/2019 8:02:24 PM	48486
Cobalt	ND	0.0012	0.0060		mg/L	1	11/14/2019 5:22:39 PM	48486
Iron	0.021	0.0093	0.020		mg/L	1	11/13/2019 8:02:24 PM	48486
Lead	0.0069	0.0035	0.0050		mg/L	1	11/13/2019 8:02:24 PM	48486
Manganese	0.00093	0.00041	0.0020	J	mg/L	1	11/14/2019 5:22:39 PM	48486
Nickel	ND	0.0028	0.010		mg/L	1	11/13/2019 8:02:24 PM	48486
Selenium	ND	0.035	0.050		mg/L	1	11/13/2019 8:02:24 PM	48486
Silver	ND	0.00055	0.0050		mg/L	1	11/13/2019 8:02:24 PM	48486
Vanadium	ND	0.00086	0.050		mg/L	1	11/13/2019 8:02:24 PM	48486
Zinc	ND	0.011	0.020		mg/L	1	11/13/2019 8:02:24 PM	48486
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	3.0	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Acenaphthylene	ND	2.4	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Aniline	ND	3.6	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Anthracene	ND	2.7	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Azobenzene	ND	3.3	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Benz(a)anthracene	ND	3.6	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Benzo(a)pyrene	ND	3.5	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Benzo(b)fluoranthene	ND	3.4	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Benzo(g,h,i)perylene	ND	2.2	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Benzo(k)fluoranthene	ND	2.9	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Benzoic acid	ND	11	20		µg/L	1	10/31/2019 3:22:30 PM	48439
Benzyl alcohol	2.5	2.4	10	J	µg/L	1	10/31/2019 3:22:30 PM	48439

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102319
Project: SWMU 13
Collection Date: 10/23/2019 6:40:00 PM
Lab ID: 1910D68-018
Matrix: AQUEOUS
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	2.6	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Bis(2-chloroethyl)ether	ND	3.2	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Bis(2-chloroisopropyl)ether	ND	3.9	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Bis(2-ethylhexyl)phthalate	ND	4.3	10		µg/L	1	10/31/2019 3:22:30 PM	48439
4-Bromophenyl phenyl ether	ND	3.0	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Butyl benzyl phthalate	ND	3.3	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Carbazole	ND	2.9	10		µg/L	1	10/31/2019 3:22:30 PM	48439
4-Chloro-3-methylphenol	ND	3.4	10		µg/L	1	10/31/2019 3:22:30 PM	48439
4-Chloroaniline	ND	2.3	10		µg/L	1	10/31/2019 3:22:30 PM	48439
2-Chloronaphthalene	ND	3.1	10		µg/L	1	10/31/2019 3:22:30 PM	48439
2-Chlorophenol	ND	2.7	10		µg/L	1	10/31/2019 3:22:30 PM	48439
4-Chlorophenyl phenyl ether	ND	2.4	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Chrysene	ND	2.8	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Di-n-butyl phthalate	ND	2.7	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Di-n-octyl phthalate	ND	3.5	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Dibenz(a,h)anthracene	ND	3.0	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Dibenzofuran	ND	3.2	10		µg/L	1	10/31/2019 3:22:30 PM	48439
1,2-Dichlorobenzene	ND	4.8	10		µg/L	1	10/31/2019 3:22:30 PM	48439
1,3-Dichlorobenzene	ND	5.3	10		µg/L	1	10/31/2019 3:22:30 PM	48439
1,4-Dichlorobenzene	ND	4.4	10		µg/L	1	10/31/2019 3:22:30 PM	48439
3,3´-Dichlorobenzidine	ND	2.8	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Diethyl phthalate	ND	2.9	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Dimethyl phthalate	ND	3.2	10		µg/L	1	10/31/2019 3:22:30 PM	48439
2,4-Dichlorophenol	ND	2.9	20		µg/L	1	10/31/2019 3:22:30 PM	48439
2,4-Dimethylphenol	ND	3.0	10		µg/L	1	10/31/2019 3:22:30 PM	48439
4,6-Dinitro-2-methylphenol	ND	2.9	20		µg/L	1	10/31/2019 3:22:30 PM	48439
2,4-Dinitrophenol	ND	2.6	20		µg/L	1	10/31/2019 3:22:30 PM	48439
2,4-Dinitrotoluene	ND	3.8	10		µg/L	1	10/31/2019 3:22:30 PM	48439
2,6-Dinitrotoluene	ND	2.4	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Fluoranthene	ND	2.4	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Fluorene	ND	2.9	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Hexachlorobenzene	ND	3.1	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Hexachlorobutadiene	ND	4.7	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Hexachlorocyclopentadiene	ND	3.6	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Hexachloroethane	ND	4.8	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Indeno(1,2,3-cd)pyrene	ND	2.7	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Isophorone	ND	3.0	10		µg/L	1	10/31/2019 3:22:30 PM	48439
1-Methylnaphthalene	ND	3.1	10		µg/L	1	10/31/2019 3:22:30 PM	48439
2-Methylnaphthalene	ND	3.0	10		µg/L	1	10/31/2019 3:22:30 PM	48439

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102319
Project: SWMU 13
Collection Date: 10/23/2019 6:40:00 PM
Lab ID: 1910D68-018
Matrix: AQUEOUS
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	2.9	10		µg/L	1	10/31/2019 3:22:30 PM	48439
3+4-Methylphenol	ND	3.6	10		µg/L	1	10/31/2019 3:22:30 PM	48439
N-Nitrosodi-n-propylamine	ND	6.5	10		µg/L	1	10/31/2019 3:22:30 PM	48439
N-Nitrosodimethylamine	ND	5.0	10		µg/L	1	10/31/2019 3:22:30 PM	48439
N-Nitrosodiphenylamine	ND	2.4	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Naphthalene	ND	4.1	10		µg/L	1	10/31/2019 3:22:30 PM	48439
2-Nitroaniline	ND	3.2	10		µg/L	1	10/31/2019 3:22:30 PM	48439
3-Nitroaniline	ND	3.2	10		µg/L	1	10/31/2019 3:22:30 PM	48439
4-Nitroaniline	ND	2.7	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Nitrobenzene	ND	2.8	10		µg/L	1	10/31/2019 3:22:30 PM	48439
2-Nitrophenol	ND	3.0	10		µg/L	1	10/31/2019 3:22:30 PM	48439
4-Nitrophenol	ND	7.6	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Pentachlorophenol	ND	2.7	20		µg/L	1	10/31/2019 3:22:30 PM	48439
Phenanthrene	ND	2.8	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Phenol	ND	8.0	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Pyrene	ND	2.5	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Pyridine	ND	9.6	10		µg/L	1	10/31/2019 3:22:30 PM	48439
1,2,4-Trichlorobenzene	ND	4.0	10		µg/L	1	10/31/2019 3:22:30 PM	48439
2,4,5-Trichlorophenol	ND	3.0	10		µg/L	1	10/31/2019 3:22:30 PM	48439
2,4,6-Trichlorophenol	ND	2.3	10		µg/L	1	10/31/2019 3:22:30 PM	48439
Surr: 2-Fluorophenol	54.1	0	15-101		%Rec	1	10/31/2019 3:22:30 PM	48439
Surr: Phenol-d5	38.6	0	15-84.6		%Rec	1	10/31/2019 3:22:30 PM	48439
Surr: 2,4,6-Tribromophenol	63.1	0	27.8-112		%Rec	1	10/31/2019 3:22:30 PM	48439
Surr: Nitrobenzene-d5	74.9	0	33-113		%Rec	1	10/31/2019 3:22:30 PM	48439
Surr: 2-Fluorobiphenyl	64.4	0	26.6-107		%Rec	1	10/31/2019 3:22:30 PM	48439
Surr: 4-Terphenyl-d14	49.7	0	18.7-148		%Rec	1	10/31/2019 3:22:30 PM	48439
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.17	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Toluene	ND	0.35	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Ethylbenzene	ND	0.13	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Naphthalene	ND	0.28	2.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Acetone	ND	1.2	10		µg/L	1	10/30/2019 6:46:54 AM	R64075

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102319
Project: SWMU 13
Collection Date: 10/23/2019 6:40:00 PM
Lab ID: 1910D68-018
Matrix: AQUEOUS
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Bromobenzene	ND	0.24	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Bromodichloromethane	ND	0.13	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Bromoform	ND	0.29	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Bromomethane	ND	0.27	3.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
2-Butanone	ND	2.1	10		µg/L	1	10/30/2019 6:46:54 AM	R64075
Carbon disulfide	ND	0.45	10		µg/L	1	10/30/2019 6:46:54 AM	R64075
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Chlorobenzene	ND	0.19	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Chloroethane	ND	0.18	2.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Chloroform	ND	0.12	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Chloromethane	ND	0.32	3.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,2-Dibromo-3-chloropropane	ND	0.33	2.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Dibromochloromethane	ND	0.24	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Dibromomethane	ND	0.21	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
2-Hexanone	ND	1.5	10		µg/L	1	10/30/2019 6:46:54 AM	R64075
Isopropylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	10/30/2019 6:46:54 AM	R64075
Methylene Chloride	ND	0.15	3.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
n-Butylbenzene	ND	0.23	3.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
n-Propylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Styrene	ND	0.19	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102319
Project: SWMU 13
Collection Date: 10/23/2019 6:40:00 PM
Lab ID: 1910D68-018
Matrix: AQUEOUS
Received Date: 10/25/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
1,2,3-Trichloropropane	ND	0.30	2.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Vinyl chloride	ND	0.18	1.0		µg/L	1	10/30/2019 6:46:54 AM	R64075
Xylenes, Total	ND	0.45	1.5		µg/L	1	10/30/2019 6:46:54 AM	R64075
Surr: 1,2-Dichloroethane-d4	94.5	0	70-130		%Rec	1	10/30/2019 6:46:54 AM	R64075
Surr: 4-Bromofluorobenzene	93.9	0	70-130		%Rec	1	10/30/2019 6:46:54 AM	R64075
Surr: Dibromofluoromethane	99.8	0	70-130		%Rec	1	10/30/2019 6:46:54 AM	R64075
Surr: Toluene-d8	99.0	0	70-130		%Rec	1	10/30/2019 6:46:54 AM	R64075

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

November 07, 2019

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1155312

Samples Received: 10/30/2019

Project Number:

Description:

Report To:

4901 Hawkins NE

Albuquerque, NM 87109

Entire Report Reviewed By:

Jason Romer
Project Manager

1910D68-001B SWMU-13-4 (0-0.5') L1155312-01 Solid

Collected by | Collected date/time 10/23/19 10:50 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1374859	1	11/05/19 09:00	11/05/19 13:26	JER	Mt. Juliet, TN

1910D68-002B SWMU-13-4 (1.5-2') L1155312-02 Solid

Collected by | Collected date/time 10/23/19 11:05 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1374859	1	11/05/19 09:00	11/05/19 13:27	JER	Mt. Juliet, TN

1910D68-003B SWMU-13-4 (8-10') L1155312-03 Solid

Collected by | Collected date/time 10/23/19 11:15 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1374859	1	11/05/19 09:00	11/05/19 13:30	JER	Mt. Juliet, TN

1910D68-004B SWMU-13-4 ((14-15.5') L1155312-04 Solid

Collected by | Collected date/time 10/23/19 11:25 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1374859	1	11/05/19 09:00	11/05/19 13:33	JER	Mt. Juliet, TN

1910D68-005B SWMU-13-4 ((15.5-16') L1155312-05 Solid

Collected by | Collected date/time 10/23/19 11:35 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1374859	1	11/05/19 09:00	11/05/19 13:34	JER	Mt. Juliet, TN

1910D68-006B SWMU-13-5 (0-0.5') L1155312-06 Solid

Collected by | Collected date/time 10/23/19 13:55 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1374859	1	11/05/19 09:00	11/05/19 13:35	JER	Mt. Juliet, TN

1910D68-007B SWMU-13-5 (1.5-2') L1155312-07 Solid

Collected by | Collected date/time 10/23/19 14:15 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1374859	1	11/05/19 09:00	11/05/19 13:36	JER	Mt. Juliet, TN

1910D68-008B SWMU-13-5 (8-10') L1155312-08 Solid

Collected by | Collected date/time 10/23/19 14:30 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1374859	1	11/05/19 09:00	11/05/19 13:37	JER	Mt. Juliet, TN

1910D68-009B SWMU-13-5 (10-10.5') L1155312-09 Solid

Collected by | Collected date/time 10/23/19 14:35 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1374859	1	11/05/19 09:00	11/05/19 13:38	JER	Mt. Juliet, TN

1910D68-010B SWMU-13-5 (14-16') L1155312-10 Solid

Collected by | Collected date/time 10/23/19 14:45 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1374859	1	11/05/19 09:00	11/05/19 13:39	JER	Mt. Juliet, TN

1910D68-011B SWMU-13-6 (0-0.5') L1155312-11 Solid

Collected by | Collected date/time 10/23/19 16:50 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 16:49	JER	Mt. Juliet, TN

1910D68-012B SWMU-13-6 (1.5-2') L1155312-12 Solid

Collected by | Collected date/time 10/23/19 17:00 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 16:50	JER	Mt. Juliet, TN

1910D68-013B SWMU-13-6 (2-3') L1155312-13 Solid

Collected by | Collected date/time 10/23/19 17:10 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 16:51	JER	Mt. Juliet, TN

1910D68-014B SWMU-13-6 (6-8') L1155312-14 Solid

Collected by | Collected date/time 10/23/19 17:15 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 16:53	JER	Mt. Juliet, TN

1910D68-015B SWMU-13-6 (10-11') L1155312-15 Solid

Collected by | Collected date/time 10/23/19 17:20 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 16:54	JER	Mt. Juliet, TN

1910D68-016B DUP02 L1155312-16 Solid

Collected by | Collected date/time 10/23/19 00:00 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 16:57	JER	Mt. Juliet, TN

1910D68-017E EB102319 L1155312-17 WW

Collected by	Collected date/time	Received date/time
	10/23/19 18:40	10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2011	WG1375056	1	11/05/19 15:00	11/06/19 15:51	JER	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jason Romer
Project Manager

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	0.747		0.250	1	11/05/2019 13:26	WG1374859

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/05/2019 13:27	WG1374859

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/05/2019 13:30	WG1374859

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/05/2019 13:33	WG1374859

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/05/2019 13:34	WG1374859

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/05/2019 13:35	WG1374859

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/05/2019 13:36	WG1374859

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/05/2019 13:37	WG1374859

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/05/2019 13:38	WG1374859

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/05/2019 13:39	WG1374859

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 16:49	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 16:50	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 16:51	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 16:53	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 16:54	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	1.06	J6	0.250	1	11/06/2019 16:57	WG1375250

Wet Chemistry by Method 4500CN E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	11/06/2019 15:51	WG1375056

Method Blank (MB)

(MB) R3469134-1 11/06/19 15:34

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

L1155017-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1155017-01 11/06/19 15:46 • (DUP) R3469134-3 11/06/19 15:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

L1155479-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1155479-03 11/06/19 16:05 • (DUP) R3469134-8 11/06/19 16:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3469134-2 11/06/19 15:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.0907	90.7	85.0-115	

L1155184-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155184-01 11/06/19 15:48 • (MS) R3469134-4 11/06/19 15:49 • (MSD) R3469134-5 11/06/19 15:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0764	0.0753	76.4	75.3	1	75.0-125			1.45	20

L1155340-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155340-16 11/06/19 15:53 • (MS) R3469134-6 11/06/19 15:54 • (MSD) R3469134-7 11/06/19 15:55

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0735	0.0688	73.5	68.8	1	75.0-125	J6	J6	6.61	20

Method Blank (MB)

(MB) R3468562-1 11/05/19 13:08

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0390	0.250

L1154882-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1154882-15 11/05/19 13:13 • (DUP) R3468562-3 11/05/19 13:14

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	0.587	0.531	1	9.93		20

L1155312-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1155312-10 11/05/19 13:39 • (DUP) R3468562-8 11/05/19 13:40

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3468562-2 11/05/19 13:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.57	103	50.0-150	

L1155184-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155184-04 11/05/19 13:22 • (MS) R3468562-4 11/05/19 13:23 • (MSD) R3468562-5 11/05/19 13:24

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.08	1.28	60.3	71.9	1	75.0-125	J6	J6	16.5	20

L1155312-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155312-02 11/05/19 13:27 • (MS) R3468562-6 11/05/19 13:28 • (MSD) R3468562-7 11/05/19 13:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.48	1.49	85.4	86.0	1	75.0-125			0.682	20

Method Blank (MB)

(MB) R3469178-1 11/06/19 16:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0390	0.250

L1155312-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1155312-13 11/06/19 16:51 • (DUP) R3469178-3 11/06/19 16:52

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

L1155340-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1155340-08 11/06/19 17:10 • (DUP) R3469178-6 11/06/19 17:11

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	1.19	0.863	1	31.8	P1	20

Laboratory Control Sample (LCS)

(LCS) R3469178-2 11/06/19 16:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.37	95.0	50.0-150	

L1155312-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155312-16 11/06/19 16:57 • (MS) R3469178-4 11/06/19 16:58 • (MSD) R3469178-5 11/06/19 16:59

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	1.06	2.30	2.31	74.8	75.2	1	75.0-125	J6		0.295	20

L1155340-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155340-14 11/06/19 17:17 • (MS) R3469178-7 11/06/19 17:18 • (MSD) R3469178-8 11/06/19 17:19

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.50	1.55	90.2	93.0	1	75.0-125			3.04	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

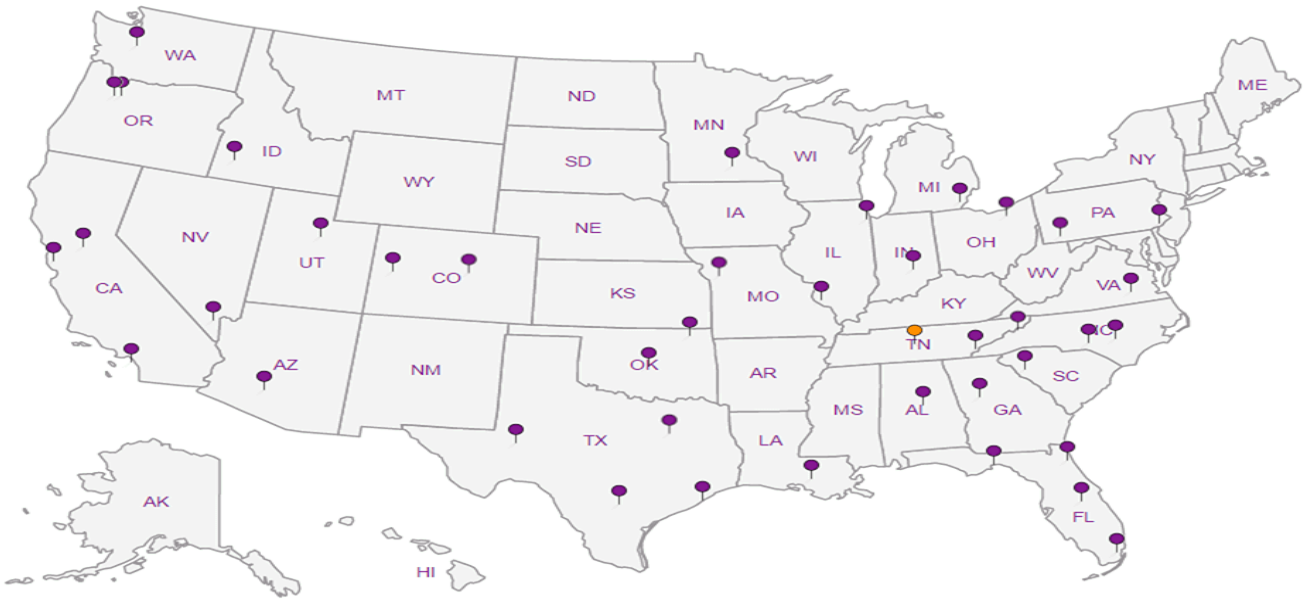
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 2

C193

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: **ESC PACE**	COMPANY: **ESC PACE**	PHONE: **(800) 767-5859**	FAX: **(615) 758-5859**
ADDRESS: **12065 Lebanon Rd**		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: **Mt. Juliet, TN 37122**			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	1910D68-001B	SWMU 13-4 (0-0.5')	4OZGU	MeOH (Soil)	10/23/2019 10:50:00 AM	1	Lv.4 Total Cyanide	L11 55312-01
2	1910D68-002B	SWMU 13-4 (1.5-2')	4OZGU	MeOH (Soil)	10/23/2019 11:05:00 AM	1	Lv.4 Total Cyanide	02
3	1910D68-003B	SWMU 13-4 (8-10')	4OZGU	MeOH (Soil)	10/23/2019 11:15:00 AM	1	Lv.4 Total Cyanide	03
4	1910D68-004B	SWMU 13-4 (14-15.5')	4OZGU	MeOH (Soil)	10/23/2019 11:25:00 AM	1	Lv.4 Total Cyanide	04
5	1910D68-005B	SWMU 13-4 (15.5-16')	4OZGU	Soil	10/23/2019 11:35:00 AM	1	Lv.4 Total Cyanide	05
6	1910D68-006B	SWMU 13-5 (0-0.5')	4OZGU	MeOH (Soil)	10/23/2019 1:55:00 PM	1	Lv.4 Total Cyanide	06
7	1910D68-007B	SWMU 13-5 (1.5-2')	4OZGU	MeOH (Soil)	10/23/2019 2:15:00 PM	1	Lv.4 Total Cyanide	07
8	1910D68-008B	SWMU 13-5 (8-10')	4OZGU	MeOH (Soil)	10/23/2019 2:30:00 PM	1	Lv.4 Total Cyanide	08
9	1910D68-009B	SWMU 13-5 (10-10.5')	4OZGU	Soil	10/23/2019 2:35:00 PM	1	Lv.4 Total Cyanide	09
10	1910D68-010B	SWMU 13-5 (14-16')	4OZGU	MeOH (Soil)	10/23/2019 2:45:00 PM	1	Lv.4 Total Cyanide	10
11	1910D68-011B	SWMU 13-6 (0-0.5')	4OZGU	MeOH (Soil)	10/23/2019 4:50:00 PM	1	Lv.4 Total Cyanide	11
12	1910D68-012B	SWMU 13-6 (1.5-2')	4OZGU	MeOH (Soil)	10/23/2019 5:00:00 PM	1	Lv.4 Total Cyanide	12
13	1910D68-013B	SWMU 13-6 (2-3')	4OZGU	MeOH (Soil)	10/23/2019 5:10:00 PM	1	Lv.4 Total Cyanide	13

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

RAD SCREEN: <0.5 mR/hr
COC SI

Relinquished By: LB	Date: 10/25/2019	Time: 10:55 AM	Received By:	Date: 10/30/19	Time: 9:30
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 2.8-.2=2.6 °C Attempt to Cool ? _____
Comments: _____

Fedex 4510 1664 1572 17 containers

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

CHAIN OF CUSTODY RECORD

PAGE: 2 OF: 2

SUB CONTRATOR: ESC PACE	COMPANY: ESC PACE	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
14	1910D68-014B	SWMU 13-6 (6-8')	4OZGU	MeOH (Soil)	10/23/2019 5:15:00 PM	1	Lv.4 Total Cyanide L1155312-14
15	1910D68-015B	SWMU 13-6 (10-11')	4OZGU	MeOH (Soil)	10/23/2019 5:20:00 PM	1	Lv.4 Total Cyanide 15
16	1910D68-016B	DUP02	4OZGU	MeOH (Soil)	10/23/2019	1	Lv.4 Total Cyanide 16
17	1910D68-018E	EB102319	500AMBHDP E-NAOH	Aqueous	10/23/2019 6:40:00 PM	1	Lv.4 Total Cyanide >12 17

RAD SCREEN: <0.5 mR/hr

CCCSI

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 10/25/2019	Time: 10:55 AM	Received By:	Date: 10/30/19	Time: 8:30
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 2.2+2.2=4.4°C Attempt to Cool ? _____
Comments: _____

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: HALLENVANM	L1155312	
Cooler Received/Opened On: 10/30/19 Temperature:	2.6	
Received By: Adam Burns		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48409**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48409**	RunNo: **64033**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2190866** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.3		10.00		93.3	70	130			

Sample ID: **MB-48409**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48409**	RunNo: **64033**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2191318** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	12		10.00		115	70	130			

Sample ID: **LCS-48409**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **48409**	RunNo: **64033**
Prep Date: **10/28/2019**	Analysis Date: **10/29/2019**	SeqNo: **2191319** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.3	63.9	124			
Surr: DNOP	4.9		5.000		97.7	70	130			

Sample ID: **LCS-48457**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **48457**	RunNo: **64089**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2192645** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.2	63.9	124			
Surr: DNOP	3.2		5.000		64.8	70	130			S

Sample ID: **MB-48457**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48457**	RunNo: **64089**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2192646** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.4		10.00		84.4	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **1910D68-007AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SWMU 13-5 (1.5-2')**	Batch ID: **48457**	RunNo: **64116**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2195298** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	55	9.8	48.78	0	114	57	142			
Surr: DNOP	4.3		4.878		89.0	70	130			

Sample ID: **1910D68-007AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SWMU 13-5 (1.5-2')**	Batch ID: **48457**	RunNo: **64116**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2195299** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	9.7	48.40	19.68	67.1	57	142	6.13	20	
Surr: DNOP	4.3		4.840		89.8	70	130	0	0	

Sample ID: **LCS-48616**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **48616**	RunNo: **64266**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2200977** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	55	10	50.00	0	110	63.9	124			
Surr: DNOP	4.9		5.000		97.0	70	130			

Sample ID: **MB-48616**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48616**	RunNo: **64266**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2200978** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		110	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48464**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW**	Batch ID: **48464**	RunNo: **64071**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2192326** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.3	1.0	5.000	0	106	71.8	135			
Surr: DNOP	0.44		0.5000		88.0	70	130			

Sample ID: **MB-48464**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **48464**	RunNo: **64071**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2192327** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	0.87		1.000		87.0	70	130			

Sample ID: **MB-48464**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **48464**	RunNo: **64124**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194394** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.1		1.000		111	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **G63989**	RunNo: **63989**
Prep Date:	Analysis Date: **10/27/2019**	SeqNo: **2189138** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		96.3	77.4	118			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **G63989**	RunNo: **63989**
Prep Date:	Analysis Date: **10/27/2019**	SeqNo: **2189139** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	106	80	120			
Surr: BFB	1200		1000		116	77.4	118			

Sample ID: **RB-II**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **A63989**	RunNo: **63989**
Prep Date:	Analysis Date: **10/27/2019**	SeqNo: **2189162** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		97.1	77.4	118			

Sample ID: **2.5UG GRO LCS-II**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **A63989**	RunNo: **63989**
Prep Date:	Analysis Date: **10/27/2019**	SeqNo: **2189163** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	25.00	0	109	80	120			
Surr: BFB	1200		1000		116	77.4	118			

Sample ID: **1910D68-008AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SWMU 13-5 (8-10')**	Batch ID: **A63989**	RunNo: **63989**
Prep Date:	Analysis Date: **10/27/2019**	SeqNo: **2189165** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	14	2.9	14.63	0	92.3	69.1	142			
Surr: BFB	610		585.1		104	77.4	118			

Sample ID: **1910D68-008AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SWMU 13-5 (8-10')**	Batch ID: **A63989**	RunNo: **63989**
Prep Date:	Analysis Date: **10/27/2019**	SeqNo: **2189166** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **1910D68-008AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SWMU 13-5 (8-10')**	Batch ID: **A63989**	RunNo: **63989**
Prep Date:	Analysis Date: **10/27/2019**	SeqNo: **2189166** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	14	2.9	14.63	0	92.6	69.1	142	0.260	20	
Surr: BFB	610		585.1		104	77.4	118	0	0	

Sample ID: **MB-48446**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193023** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		99.9	77.4	118			

Sample ID: **LCS-48446**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193024** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.5	80	120			
Surr: BFB	1100		1000		108	77.4	118			

Sample ID: **1910D68-005AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SWMU 13-4 (15.5-16**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193028** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	4.8	23.81	0	103	69.1	142			
Surr: BFB	1100		952.4		113	77.4	118			

Sample ID: **1910D68-005AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SWMU 13-4 (15.5-16**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193029** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.7	23.70	0	96.2	69.1	142	7.26	20	
Surr: BFB	1000		947.9		110	77.4	118	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **R64171**	RunNo: **64171**
Prep Date:	Analysis Date: **11/1/2019**	SeqNo: **2195897** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	19		20.00		97.4	65.8	143			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **R64171**	RunNo: **64171**
Prep Date:	Analysis Date: **11/1/2019**	SeqNo: **2195898** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.39	0.050	0.5000	0	77.4	73.6	119			
Surr: BFB	22		20.00		109	65.8	143			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **S64028**	RunNo: **64028**
Prep Date:	Analysis Date: **10/28/2019**	SeqNo: **2190354** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **S64028**	RunNo: **64028**
Prep Date:	Analysis Date: **10/28/2019**	SeqNo: **2190354** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	0.010	0.15								J
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.49		0.5000		98.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.44		0.5000		87.9	70	130			
Surr: Toluene-d8	0.48		0.5000		96.3	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.6	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **S64028**	RunNo: **64028**
Prep Date:	Analysis Date: **10/28/2019**	SeqNo: **2190356** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	1.000	0	89.0	68	135			
Toluene	0.93	0.050	1.000	0	93.2	70	130			
Chlorobenzene	0.91	0.050	1.000	0	91.5	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **S64028**	RunNo: **64028**
Prep Date:	Analysis Date: **10/28/2019**	SeqNo: **2190356** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.90	0.050	1.000	0	90.4	51.1	139			
Trichloroethene (TCE)	0.85	0.050	1.000	0	85.2	70	130			
Surr: Dibromofluoromethane	0.44		0.5000		87.4	70	130			
Surr: 1,2-Dichloroethane-d4	0.41		0.5000		82.2	70	130			
Surr: Toluene-d8	0.47		0.5000		93.5	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.7	70	130			

Sample ID: **1910d68-001ams**	SampType: **MS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU 13-4 (0-0.5')**	Batch ID: **S64028**	RunNo: **64028**
Prep Date:	Analysis Date: **10/28/2019**	SeqNo: **2190368** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.69	0.018	0.7236	0	95.7	57.1	141			
Toluene	0.70	0.036	0.7236	0	96.2	70	130			
Chlorobenzene	0.68	0.036	0.7236	0	94.1	70	130			
1,1-Dichloroethene	0.71	0.036	0.7236	0	97.6	38.5	141			
Trichloroethene (TCE)	0.68	0.036	0.7236	0	93.4	70	130			
Surr: Dibromofluoromethane	0.35		0.3618		96.1	70	130			
Surr: 1,2-Dichloroethane-d4	0.33		0.3618		92.2	70	130			
Surr: Toluene-d8	0.35		0.3618		96.4	70	130			
Surr: 4-Bromofluorobenzene	0.33		0.3618		92.5	70	130			

Sample ID: **1910d68-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU 13-4 (0-0.5')**	Batch ID: **S64028**	RunNo: **64028**
Prep Date:	Analysis Date: **10/28/2019**	SeqNo: **2190370** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.66	0.018	0.7236	0	90.8	57.1	141	5.16	20	
Toluene	0.70	0.036	0.7236	0	97.0	70	130	0.835	20	
Chlorobenzene	0.67	0.036	0.7236	0	92.1	70	130	2.22	20	
1,1-Dichloroethene	0.68	0.036	0.7236	0	94.3	38.5	141	3.43	20	
Trichloroethene (TCE)	0.66	0.036	0.7236	0	90.9	70	130	2.71	20	
Surr: Dibromofluoromethane	0.35		0.3618		95.6	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.33		0.3618		92.4	70	130	0	0	
Surr: Toluene-d8	0.36		0.3618		99.0	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.34		0.3618		94.6	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48446** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **48446** RunNo: **64109**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2194198** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48446** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **48446** RunNo: **64109**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2194198** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.54		0.5000		107	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		93.0	70	130			
Surr: Toluene-d8	0.49		0.5000		98.5	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.1	70	130			

Sample ID: **lcs-48446** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS** Batch ID: **48446** RunNo: **64109**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2194199** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	98.8	68	135			
Toluene	0.96	0.050	1.000	0	95.8	70	130			
Chlorobenzene	0.91	0.050	1.000	0	91.0	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **lcs-48446** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS** Batch ID: **48446** RunNo: **64109**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2194199** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.94	0.050	1.000	0	93.8	51.1	139			
Trichloroethene (TCE)	0.94	0.050	1.000	0	93.9	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		95.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.4	70	130			
Surr: Toluene-d8	0.48		0.5000		95.6	70	130			
Surr: 4-Bromofluorobenzene	0.44		0.5000		88.7	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R64075** RunNo: **64075**
Prep Date: Analysis Date: **10/29/2019** SeqNo: **2192371** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.5	70	130			
Toluene	19	1.0	20.00	0	93.8	70	130			
Chlorobenzene	20	1.0	20.00	0	99.5	70	130			
1,1-Dichloroethene	17	1.0	20.00	0	84.9	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	84.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.1	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		90.9	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.9		10.00		99.1	70	130			

Sample ID: **rb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R64075** RunNo: **64075**
Prep Date: Analysis Date: **10/29/2019** SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.2		10.00		92.4	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		93.8	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.0	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48455**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48455**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194553** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.16	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48455**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48455**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194553** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.3		3.330		69.5	26.7	85.9			
Surr: Phenol-d5	2.4		3.330		71.3	18.5	101			
Surr: 2,4,6-Tribromophenol	2.2		3.330		66.0	35.8	85.6			
Surr: Nitrobenzene-d5	1.2		1.670		74.7	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		69.1	34.7	85.2			
Surr: 4-Terphenyl-d14	1.5		1.670		90.2	37.4	91.3			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **lcs-48455** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **LCSS** Batch ID: **48455** RunNo: **64136**

Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194554** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.3	0.20	1.670	0	75.4	46	89.5			
4-Chloro-3-methylphenol	2.6	0.50	3.330	0	78.8	44.1	101			
2-Chlorophenol	2.5	0.20	3.330	0	74.9	47	91			
1,4-Dichlorobenzene	1.2	0.20	1.670	0	72.1	41.4	85.8			
2,4-Dinitrotoluene	1.1	0.50	1.670	0	65.5	37.4	82			
N-Nitrosodi-n-propylamine	1.4	0.20	1.670	0	86.6	47.8	92.9			
4-Nitrophenol	2.4	0.25	3.330	0	71.5	45	94.3			
Pentachlorophenol	2.0	0.40	3.330	0	60.3	31.7	76.9			
Phenol	2.9	0.20	3.330	0	87.0	49.4	92.5			
Pyrene	1.2	0.20	1.670	0	69.1	52.9	82.7			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	71.1	43.6	98.1			
Surr: 2-Fluorophenol	2.3		3.330		68.5	26.7	85.9			
Surr: Phenol-d5	2.5		3.330		74.8	18.5	101			
Surr: 2,4,6-Tribromophenol	2.4		3.330		70.7	35.8	85.6			
Surr: Nitrobenzene-d5	1.3		1.670		78.1	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		73.2	34.7	85.2			
Surr: 4-Terphenyl-d14	1.3		1.670		76.0	37.4	91.3			

Sample ID: **MB-48455** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **PBS** Batch ID: **48455** RunNo: **64267**

Prep Date: **10/29/2019** Analysis Date: **11/6/2019** SeqNo: **2199506** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.030	0.20								J
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	0.015	0.20								J
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	0.14	0.50								J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48455** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48455** RunNo: **64267**
Prep Date: **10/29/2019** Analysis Date: **11/6/2019** SeqNo: **2199506** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.18	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	0.11	0.20								J
Dimethyl phthalate	0.036	0.20								J
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	0.030	0.20								J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48455**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48455**	RunNo: **64267**
Prep Date: **10/29/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199506** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	0.019	0.20								J
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	0.0082	0.20								J
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.6		3.330		76.8	26.7	85.9			
Surr: Phenol-d5	2.6		3.330		79.5	18.5	101			
Surr: 2,4,6-Tribromophenol	1.7		3.330		52.3	35.8	85.6			
Surr: Nitrobenzene-d5	1.2		1.670		71.3	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.0		1.670		59.7	34.7	85.2			
Surr: 4-Terphenyl-d14	1.4		1.670		85.6	37.4	91.3			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194544** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3´-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194544** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	130		200.0		66.6	15	101			
Surr: Phenol-d5	99		200.0		49.5	15	84.6			
Surr: 2,4,6-Tribromophenol	170		200.0		84.1	27.8	112			
Surr: Nitrobenzene-d5	93		100.0		92.9	33	113			
Surr: 2-Fluorobiphenyl	83		100.0		83.1	26.6	107			
Surr: 4-Terphenyl-d14	62		100.0		61.9	18.7	148			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **lcs-48439** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **LCSW** Batch ID: **48439** RunNo: **64136**

Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194545** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	85	10	100.0	0	84.9	32.2	94			
4-Chloro-3-methylphenol	180	10	200.0	0	88.4	37.7	101			
2-Chlorophenol	170	10	200.0	0	83.6	32.6	90.1			
1,4-Dichlorobenzene	79	10	100.0	0	79.2	30	87.2			
2,4-Dinitrotoluene	72	10	100.0	0	72.2	35.9	85.8			
N-Nitrosodi-n-propylamine	97	10	100.0	0	97.0	37.1	108			
4-Nitrophenol	94	10	200.0	0	47.2	22.4	86.6			
Pentachlorophenol	140	20	200.0	0	70.0	31.6	91			
Phenol	110	10	200.0	0	57.2	21.7	84.9			
Pyrene	80	10	100.0	0	80.4	46.3	103			
1,2,4-Trichlorobenzene	78	10	100.0	0	78.0	30.2	88.3			
Surr: 2-Fluorophenol	130		200.0		66.0	15	101			
Surr: Phenol-d5	100		200.0		51.5	15	84.6			
Surr: 2,4,6-Tribromophenol	160		200.0		80.3	27.8	112			
Surr: Nitrobenzene-d5	91		100.0		91.3	33	113			
Surr: 2-Fluorobiphenyl	81		100.0		81.1	26.6	107			
Surr: 4-Terphenyl-d14	59		100.0		58.7	18.7	148			

Sample ID: **lcsd-48439** SampType: **LCSD** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **LCSS02** Batch ID: **48439** RunNo: **64136**

Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194546** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	84	10	100.0	0	84.3	32.2	94	0.709	32.9	
4-Chloro-3-methylphenol	170	10	200.0	0	86.7	37.7	101	1.92	29.9	
2-Chlorophenol	160	10	200.0	0	80.9	32.6	90.1	3.33	28.5	
1,4-Dichlorobenzene	75	10	100.0	0	75.1	15	87.2	5.36	44.9	
2,4-Dinitrotoluene	77	10	100.0	0	77.1	35.9	85.8	6.51	28.5	
N-Nitrosodi-n-propylamine	92	10	100.0	0	92.3	37.1	108	4.97	29.9	
4-Nitrophenol	100	10	200.0	0	50.6	15	86.6	6.96	68	
Pentachlorophenol	140	20	200.0	0	68.3	31.6	91	2.40	39.5	
Phenol	110	10	200.0	0	53.0	15	84.9	7.69	44.2	
Pyrene	78	10	100.0	0	78.3	46.3	103	2.65	23.8	
1,2,4-Trichlorobenzene	75	10	100.0	0	75.4	15.7	88.3	3.31	38	
Surr: 2-Fluorophenol	120		200.0		61.9	15	101	0	0	
Surr: Phenol-d5	93		200.0		46.7	15	84.6	0	0	
Surr: 2,4,6-Tribromophenol	160		200.0		78.3	27.8	112	0	0	
Surr: Nitrobenzene-d5	92		100.0		92.3	33	113	0	0	
Surr: 2-Fluorobiphenyl	81		100.0		80.9	26.6	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **lcsd-48439**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02**	Batch ID: **48439**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194546** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	58		100.0		57.7	18.7	148	0	0	

Sample ID: **MB-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64213**
Prep Date: **10/29/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197264** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	0.85	10								J
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	4.1	10								J
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	3.1	10								J
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48439** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW** Batch ID: **48439** RunNo: **64213**
Prep Date: **10/29/2019** Analysis Date: **11/4/2019** SeqNo: **2197264** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
3,3´-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64213**
Prep Date: **10/29/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197264** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	140		200.0		68.6	15	101			
Surr: Phenol-d5	100		200.0		50.1	15	84.6			
Surr: 2,4,6-Tribromophenol	160		200.0		80.4	27.8	112			
Surr: Nitrobenzene-d5	84		100.0		84.5	33	113			
Surr: 2-Fluorobiphenyl	73		100.0		73.4	26.6	107			
Surr: 4-Terphenyl-d14	64		100.0		64.4	18.7	148			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48513**	SampType: **MBLK**	TestCode: **EPA Method 7471: Mercury**
Client ID: **PBS**	Batch ID: **48513**	RunNo: **64163**
Prep Date: **10/31/2019**	Analysis Date: **11/1/2019**	SeqNo: **2195473** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LLLCS-48513**	SampType: **LCSLL**	TestCode: **EPA Method 7471: Mercury**
Client ID: **BatchQC**	Batch ID: **48513**	RunNo: **64163**
Prep Date: **10/31/2019**	Analysis Date: **11/1/2019**	SeqNo: **2195474** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0083	0.033	0.006660	0	124	70	130			J

Sample ID: **LCS-48513**	SampType: **LCS**	TestCode: **EPA Method 7471: Mercury**
Client ID: **LCSS**	Batch ID: **48513**	RunNo: **64163**
Prep Date: **10/31/2019**	Analysis Date: **11/1/2019**	SeqNo: **2195475** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.18	0.033	0.1667	0	109	80	120			

Sample ID: **MB-48571**	SampType: **MBLK**	TestCode: **EPA Method 7471: Mercury**
Client ID: **PBS**	Batch ID: **48571**	RunNo: **64207**
Prep Date: **11/4/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197008** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LCSLL-48571**	SampType: **LCSLL**	TestCode: **EPA Method 7471: Mercury**
Client ID: **BatchQC**	Batch ID: **48571**	RunNo: **64207**
Prep Date: **11/4/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197009** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.033	0.006660	0	75.6	70	130			J

Sample ID: **LCS-48571**	SampType: **LCS**	TestCode: **EPA Method 7471: Mercury**
Client ID: **LCSS**	Batch ID: **48571**	RunNo: **64207**
Prep Date: **11/4/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197010** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.17	0.033	0.1667	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48565**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **PBW**	Batch ID: **48565**	RunNo: **64240**							
Prep Date: **11/4/2019**	Analysis Date: **11/5/2019**	SeqNo: **2198291**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00018	0.00020								J

Sample ID: **LCS-48565**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **LCSW**	Batch ID: **48565**	RunNo: **64240**							
Prep Date: **11/4/2019**	Analysis Date: **11/5/2019**	SeqNo: **2198292**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	98.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48433**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48433**	RunNo: **64206**
Prep Date: **10/28/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196928** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	0.025	0.10								J
Chromium	0.12	0.30								J
Cobalt	ND	0.30								
Manganese	0.079	0.10								J
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.92	2.5								J

Sample ID: **LCS-48433**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48433**	RunNo: **64206**
Prep Date: **10/28/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196930** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	25	2.5	25.00	0	101	80	120			
Arsenic	24	2.5	25.00	0	97.8	80	120			
Barium	24	0.10	25.00	0	96.0	80	120			
Beryllium	26	0.15	25.00	0	103	80	120			
Cadmium	24	0.10	25.00	0	96.6	80	120			
Chromium	24	0.30	25.00	0	96.9	80	120			
Cobalt	24	0.30	25.00	0	95.7	80	120			
Manganese	25	0.10	25.00	0	99.4	80	120			
Nickel	24	0.50	25.00	0	96.0	80	120			
Selenium	24	2.5	25.00	0	96.0	80	120			
Silver	4.9	0.25	5.000	0	98.4	80	120			
Vanadium	25	2.5	25.00	0	99.9	80	120			
Zinc	25	2.5	25.00	0	98.7	80	120			

Sample ID: **MB-48519**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48519**	RunNo: **64206**
Prep Date: **10/31/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196952** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48519**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48519**	RunNo: **64206**
Prep Date: **10/31/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196952** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	0.033	0.10								J
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	1.7	2.5								J
Manganese	0.021	0.10								J
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.40	2.5								J

Sample ID: **LCS-48519**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48519**	RunNo: **64206**
Prep Date: **10/31/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196954** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	24	2.5	25.00	0	97.6	80	120			
Arsenic	25	2.5	25.00	0	99.6	80	120			
Barium	24	0.10	25.00	0	95.0	80	120			
Beryllium	26	0.15	25.00	0	103	80	120			
Cadmium	24	0.10	25.00	0	95.1	80	120			
Chromium	24	0.30	25.00	0	96.4	80	120			
Cobalt	24	0.30	25.00	0	97.2	80	120			
Iron	26	2.5	25.00	0	102	80	120			
Manganese	25	0.10	25.00	0	99.3	80	120			
Nickel	24	0.50	25.00	0	96.4	80	120			
Selenium	25	2.5	25.00	0	98.6	80	120			
Silver	4.6	0.25	5.000	0	92.7	80	120			
Vanadium	25	2.5	25.00	0	99.2	80	120			
Zinc	24	2.5	25.00	0	97.8	80	120			

Sample ID: **MB-48433**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48433**	RunNo: **64206**
Prep Date: **10/28/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197455** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.24	0.25								J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48433**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48433**	RunNo: **64206**
Prep Date: **10/28/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197457** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	25	0.25	25.00	0	99.7	80	120			

Sample ID: **MB-48519**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48519**	RunNo: **64206**
Prep Date: **10/31/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197458** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.25								

Sample ID: **LCS-48519**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48519**	RunNo: **64206**
Prep Date: **10/31/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197462** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	24	0.25	25.00	0	97.9	80	120			

Sample ID: **MB-48433**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48433**	RunNo: **64334**
Prep Date: **10/28/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201997** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.0	2.5								

Sample ID: **LCS-48433**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48433**	RunNo: **64334**
Prep Date: **10/28/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201999** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	26	2.5	25.00	0	104	80	120			B

Sample ID: **1910D68-001AMS**	SampType: **MS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **SWMU 13-4 (0-0.5')**	Batch ID: **48433**	RunNo: **64334**
Prep Date: **10/28/2019**	Analysis Date: **11/7/2019**	SeqNo: **2202031** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	24	5.0	24.76	0	98.5	75	125			
Beryllium	24	0.30	24.76	1.637	89.9	75	125			
Cadmium	21	0.20	24.76	0	83.8	75	125			
Cobalt	28	0.59	24.76	7.946	81.4	75	125			
Nickel	37	0.99	24.76	17.06	82.3	75	125			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **1910D68-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-4 (0-0.5')** Batch ID: **48433** RunNo: **64334**

Prep Date: **10/28/2019** Analysis Date: **11/7/2019** SeqNo: **2202031** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	27	5.0	24.76	4.047	90.8	75	125			
Vanadium	58	5.0	24.76	36.19	88.8	75	125			

Sample ID: **1910D68-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-4 (0-0.5')** Batch ID: **48433** RunNo: **64334**

Prep Date: **10/28/2019** Analysis Date: **11/7/2019** SeqNo: **2202032** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	27	5.1	25.59	0	106	75	125	10.9	20	
Beryllium	26	0.31	25.59	1.637	93.4	75	125	6.67	20	
Cadmium	22	0.20	25.59	0	86.3	75	125	6.16	20	
Cobalt	30	0.61	25.59	7.946	84.3	75	125	4.93	20	
Nickel	39	1.0	25.59	17.06	84.9	75	125	3.58	20	
Selenium	26	5.1	25.59	4.047	84.5	75	125	3.23	20	
Vanadium	59	5.1	25.59	36.19	89.9	75	125	1.71	20	

Sample ID: **MB-48651** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **PBS** Batch ID: **48651** RunNo: **64473**

Prep Date: **11/7/2019** Analysis Date: **11/13/2019** SeqNo: **2207228** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	0.045	0.10								J
Chromium	0.086	0.30								J
Cobalt	ND	0.30								
Iron	3.5	2.5								
Lead	ND	0.25								
Manganese	0.049	0.10								J
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	0.044	0.25								J
Vanadium	ND	2.5								
Zinc	ND	2.5								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48651**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48651**	RunNo: **64473**
Prep Date: **11/7/2019**	Analysis Date: **11/13/2019**	SeqNo: **2207230** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	24	2.5	25.00	0	94.5	80	120			
Barium	24	0.10	25.00	0	94.7	80	120			
Beryllium	24	0.15	25.00	0	96.1	80	120			
Cadmium	24	0.10	25.00	0	96.1	80	120			
Chromium	24	0.30	25.00	0	94.0	80	120			
Cobalt	24	0.30	25.00	0	95.2	80	120			
Iron	26	2.5	25.00	0	104	80	120			B
Lead	24	0.25	25.00	0	97.6	80	120			
Manganese	26	0.10	25.00	0	103	80	120			
Nickel	24	0.50	25.00	0	94.3	80	120			
Selenium	20	2.5	25.00	0	81.8	80	120			
Silver	4.8	0.25	5.000	0	95.5	80	120			
Vanadium	24	2.5	25.00	0	96.6	80	120			
Zinc	23	2.5	25.00	0	93.6	80	120			

Sample ID: **MB-48651**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48651**	RunNo: **64552**
Prep Date: **11/7/2019**	Analysis Date: **11/15/2019**	SeqNo: **2210343** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								

Sample ID: **LCS-48651**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48651**	RunNo: **64552**
Prep Date: **11/7/2019**	Analysis Date: **11/15/2019**	SeqNo: **2210345** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	25	2.5	25.00	0	99.5	80	120			

Sample ID: **MB-48651**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48651**	RunNo: **64594**
Prep Date: **11/7/2019**	Analysis Date: **11/18/2019**	SeqNo: **2212237** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48651** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **LCSS** Batch ID: **48651** RunNo: **64594**

Prep Date: **11/7/2019** Analysis Date: **11/18/2019** SeqNo: **2212239** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	25	2.5	25.00	0	100	80	120			

Sample ID: **1910D68-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-4 (0-0.5')** Batch ID: **48433** RunNo: **64665**

Prep Date: **10/28/2019** Analysis Date: **11/20/2019** SeqNo: **2215348** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	5.0	24.76	0	0	75	125			S
Barium	360	0.20	24.76	297.5	243	75	125			S
Chromium	120	0.59	24.76	111.6	28.0	75	125			S
Lead	26	0.50	24.76	5.243	82.9	75	125			
Manganese	520	0.20	24.76	442.9	305	75	125			ES
Silver	1.7	0.50	4.953	0	33.4	75	125			S
Zinc	140	5.0	24.76	122.8	51.1	75	125			S

Sample ID: **1910D68-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-4 (0-0.5')** Batch ID: **48433** RunNo: **64665**

Prep Date: **10/28/2019** Analysis Date: **11/20/2019** SeqNo: **2215349** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	5.1	25.59	0	0	75	125	0	20	S
Barium	330	0.20	25.59	297.5	126	75	125	8.12	20	S
Chromium	99	0.61	25.59	111.6	-50.7	75	125	18.3	20	S
Lead	26	0.51	25.59	5.243	81.3	75	125	1.12	20	
Manganese	390	0.20	25.59	442.9	-191	75	125	27.3	20	RS
Silver	1.7	0.51	5.119	0	32.4	75	125	0.0334	20	S
Zinc	120	5.1	25.59	122.8	-25.4	75	125	15.2	20	S

Sample ID: **1910D68-001APS** SampType: **PS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-4 (0-0.5')** Batch ID: **48433** RunNo: **64665**

Prep Date: Analysis Date: **11/20/2019** SeqNo: **2215350** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	32	4.9	49.18	0	66.1	80	120			S
Barium	340	0.20	49.18	297.5	93.1	80	120			
Chromium	150	0.59	49.18	111.6	87.1	80	120			
Lead	48	0.49	49.18	5.243	86.7	80	120			
Manganese	490	0.20	49.18	442.9	92.4	80	120			
Silver	5.9	0.49	9.836	0	60.2	80	120			S
Zinc	160	4.9	49.18	122.8	80.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64273**
Prep Date: **10/30/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199636** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	0.0012	0.050								J
Zinc	ND	0.020								

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64273**
Prep Date: **10/30/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199638** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.51	0.050	0.5000	0	102	80	120			
Arsenic	0.50	0.020	0.5000	0	99.8	80	120			
Barium	0.48	0.020	0.5000	0	96.6	80	120			
Beryllium	0.52	0.0030	0.5000	0	103	80	120			
Cadmium	0.51	0.0020	0.5000	0	101	80	120			
Chromium	0.50	0.0060	0.5000	0	99.3	80	120			
Cobalt	0.51	0.0060	0.5000	0	101	80	120			
Iron	0.51	0.020	0.5000	0	102	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			
Nickel	0.49	0.010	0.5000	0	98.1	80	120			
Silver	0.095	0.0050	0.1000	0	94.6	80	120			
Vanadium	0.51	0.050	0.5000	0	101	80	120			
Zinc	0.49	0.020	0.5000	0	98.7	80	120			

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64389**
Prep Date: **10/30/2019**	Analysis Date: **11/11/2019**	SeqNo: **2203942** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0043	0.0050								J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910D68**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64389**
Prep Date: **10/30/2019**	Analysis Date: **11/11/2019**	SeqNo: **2203944** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.51	0.0050	0.5000	0	101	80	120			

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64501**
Prep Date: **10/30/2019**	Analysis Date: **11/13/2019**	SeqNo: **2208275** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64501**
Prep Date: **10/30/2019**	Analysis Date: **11/13/2019**	SeqNo: **2208277** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.51	0.0050	0.5000	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **MARATHON GALLUP** Work Order Number: **1910D68** RcptNo: **1**

Received By: Juan Rojas **10/25/2019 9:15:00 AM**

Completed By: **Leah Baca** **10/25/2019 10:34:42 AM** Leah Baca

Reviewed By: EN M 10/25/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 1 (1) (<2 or >12 unless noted)

Adjusted? NO

Checked by: MB 10/25/19

Special Handling (if applicable)

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

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.0	Good	Yes			
2	0.2	Good	Yes			
3	0.4	Good	Yes			

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: 0-0=0.0

0.2-0=0.2

0.4-0=0.4

HEAL No. 1910D68

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide	Air Bubbles (Y or N)
10/23/19	1050	Soil	SWMU 13-4 (0-0.5')	8 oz Jar - 2	Neat	-001			X							X	X	X	
				Vial - 2	MeOH											X			
				4oz Jar-1	Neat													X	
	1105		SWMU 13-4 (1.5-2')	8oz Jar-2	Neat	-002			X							X	X	X	
				Vial-2	MeOH											X			
				4oz Jar-1	Neat													X	
	1115		SWMU 13-4 (8-10')	8oz Jar-2	Neat	-003			X							X	X	X	
				Vial-2	MeOH											X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/24/19	0700		carrier	10/25/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: 0.0 = 0.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. (0.2-0=0.2, 0.4-0=0.4) 1910D68	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide				Air Bubbles (Y or N)
10/23/19	1125	Soil	SWMU 13-4(14-15.5)	8 oz Jar - 2	Neat	-004			X							X	X	X				
				Vial - 2	MeOH											X						
	↓		↓	4oz JAR-1	NEAT													X				
	1135		SWMU 13-4(15.5-16')	4oz JAR-1	NEAT	-005			X							X	X	X				
	1355		SWMU 13-5(0-0.5')	8oz JAR-2	NEAT	-006			X							X	X	X				
	↓		↓	VIAL-2	MeOH											X						
				4oz JAR-1	NEAT													X				
	1415		SWMU 13-5(1.5-2')	8oz JAR-2	NEAT	-007			X							X	X	X				
	↓		↓	VIAL-2	MeOH											X						
↓	↓	↓	↓	4oz JAR-1	NEAT													X				

Date	Time	Relinquished by:	Received by:	Date	Time
10/24/19	0700		carrier	10/25/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: 0.0 - 0 = 0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	0.2-0=0.2, 0.4-0=0.4 HEAL No. 1910D68	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide				Air Bubbles (Y or N)
10/23/19	1430	Soil	SWMU 13-5 (8-10')	8 oz Jar - 2	Neat	-008			X							X	X	X				
				Vial - 2	MeOH											X						
				4 oz JAR-1	NEAT													X				
	1435		SWMU 13-5 (10-10.5')	8 oz JAR-1	NEAT	-009			X							X	X	X				
	1445		SWMU 13-5 (14-16')	8 oz JAR-1	NEAT	-010			X							X	X	X				
				VIAL-2	MEOH											X						
				4 oz JAR-1	NEAT											·		X				
	1650		SWMU 13-6 (0-0.5')	8 oz JAR-1	NEAT	-011			X							X	X	X				
				VIAL-2	MEOH											X						
				4 oz JAR-1	NEAT													X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/24/19	0700		carrier	10/25/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: 0.0-0=0

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4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. (0.2-0=0.2, 0.4-0=0.4) 1911D68	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide				Air Bubbles (Y or N)
10/23/19	1700	Soil	SWMU 13-6 (1.5-2')	8 oz Jar - 2	Neat	-012			X							X	X	X				
				Vial - 2	MeOH	1										X						
	↓		↓	4 oz Jar-1	Neat	1												X				
	1710		SWMU 13-6 (2-3')	8 oz Jar-2	Neat	-013			X							X	X	X				
				Vial-2	MeOH	1										X						
	↓		↓	4 oz Jar-1	Neat	1												X				
	1715		SWMU 13-6 (6-8')	8 oz Jar-2	Neat	-014			X							X	X	X				
				Vial-2	MeOH	1										X		·				
↓	↓	↓	↓	4 oz Jar-1	Neat	1												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/24/19	0700	[signature]	[signature] courier	10/25/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: 0.0-0=0.0

0.2-0=0.2
0.4-0=0.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910D68	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide				Air Bubbles (Y or N)
10/23/19	1720	Soil	SWMU 13-6(10-11')	8 oz Jar - 2	Neat	-015			X							X	X	X				
↓	↓	↓		Vial - 2	MeOH	↓										X						
	↓			4oz JAR-1	NEAT	↓												X				
	—		DUP02	8 oz JAR-2	NEAT	-016			X							X	X	X				
	↓			VIAL-2	MeOH	↓										X						
	↓	↓		4oz JAR-1	NEAT	↓												X				
↓	—	MeOH	MEOH BLANK	VIAL-1	MeOH	-017										X						

Date	Time	Relinquished by:	Received by:	Date	Time
10/24/19	0700		carrier	10/25/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: 0.0 - 0 = 0.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. (0.2 - 0 = 0.2; 0.4 - 0 = 0.4; 1910D68)	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals - Total	Cyanide			Air Bubbles (Y or N)
10/23/19	1840	Water	EB102319	40ml voa - 5	HCl	-018			X							X						
				250 ml amber - 1	Neat				X													
				1 liter amber - 1	Neat												X					
				250 ml plastic - 1	HNO_3													X				
↓	↓	↓	↓	500 ml plastic - 1	NaOH														X			

Date	Time	Relinquished by:	Received by:	Date	Time
10/24/19	0700		carrier	10/25/19	9:15

Remarks: See attached sheet for Analytical Methods and Target Analytes.

SWMU 13 - Soil and Equipment Blank Analytical Requirements

- SW-846 Method 8260 for volatile organic compounds;
- SW-846 Method 8270 for semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline range (C5-C10), diesel range (>C10-C28), and motor oil range (>C28-C36) organics.
- Inorganics (Skinner List Metals + Iron + Manganese)

Inorganic Analytical Methods

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2019

Brian Moore

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: SWMU 13 OrderNo.: 1910E04

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 30 sample(s) on 10/25/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-6 (17-18')
Project: SWMU 13
Collection Date: 10/24/2019 9:30:00 AM
Lab ID: 1910E04-001
Matrix: SOIL
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.9	9.6		mg/Kg	1	10/31/2019 5:44:47 AM	48458
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/31/2019 5:44:47 AM	48458
Surr: DNOP	99.5	0	70-130		%Rec	1	10/31/2019 5:44:47 AM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.5	5.0		mg/Kg	1	10/30/2019 1:24:22 PM	48446
Surr: BFB	115	0	77.4-118		%Rec	1	10/30/2019 1:24:22 PM	48446
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0036	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:03:39 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.72	4.9		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Arsenic	ND	2.8	4.9		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Barium	260	0.045	0.20		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Beryllium	1.3	0.018	0.29		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Cadmium	ND	0.047	0.20		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Chromium	13	0.16	0.59		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Cobalt	5.7	0.21	0.59		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Iron	18000	71	240		mg/Kg	100	11/18/2019 7:50:51 PM	48604
Lead	1.7	0.47	0.49		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Manganese	430	0.041	0.20		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Nickel	12	0.29	0.98		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Selenium	ND	2.5	5.0		mg/Kg	2	11/25/2019 6:33:49 PM	48977
Silver	ND	0.063	0.49		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Vanadium	23	0.13	4.9		mg/Kg	2	11/18/2019 7:49:17 PM	48604
Zinc	19	0.77	4.9		mg/Kg	2	11/18/2019 7:49:17 PM	48604
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Acenaphthylene	ND	0.11	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Aniline	ND	0.13	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Anthracene	ND	0.10	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Azobenzene	ND	0.14	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Benz(a)anthracene	ND	0.094	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Benzo(a)pyrene	ND	0.086	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Benzo(b)fluoranthene	ND	0.086	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Benzo(g,h,i)perylene	ND	0.083	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Benzo(k)fluoranthene	ND	0.088	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Benzoic acid	ND	0.10	0.49		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	11/1/2019 10:08:56 AM	48455
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Butyl benzyl phthalate	ND	0.099	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Carbazole	ND	0.11	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	11/1/2019 10:08:56 AM	48455
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
4-Chlorophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Chrysene	ND	0.086	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Di-n-butyl phthalate	0.16	0.15	0.39	J	mg/Kg	1	11/1/2019 10:08:56 AM	48455
Di-n-octyl phthalate	ND	0.099	0.39		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Dibenz(a,h)anthracene	ND	0.088	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Dibenzofuran	ND	0.13	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
1,2-Dichlorobenzene	ND	0.12	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
3,3´-Dichlorobenzidine	ND	0.086	0.24		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	11/1/2019 10:08:56 AM	48455
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2,4-Dinitrotoluene	ND	0.11	0.49		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Fluoranthene	ND	0.11	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Fluorene	ND	0.11	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Hexachlorobutadiene	ND	0.14	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Indeno(1,2,3-cd)pyrene	ND	0.097	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Isophorone	ND	0.14	0.39		mg/Kg	1	11/1/2019 10:08:56 AM	48455
1-Methylnaphthalene	ND	0.15	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	11/1/2019 10:08:56 AM	48455
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Naphthalene	ND	0.15	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Nitrobenzene	ND	0.13	0.39		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Phenanthrene	ND	0.11	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Phenol	ND	0.12	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Pyrene	ND	0.091	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Pyridine	ND	0.12	0.39		mg/Kg	1	11/1/2019 10:08:56 AM	48455
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2,4,5-Trichlorophenol	ND	0.13	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	11/1/2019 10:08:56 AM	48455
Surr: 2-Fluorophenol	72.2		26.7-85.9		%Rec	1	11/1/2019 10:08:56 AM	48455
Surr: Phenol-d5	75.3		18.5-101		%Rec	1	11/1/2019 10:08:56 AM	48455
Surr: 2,4,6-Tribromophenol	73.5		35.8-85.6		%Rec	1	11/1/2019 10:08:56 AM	48455
Surr: Nitrobenzene-d5	78.4		40.8-95.2		%Rec	1	11/1/2019 10:08:56 AM	48455
Surr: 2-Fluorobiphenyl	66.7		34.7-85.2		%Rec	1	11/1/2019 10:08:56 AM	48455
Surr: 4-Terphenyl-d14	91.0		37.4-91.3		%Rec	1	11/1/2019 10:08:56 AM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0041	0.025		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Toluene	ND	0.0048	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Ethylbenzene	ND	0.0029	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Methyl tert-butyl ether (MTBE)	ND	0.012	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,2,4-Trimethylbenzene	ND	0.0046	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,3,5-Trimethylbenzene	ND	0.0048	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,2-Dichloroethane (EDC)	ND	0.0051	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,2-Dibromoethane (EDB)	ND	0.0046	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Naphthalene	ND	0.010	0.10		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1-Methylnaphthalene	ND	0.029	0.20		mg/Kg	1	10/30/2019 3:05:18 PM	48446
2-Methylnaphthalene	ND	0.022	0.20		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Acetone	ND	0.041	0.75		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Bromobenzene	ND	0.0048	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446

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EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0046	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Bromoform	ND	0.0045	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Bromomethane	ND	0.012	0.15		mg/Kg	1	10/30/2019 3:05:18 PM	48446
2-Butanone	0.085	0.058	0.50	J	mg/Kg	1	10/30/2019 3:05:18 PM	48446
Carbon disulfide	ND	0.017	0.50		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Carbon tetrachloride	ND	0.0047	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Chlorobenzene	ND	0.0064	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Chloroethane	ND	0.0074	0.10		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Chloroform	ND	0.0040	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Chloromethane	ND	0.0048	0.15		mg/Kg	1	10/30/2019 3:05:18 PM	48446
2-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
4-Chlorotoluene	ND	0.0041	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
cis-1,2-DCE	ND	0.0068	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
cis-1,3-Dichloropropene	ND	0.0042	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,2-Dibromo-3-chloropropane	ND	0.0051	0.10		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Dibromochloromethane	ND	0.0035	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Dibromomethane	ND	0.0054	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,2-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,3-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,4-Dichlorobenzene	ND	0.0042	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Dichlorodifluoromethane	ND	0.012	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,1-Dichloroethane	ND	0.0032	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,3-Dichloropropane	ND	0.0054	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
2,2-Dichloropropane	ND	0.016	0.10		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,1-Dichloropropene	ND	0.0046	0.10		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Hexachlorobutadiene	ND	0.0051	0.10		mg/Kg	1	10/30/2019 3:05:18 PM	48446
2-Hexanone	ND	0.0083	0.50		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Isopropylbenzene	ND	0.0036	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
4-Isopropyltoluene	ND	0.0041	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
4-Methyl-2-pentanone	ND	0.0094	0.50		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Methylene chloride	ND	0.0088	0.15		mg/Kg	1	10/30/2019 3:05:18 PM	48446
n-Butylbenzene	ND	0.0047	0.15		mg/Kg	1	10/30/2019 3:05:18 PM	48446
n-Propylbenzene	ND	0.0040	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
sec-Butylbenzene	ND	0.0056	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Styrene	ND	0.0039	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
tert-Butylbenzene	ND	0.0047	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,1,1,2-Tetrachloroethane	ND	0.0034	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446

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EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0051	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
trans-1,2-DCE	ND	0.0046	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
trans-1,3-Dichloropropene	ND	0.0053	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,2,3-Trichlorobenzene	ND	0.0044	0.10		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,2,4-Trichlorobenzene	ND	0.0051	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,1,1-Trichloroethane	ND	0.0045	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,1,2-Trichloroethane	ND	0.0035	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Trichloroethene (TCE)	ND	0.0058	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Trichlorofluoromethane	ND	0.017	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
1,2,3-Trichloropropane	ND	0.0081	0.10		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Vinyl chloride	ND	0.0033	0.050		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Xylenes, Total	ND	0.013	0.10		mg/Kg	1	10/30/2019 3:05:18 PM	48446
Surr: Dibromofluoromethane	106		70-130		%Rec	1	10/30/2019 3:05:18 PM	48446
Surr: 1,2-Dichloroethane-d4	93.4		70-130		%Rec	1	10/30/2019 3:05:18 PM	48446
Surr: Toluene-d8	102		70-130		%Rec	1	10/30/2019 3:05:18 PM	48446
Surr: 4-Bromofluorobenzene	88.6		70-130		%Rec	1	10/30/2019 3:05:18 PM	48446

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 10:45:00 AM
Lab ID: 1910E04-002
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.8	8.8		mg/Kg	1	10/31/2019 6:50:21 AM	48458
Motor Oil Range Organics (MRO)	ND	44	44		mg/Kg	1	10/31/2019 6:50:21 AM	48458
Surr: DNOP	93.5	0	70-130		%Rec	1	10/31/2019 6:50:21 AM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.89	2.9		mg/Kg	1	10/29/2019 9:05:55 PM	G64058
Surr: BFB	115	0	77.4-118		%Rec	1	10/29/2019 9:05:55 PM	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0046	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:05:44 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Arsenic	ND	2.9	5.1		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Barium	210	0.047	0.20		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Beryllium	1.1	0.019	0.30		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Chromium	11	0.16	0.61		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Cobalt	4.8	0.21	0.61		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Iron	17000	74	250		mg/Kg	100	11/18/2019 7:54:01 PM	48433
Lead	1.8	0.49	0.51		mg/Kg	2	11/18/2019 7:52:27 PM	48433
Manganese	320	0.042	0.20		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Nickel	9.8	0.30	1.0		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Selenium	ND	2.5	5.1		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Silver	ND	0.065	0.51		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Vanadium	20	0.14	5.1		mg/Kg	2	11/7/2019 3:16:01 PM	48433
Zinc	20	0.80	5.1		mg/Kg	2	11/7/2019 3:16:01 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.24	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Acenaphthylene	ND	0.22	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Aniline	ND	0.26	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Anthracene	ND	0.22	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Azobenzene	ND	0.28	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Benz(a)anthracene	ND	0.19	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Benzo(a)pyrene	ND	0.18	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Benzo(b)fluoranthene	ND	0.18	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Benzo(g,h,i)perylene	ND	0.17	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Benzo(k)fluoranthene	ND	0.18	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Benzoic acid	ND	0.21	1.0		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Benzyl alcohol	ND	0.25	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 10:45:00 AM
Lab ID: 1910E04-002
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.30	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Bis(2-chloroethyl)ether	ND	0.25	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Bis(2-chloroisopropyl)ether	ND	0.23	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Bis(2-ethylhexyl)phthalate	ND	0.29	1.0		mg/Kg	1	11/1/2019 10:37:47 AM	48455
4-Bromophenyl phenyl ether	ND	0.24	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Butyl benzyl phthalate	ND	0.21	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Carbazole	ND	0.24	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
4-Chloro-3-methylphenol	ND	0.31	1.0		mg/Kg	1	11/1/2019 10:37:47 AM	48455
4-Chloroaniline	ND	0.29	1.0		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2-Chloronaphthalene	ND	0.25	0.51		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2-Chlorophenol	ND	0.25	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
4-Chlorophenyl phenyl ether	ND	0.22	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Chrysene	ND	0.18	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Di-n-butyl phthalate	ND	0.30	0.81		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Di-n-octyl phthalate	ND	0.21	0.81		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Dibenz(a,h)anthracene	ND	0.18	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Dibenzofuran	ND	0.26	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
1,2-Dichlorobenzene	ND	0.24	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
1,3-Dichlorobenzene	ND	0.21	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
1,4-Dichlorobenzene	ND	0.22	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
3,3´-Dichlorobenzidine	ND	0.18	0.51		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Diethyl phthalate	ND	0.29	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Dimethyl phthalate	ND	0.27	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2,4-Dichlorophenol	ND	0.23	0.81		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2,4-Dimethylphenol	ND	0.22	0.61		mg/Kg	1	11/1/2019 10:37:47 AM	48455
4,6-Dinitro-2-methylphenol	ND	0.19	0.81		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2,4-Dinitrophenol	ND	0.15	1.0		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2,4-Dinitrotoluene	ND	0.24	1.0		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2,6-Dinitrotoluene	ND	0.27	1.0		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Fluoranthene	ND	0.23	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Fluorene	ND	0.23	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Hexachlorobenzene	ND	0.25	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Hexachlorobutadiene	ND	0.28	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Hexachlorocyclopentadiene	ND	0.23	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Hexachloroethane	ND	0.23	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Indeno(1,2,3-cd)pyrene	ND	0.20	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Isophorone	ND	0.30	0.81		mg/Kg	1	11/1/2019 10:37:47 AM	48455
1-Methylnaphthalene	ND	0.30	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2-Methylnaphthalene	ND	0.29	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 10:45:00 AM
Lab ID: 1910E04-002
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.24	0.81		mg/Kg	1	11/1/2019 10:37:47 AM	48455
3+4-Methylphenol	ND	0.25	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
N-Nitrosodi-n-propylamine	ND	0.29	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
N-Nitrosodiphenylamine	ND	0.21	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Naphthalene	ND	0.31	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2-Nitroaniline	ND	0.29	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
3-Nitroaniline	ND	0.28	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
4-Nitroaniline	ND	0.26	0.81		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Nitrobenzene	ND	0.28	0.81		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2-Nitrophenol	ND	0.28	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
4-Nitrophenol	ND	0.27	0.51		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Pentachlorophenol	ND	0.21	0.81		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Phenanthrene	ND	0.22	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Phenol	ND	0.25	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Pyrene	ND	0.19	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Pyridine	ND	0.24	0.81		mg/Kg	1	11/1/2019 10:37:47 AM	48455
1,2,4-Trichlorobenzene	ND	0.31	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2,4,5-Trichlorophenol	ND	0.26	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
2,4,6-Trichlorophenol	ND	0.21	0.40		mg/Kg	1	11/1/2019 10:37:47 AM	48455
Surr: 2-Fluorophenol	78.8		26.7-85.9		%Rec	1	11/1/2019 10:37:47 AM	48455
Surr: Phenol-d5	80.4		18.5-101		%Rec	1	11/1/2019 10:37:47 AM	48455
Surr: 2,4,6-Tribromophenol	76.8		35.8-85.6		%Rec	1	11/1/2019 10:37:47 AM	48455
Surr: Nitrobenzene-d5	92.9		40.8-95.2		%Rec	1	11/1/2019 10:37:47 AM	48455
Surr: 2-Fluorobiphenyl	79.8		34.7-85.2		%Rec	1	11/1/2019 10:37:47 AM	48455
Surr: 4-Terphenyl-d14	107		37.4-91.3	S	%Rec	1	11/1/2019 10:37:47 AM	48455
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0024	0.015		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Toluene	ND	0.0028	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Ethylbenzene	ND	0.0017	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0070	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,2,4-Trimethylbenzene	ND	0.0027	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,3,5-Trimethylbenzene	ND	0.0029	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,2-Dichloroethane (EDC)	ND	0.0030	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,2-Dibromoethane (EDB)	ND	0.0027	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Naphthalene	ND	0.0059	0.059		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1-Methylnaphthalene	ND	0.017	0.12		mg/Kg	1	10/29/2019 12:15:30 P	A64063
2-Methylnaphthalene	ND	0.013	0.12		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Acetone	ND	0.024	0.44		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Bromobenzene	ND	0.0028	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 10:45:00 AM
Lab ID: 1910E04-002
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0027	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Bromoform	ND	0.0027	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Bromomethane	ND	0.0071	0.088		mg/Kg	1	10/29/2019 12:15:30 P	A64063
2-Butanone	ND	0.034	0.29		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Carbon disulfide	ND	0.0097	0.29		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Carbon tetrachloride	ND	0.0028	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Chlorobenzene	ND	0.0038	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Chloroethane	ND	0.0043	0.059		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Chloroform	ND	0.0024	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Chloromethane	ND	0.0028	0.088		mg/Kg	1	10/29/2019 12:15:30 P	A64063
2-Chlorotoluene	ND	0.0026	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
4-Chlorotoluene	ND	0.0024	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
cis-1,2-DCE	ND	0.0040	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
cis-1,3-Dichloropropene	ND	0.0025	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,2-Dibromo-3-chloropropane	ND	0.0030	0.059		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Dibromochloromethane	ND	0.0021	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Dibromomethane	ND	0.0032	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,2-Dichlorobenzene	ND	0.0024	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,3-Dichlorobenzene	ND	0.0026	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,4-Dichlorobenzene	ND	0.0025	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Dichlorodifluoromethane	ND	0.0068	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,1-Dichloroethane	ND	0.0019	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,1-Dichloroethene	ND	0.012	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,2-Dichloropropane	ND	0.0021	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,3-Dichloropropane	ND	0.0032	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
2,2-Dichloropropane	ND	0.0096	0.059		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,1-Dichloropropene	ND	0.0027	0.059		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Hexachlorobutadiene	ND	0.0030	0.059		mg/Kg	1	10/29/2019 12:15:30 P	A64063
2-Hexanone	ND	0.0049	0.29		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Isopropylbenzene	ND	0.0021	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
4-Isopropyltoluene	ND	0.0024	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
4-Methyl-2-pentanone	ND	0.0056	0.29		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Methylene chloride	ND	0.0052	0.088		mg/Kg	1	10/29/2019 12:15:30 P	A64063
n-Butylbenzene	ND	0.0027	0.088		mg/Kg	1	10/29/2019 12:15:30 P	A64063
n-Propylbenzene	ND	0.0023	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
sec-Butylbenzene	ND	0.0033	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Styrene	ND	0.0023	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
tert-Butylbenzene	ND	0.0028	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,1,1,2-Tetrachloroethane	ND	0.0020	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 10:45:00 AM
Lab ID: 1910E04-002
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0030	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Tetrachloroethene (PCE)	ND	0.0024	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
trans-1,2-DCE	ND	0.0027	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
trans-1,3-Dichloropropene	ND	0.0031	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,2,3-Trichlorobenzene	ND	0.0026	0.059		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,2,4-Trichlorobenzene	ND	0.0030	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,1,1-Trichloroethane	ND	0.0027	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,1,2-Trichloroethane	ND	0.0021	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Trichloroethene (TCE)	ND	0.0034	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Trichlorofluoromethane	ND	0.010	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
1,2,3-Trichloropropane	ND	0.0048	0.059		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Vinyl chloride	ND	0.0019	0.029		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Xylenes, Total	ND	0.0074	0.059		mg/Kg	1	10/29/2019 12:15:30 P	A64063
Surr: Dibromofluoromethane	116		70-130		%Rec	1	10/29/2019 12:15:30 P	A64063
Surr: 1,2-Dichloroethane-d4	99.5		70-130		%Rec	1	10/29/2019 12:15:30 P	A64063
Surr: Toluene-d8	99.5		70-130		%Rec	1	10/29/2019 12:15:30 P	A64063
Surr: 4-Bromofluorobenzene	92.3		70-130		%Rec	1	10/29/2019 12:15:30 P	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 11:10:00 AM
Lab ID: 1910E04-003
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.9	9.5		mg/Kg	1	10/31/2019 7:25:35 AM	48458
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/31/2019 7:25:35 AM	48458
Surr: DNOP	95.6	0	70-130		%Rec	1	10/31/2019 7:25:35 AM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.77	2.5		mg/Kg	1	10/29/2019 9:29:30 PM	G64058
Surr: BFB	108	0	77.4-118		%Rec	1	10/29/2019 9:29:30 PM	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.021	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:11:58 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.71	4.8		mg/Kg	2	11/7/2019 3:17:37 PM	48433
Arsenic	ND	2.8	4.8		mg/Kg	2	11/7/2019 3:17:37 PM	48433
Barium	740	0.11	0.48		mg/Kg	5	11/19/2019 6:25:11 PM	48433
Beryllium	0.86	0.018	0.29		mg/Kg	2	11/7/2019 3:17:37 PM	48433
Cadmium	ND	0.047	0.19		mg/Kg	2	11/7/2019 3:17:37 PM	48433
Chromium	8.9	0.15	0.58		mg/Kg	2	11/7/2019 3:17:37 PM	48433
Cobalt	3.8	0.21	0.58		mg/Kg	2	11/7/2019 3:17:37 PM	48433
Iron	13000	70	240		mg/Kg	100	11/18/2019 7:57:11 PM	48433
Lead	1.7	0.47	0.48		mg/Kg	2	11/18/2019 7:55:35 PM	48433
Manganese	380	0.040	0.19		mg/Kg	2	11/7/2019 3:17:37 PM	48433
Nickel	7.7	0.29	0.97		mg/Kg	2	11/7/2019 3:17:37 PM	48433
Selenium	ND	2.4	4.8		mg/Kg	2	11/7/2019 3:17:37 PM	48433
Silver	ND	0.062	0.48		mg/Kg	2	11/7/2019 3:17:37 PM	48433
Vanadium	19	0.13	4.8		mg/Kg	2	11/7/2019 3:17:37 PM	48433
Zinc	14	0.77	4.8		mg/Kg	2	11/7/2019 3:17:37 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Aniline	ND	0.13	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Anthracene	ND	0.11	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Azobenzene	ND	0.14	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Benz(a)anthracene	ND	0.095	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Benzo(a)pyrene	ND	0.088	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Benzo(b)fluoranthene	ND	0.087	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Benzo(g,h,i)perylene	ND	0.085	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Benzo(k)fluoranthene	ND	0.090	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Benzoic acid	ND	0.10	0.49		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 11:10:00 AM
Lab ID: 1910E04-003
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	11/4/2019 1:00:07 PM	48494
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Carbazole	ND	0.12	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	11/4/2019 1:00:07 PM	48494
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2-Chloronaphthalene	ND	0.12	0.25		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Chrysene	ND	0.087	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Di-n-butyl phthalate	0.15	0.15	0.40	J	mg/Kg	1	11/4/2019 1:00:07 PM	48494
Di-n-octyl phthalate	ND	0.10	0.40		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Dibenz(a,h)anthracene	ND	0.090	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
3,3´-Dichlorobenzidine	ND	0.088	0.25		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2,4-Dichlorophenol	ND	0.11	0.40		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	11/4/2019 1:00:07 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.091	0.40		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2,4-Dinitrophenol	ND	0.072	0.49		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Fluoranthene	ND	0.11	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Fluorene	ND	0.11	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.098	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Isophorone	ND	0.15	0.40		mg/Kg	1	11/4/2019 1:00:07 PM	48494
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 11:10:00 AM
Lab ID: 1910E04-003
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.40		mg/Kg	1	11/4/2019 1:00:07 PM	48494
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Naphthalene	ND	0.15	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Nitrobenzene	ND	0.14	0.40		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
4-Nitrophenol	ND	0.13	0.25		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Pentachlorophenol	ND	0.10	0.40		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Phenanthrene	ND	0.11	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Phenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Pyrene	ND	0.093	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Pyridine	ND	0.12	0.40		mg/Kg	1	11/4/2019 1:00:07 PM	48494
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	11/4/2019 1:00:07 PM	48494
Surr: 2-Fluorophenol	68.0		26.7-85.9		%Rec	1	11/4/2019 1:00:07 PM	48494
Surr: Phenol-d5	74.1		18.5-101		%Rec	1	11/4/2019 1:00:07 PM	48494
Surr: 2,4,6-Tribromophenol	67.6		35.8-85.6		%Rec	1	11/4/2019 1:00:07 PM	48494
Surr: Nitrobenzene-d5	78.7		40.8-95.2		%Rec	1	11/4/2019 1:00:07 PM	48494
Surr: 2-Fluorobiphenyl	64.6		34.7-85.2		%Rec	1	11/4/2019 1:00:07 PM	48494
Surr: 4-Terphenyl-d14	72.4		37.4-91.3		%Rec	1	11/4/2019 1:00:07 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0021	0.013		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Toluene	ND	0.0024	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Ethylbenzene	ND	0.0015	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0060	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0023	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0025	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0026	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0023	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Naphthalene	ND	0.0051	0.051		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1-Methylnaphthalene	ND	0.015	0.10		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
2-Methylnaphthalene	ND	0.011	0.10		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Acetone	ND	0.021	0.38		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Bromobenzene	ND	0.0024	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 11:10:00 AM
Lab ID: 1910E04-003
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0023	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Bromoform	ND	0.0023	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Bromomethane	ND	0.0061	0.076		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
2-Butanone	ND	0.029	0.25		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Carbon disulfide	ND	0.0084	0.25		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Carbon tetrachloride	ND	0.0024	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Chlorobenzene	ND	0.0033	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Chloroethane	ND	0.0038	0.051		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Chloroform	ND	0.0020	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Chloromethane	ND	0.0024	0.076		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
2-Chlorotoluene	ND	0.0022	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
4-Chlorotoluene	ND	0.0021	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
cis-1,2-DCE	ND	0.0035	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
cis-1,3-Dichloropropene	ND	0.0022	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0026	0.051		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Dibromochloromethane	ND	0.0018	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Dibromomethane	ND	0.0027	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,2-Dichlorobenzene	ND	0.0021	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,3-Dichlorobenzene	ND	0.0022	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,4-Dichlorobenzene	ND	0.0021	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Dichlorodifluoromethane	ND	0.0059	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,1-Dichloroethane	ND	0.0016	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,1-Dichloroethene	ND	0.010	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,2-Dichloropropane	ND	0.0019	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,3-Dichloropropane	ND	0.0028	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
2,2-Dichloropropane	ND	0.0083	0.051		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,1-Dichloropropene	ND	0.0023	0.051		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Hexachlorobutadiene	ND	0.0026	0.051		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
2-Hexanone	ND	0.0042	0.25		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Isopropylbenzene	ND	0.0018	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
4-Isopropyltoluene	ND	0.0021	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
4-Methyl-2-pentanone	ND	0.0048	0.25		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Methylene chloride	0.0071	0.0045	0.076	J	mg/Kg	1	10/29/2019 1:43:37 PM	A64063
n-Butylbenzene	ND	0.0024	0.076		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
n-Propylbenzene	ND	0.0020	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
sec-Butylbenzene	ND	0.0029	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Styrene	ND	0.0020	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
tert-Butylbenzene	ND	0.0024	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0017	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 11:10:00 AM
Lab ID: 1910E04-003
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0026	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Tetrachloroethene (PCE)	ND	0.0020	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
trans-1,2-DCE	ND	0.0023	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
trans-1,3-Dichloropropene	ND	0.0027	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0022	0.051		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0026	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,1,1-Trichloroethane	ND	0.0023	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,1,2-Trichloroethane	ND	0.0018	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Trichloroethene (TCE)	ND	0.0030	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Trichlorofluoromethane	ND	0.0087	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
1,2,3-Trichloropropane	ND	0.0041	0.051		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Vinyl chloride	ND	0.0017	0.025		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Xylenes, Total	ND	0.0064	0.051		mg/Kg	1	10/29/2019 1:43:37 PM	A64063
Surr: Dibromofluoromethane	110		70-130		%Rec	1	10/29/2019 1:43:37 PM	A64063
Surr: 1,2-Dichloroethane-d4	98.6		70-130		%Rec	1	10/29/2019 1:43:37 PM	A64063
Surr: Toluene-d8	97.0		70-130		%Rec	1	10/29/2019 1:43:37 PM	A64063
Surr: 4-Bromofluorobenzene	91.9		70-130		%Rec	1	10/29/2019 1:43:37 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank
Project: SWMU 13
Collection Date:
Lab ID: 1910E04-004
Matrix: MEOH BLAN
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0041	0.025		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Toluene	ND	0.0048	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Ethylbenzene	ND	0.0029	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.012	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0046	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0048	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0051	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0046	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Naphthalene	ND	0.010	0.10		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1-Methylnaphthalene	ND	0.029	0.20		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
2-Methylnaphthalene	ND	0.022	0.20		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Acetone	ND	0.041	0.75		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Bromobenzene	ND	0.0048	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Bromodichloromethane	ND	0.0046	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Bromoform	ND	0.0045	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Bromomethane	ND	0.012	0.15		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
2-Butanone	ND	0.058	0.50		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Carbon disulfide	ND	0.017	0.50		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Carbon tetrachloride	ND	0.0047	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Chlorobenzene	ND	0.0064	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Chloroethane	ND	0.0074	0.10		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Chloroform	ND	0.0040	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Chloromethane	ND	0.0048	0.15		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
2-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
4-Chlorotoluene	ND	0.0041	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
cis-1,2-DCE	ND	0.0068	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
cis-1,3-Dichloropropene	ND	0.0042	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0051	0.10		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Dibromochloromethane	ND	0.0035	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Dibromomethane	ND	0.0054	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,2-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,3-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,4-Dichlorobenzene	ND	0.0042	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Dichlorodifluoromethane	ND	0.012	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,1-Dichloroethane	ND	0.0032	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,3-Dichloropropane	ND	0.0054	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
2,2-Dichloropropane	ND	0.016	0.10		mg/Kg	1	10/29/2019 2:13:02 PM	A64063

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank
Project: SWMU 13
Collection Date:
Lab ID: 1910E04-004
Matrix: MEOH BLAN
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1-Dichloropropene	ND	0.0046	0.10		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Hexachlorobutadiene	ND	0.0051	0.10		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
2-Hexanone	ND	0.0083	0.50		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Isopropylbenzene	ND	0.0036	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
4-Isopropyltoluene	ND	0.0041	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
4-Methyl-2-pentanone	ND	0.0094	0.50		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Methylene chloride	0.011	0.0088	0.15	J	mg/Kg	1	10/29/2019 2:13:02 PM	A64063
n-Butylbenzene	ND	0.0047	0.15		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
n-Propylbenzene	ND	0.0040	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
sec-Butylbenzene	ND	0.0056	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Styrene	ND	0.0039	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
tert-Butylbenzene	ND	0.0047	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0034	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,1,2,2-Tetrachloroethane	ND	0.0051	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
trans-1,2-DCE	ND	0.0046	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
trans-1,3-Dichloropropene	ND	0.0053	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0044	0.10		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0051	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,1,1-Trichloroethane	ND	0.0045	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,1,2-Trichloroethane	ND	0.0035	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Trichloroethene (TCE)	ND	0.0058	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Trichlorofluoromethane	ND	0.017	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
1,2,3-Trichloropropane	ND	0.0081	0.10		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Vinyl chloride	ND	0.0033	0.050		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Xylenes, Total	ND	0.013	0.10		mg/Kg	1	10/29/2019 2:13:02 PM	A64063
Surr: Dibromofluoromethane	108		70-130		%Rec	1	10/29/2019 2:13:02 PM	A64063
Surr: 1,2-Dichloroethane-d4	97.6		70-130		%Rec	1	10/29/2019 2:13:02 PM	A64063
Surr: Toluene-d8	100		70-130		%Rec	1	10/29/2019 2:13:02 PM	A64063
Surr: 4-Bromofluorobenzene	92.0		70-130		%Rec	1	10/29/2019 2:13:02 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (4-6')
Project: SWMU 13
Collection Date: 10/24/2019 1:05:00 PM
Lab ID: 1910E04-005
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.7	8.5		mg/Kg	1	10/31/2019 7:47:34 AM	48458
Motor Oil Range Organics (MRO)	ND	42	42		mg/Kg	1	10/31/2019 7:47:34 AM	48458
Surr: DNOP	95.2	0	70-130		%Rec	1	10/31/2019 7:47:34 AM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.74	2.4		mg/Kg	1	10/29/2019 9:53:05 PM	G64058
Surr: BFB	108	0	77.4-118		%Rec	1	10/29/2019 9:53:05 PM	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0052	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:13:56 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.72	4.9		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Arsenic	ND	2.8	4.9		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Barium	290	0.045	0.20		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Beryllium	0.72	0.018	0.29		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Cadmium	ND	0.048	0.20		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Chromium	11	0.16	0.59		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Cobalt	4.1	0.21	0.59		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Iron	11000	71	240		mg/Kg	100	11/18/2019 8:06:34 PM	48433
Lead	2.5	0.48	0.49		mg/Kg	2	11/18/2019 8:02:53 PM	48433
Manganese	360	0.041	0.20		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Nickel	7.1	0.29	0.98		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Selenium	ND	2.5	4.9		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Silver	ND	0.063	0.49		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Vanadium	15	0.13	4.9		mg/Kg	2	11/7/2019 3:19:11 PM	48433
Zinc	15	0.78	4.9		mg/Kg	2	11/7/2019 3:19:11 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Acenaphthylene	ND	0.11	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Aniline	ND	0.13	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Anthracene	ND	0.11	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Azobenzene	ND	0.14	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Benz(a)anthracene	ND	0.10	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Benzo(a)pyrene	ND	0.092	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Benzo(b)fluoranthene	ND	0.091	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Benzo(g,h,i)perylene	ND	0.089	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Benzo(k)fluoranthene	ND	0.094	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Benzoic acid	ND	0.11	0.52		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Benzyl alcohol	ND	0.13	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (4-6')
Project: SWMU 13
Collection Date: 10/24/2019 1:05:00 PM
Lab ID: 1910E04-005
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Bis(2-chloroethyl)ether	ND	0.13	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.12	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.15	0.52		mg/Kg	1	11/4/2019 2:28:16 PM	48494
4-Bromophenyl phenyl ether	ND	0.12	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Butyl benzyl phthalate	ND	0.11	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Carbazole	ND	0.12	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
4-Chloro-3-methylphenol	ND	0.16	0.52		mg/Kg	1	11/4/2019 2:28:16 PM	48494
4-Chloroaniline	ND	0.15	0.52		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2-Chloronaphthalene	ND	0.13	0.26		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2-Chlorophenol	ND	0.13	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
4-Chlorophenyl phenyl ether	ND	0.11	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Chrysene	ND	0.091	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Di-n-butyl phthalate	ND	0.15	0.41		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Di-n-octyl phthalate	ND	0.11	0.41		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Dibenz(a,h)anthracene	ND	0.094	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Dibenzofuran	ND	0.14	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
1,2-Dichlorobenzene	ND	0.12	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
1,3-Dichlorobenzene	ND	0.11	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
1,4-Dichlorobenzene	ND	0.11	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
3,3´-Dichlorobenzidine	ND	0.092	0.26		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Diethyl phthalate	ND	0.15	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Dimethyl phthalate	ND	0.14	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2,4-Dichlorophenol	ND	0.12	0.41		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2,4-Dimethylphenol	ND	0.11	0.31		mg/Kg	1	11/4/2019 2:28:16 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.095	0.41		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2,4-Dinitrophenol	ND	0.075	0.52		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2,4-Dinitrotoluene	ND	0.12	0.52		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2,6-Dinitrotoluene	ND	0.14	0.52		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Fluoranthene	ND	0.12	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Fluorene	ND	0.12	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Hexachlorobenzene	ND	0.13	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Hexachlorobutadiene	ND	0.14	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Hexachlorocyclopentadiene	ND	0.12	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Hexachloroethane	ND	0.12	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.10	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Isophorone	ND	0.15	0.41		mg/Kg	1	11/4/2019 2:28:16 PM	48494
1-Methylnaphthalene	ND	0.15	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2-Methylnaphthalene	ND	0.15	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (4-6')
Project: SWMU 13
Collection Date: 10/24/2019 1:05:00 PM
Lab ID: 1910E04-005
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.41		mg/Kg	1	11/4/2019 2:28:16 PM	48494
3+4-Methylphenol	ND	0.13	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
N-Nitrosodi-n-propylamine	ND	0.15	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
N-Nitrosodiphenylamine	ND	0.11	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Naphthalene	ND	0.16	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2-Nitroaniline	ND	0.15	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
3-Nitroaniline	ND	0.14	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
4-Nitroaniline	ND	0.13	0.41		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Nitrobenzene	ND	0.14	0.41		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2-Nitrophenol	ND	0.14	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
4-Nitrophenol	ND	0.14	0.26		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Pentachlorophenol	ND	0.11	0.41		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Phenanthrene	ND	0.11	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Phenol	ND	0.13	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Pyrene	ND	0.097	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Pyridine	ND	0.12	0.41		mg/Kg	1	11/4/2019 2:28:16 PM	48494
1,2,4-Trichlorobenzene	ND	0.16	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2,4,5-Trichlorophenol	ND	0.13	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
2,4,6-Trichlorophenol	ND	0.11	0.21		mg/Kg	1	11/4/2019 2:28:16 PM	48494
Surr: 2-Fluorophenol	66.6		26.7-85.9		%Rec	1	11/4/2019 2:28:16 PM	48494
Surr: Phenol-d5	69.3		18.5-101		%Rec	1	11/4/2019 2:28:16 PM	48494
Surr: 2,4,6-Tribromophenol	56.3		35.8-85.6		%Rec	1	11/4/2019 2:28:16 PM	48494
Surr: Nitrobenzene-d5	64.7		40.8-95.2		%Rec	1	11/4/2019 2:28:16 PM	48494
Surr: 2-Fluorobiphenyl	58.7		34.7-85.2		%Rec	1	11/4/2019 2:28:16 PM	48494
Surr: 4-Terphenyl-d14	52.5		37.4-91.3		%Rec	1	11/4/2019 2:28:16 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0020	0.012		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Toluene	ND	0.0023	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Ethylbenzene	ND	0.0014	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0058	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0022	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0024	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0025	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0022	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Naphthalene	ND	0.0049	0.049		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1-Methylnaphthalene	0.035	0.014	0.098	J	mg/Kg	1	10/29/2019 2:42:11 PM	A64063
2-Methylnaphthalene	ND	0.011	0.098		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Acetone	ND	0.020	0.37		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Bromobenzene	ND	0.0023	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (4-6')
Project: SWMU 13
Collection Date: 10/24/2019 1:05:00 PM
Lab ID: 1910E04-005
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0022	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Bromoform	ND	0.0022	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Bromomethane	ND	0.0059	0.073		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
2-Butanone	ND	0.028	0.24		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Carbon disulfide	ND	0.0081	0.24		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Carbon tetrachloride	ND	0.0023	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Chlorobenzene	ND	0.0031	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Chloroethane	ND	0.0036	0.049		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Chloroform	ND	0.0020	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Chloromethane	ND	0.0023	0.073		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
2-Chlorotoluene	ND	0.0021	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
4-Chlorotoluene	ND	0.0020	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
cis-1,2-DCE	ND	0.0033	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
cis-1,3-Dichloropropene	ND	0.0021	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0025	0.049		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Dibromochloromethane	ND	0.0017	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Dibromomethane	ND	0.0026	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,2-Dichlorobenzene	ND	0.0020	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,3-Dichlorobenzene	ND	0.0021	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,4-Dichlorobenzene	ND	0.0020	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Dichlorodifluoromethane	ND	0.0057	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,1-Dichloroethane	ND	0.0016	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,1-Dichloroethene	ND	0.0098	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,2-Dichloropropane	ND	0.0018	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,3-Dichloropropane	ND	0.0026	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
2,2-Dichloropropane	ND	0.0080	0.049		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,1-Dichloropropene	ND	0.0022	0.049		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Hexachlorobutadiene	ND	0.0025	0.049		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
2-Hexanone	ND	0.0041	0.24		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Isopropylbenzene	ND	0.0018	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
4-Isopropyltoluene	ND	0.0020	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
4-Methyl-2-pentanone	ND	0.0046	0.24		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Methylene chloride	ND	0.0043	0.073		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
n-Butylbenzene	ND	0.0023	0.073		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
n-Propylbenzene	ND	0.0020	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
sec-Butylbenzene	ND	0.0028	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Styrene	ND	0.0019	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
tert-Butylbenzene	ND	0.0023	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0017	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (4-6')
Project: SWMU 13
Collection Date: 10/24/2019 1:05:00 PM
Lab ID: 1910E04-005
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0025	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Tetrachloroethene (PCE)	ND	0.0020	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
trans-1,2-DCE	ND	0.0022	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
trans-1,3-Dichloropropene	ND	0.0026	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0021	0.049		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0025	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,1,1-Trichloroethane	ND	0.0022	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,1,2-Trichloroethane	ND	0.0017	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Trichloroethene (TCE)	ND	0.0028	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Trichlorofluoromethane	ND	0.0083	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
1,2,3-Trichloropropane	ND	0.0040	0.049		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Vinyl chloride	ND	0.0016	0.024		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Xylenes, Total	ND	0.0062	0.049		mg/Kg	1	10/29/2019 2:42:11 PM	A64063
Surr: Dibromofluoromethane	107		70-130		%Rec	1	10/29/2019 2:42:11 PM	A64063
Surr: 1,2-Dichloroethane-d4	96.6		70-130		%Rec	1	10/29/2019 2:42:11 PM	A64063
Surr: Toluene-d8	102		70-130		%Rec	1	10/29/2019 2:42:11 PM	A64063
Surr: 4-Bromofluorobenzene	94.3		70-130		%Rec	1	10/29/2019 2:42:11 PM	A64063

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (10-12')
Project: SWMU 13
Collection Date: 10/24/2019 1:15:00 PM
Lab ID: 1910E04-006
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.8	9.1		mg/Kg	1	10/31/2019 8:31:40 AM	48458
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	10/31/2019 8:31:40 AM	48458
Surr: DNOP	95.9	0	70-130		%Rec	1	10/31/2019 8:31:40 AM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.74	2.4		mg/Kg	1	10/29/2019 10:16:46 P	G64058
Surr: BFB	118	0	77.4-118		%Rec	1	10/29/2019 10:16:46 P	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0034	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:15:54 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Arsenic	ND	2.9	5.0		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Barium	250	0.047	0.20		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Beryllium	1.4	0.019	0.30		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Chromium	14	0.16	0.61		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Cobalt	5.5	0.21	0.61		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Iron	19000	73	250		mg/Kg	100	11/18/2019 8:09:46 PM	48433
Lead	2.7	0.49	0.50		mg/Kg	2	11/18/2019 8:08:11 PM	48433
Manganese	310	0.042	0.20		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Nickel	12	0.30	1.0		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Selenium	ND	2.5	5.0		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Silver	ND	0.065	0.50		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Vanadium	21	0.13	5.0		mg/Kg	2	11/7/2019 3:20:46 PM	48433
Zinc	19	0.80	5.0		mg/Kg	2	11/7/2019 3:20:46 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Aniline	ND	0.13	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Anthracene	ND	0.11	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Azobenzene	ND	0.14	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Benz(a)anthracene	ND	0.099	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Benzo(a)pyrene	ND	0.091	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Benzo(b)fluoranthene	ND	0.091	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Benzo(g,h,i)perylene	ND	0.088	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Benzo(k)fluoranthene	ND	0.093	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Benzoic acid	ND	0.11	0.51		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Benzyl alcohol	ND	0.13	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494

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Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (10-12')
Project: SWMU 13
Collection Date: 10/24/2019 1:15:00 PM
Lab ID: 1910E04-006
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.12	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.15	0.51		mg/Kg	1	11/4/2019 2:57:34 PM	48494
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Carbazole	ND	0.12	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
4-Chloro-3-methylphenol	ND	0.16	0.51		mg/Kg	1	11/4/2019 2:57:34 PM	48494
4-Chloroaniline	ND	0.15	0.51		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2-Chloronaphthalene	ND	0.13	0.26		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2-Chlorophenol	ND	0.13	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Chrysene	ND	0.090	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Di-n-butyl phthalate	0.19	0.15	0.41	J	mg/Kg	1	11/4/2019 2:57:34 PM	48494
Di-n-octyl phthalate	ND	0.10	0.41		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Dibenz(a,h)anthracene	ND	0.093	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
1,3-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
3,3´-Dichlorobenzidine	ND	0.091	0.26		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Diethyl phthalate	ND	0.15	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Dimethyl phthalate	ND	0.14	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2,4-Dichlorophenol	ND	0.12	0.41		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2,4-Dimethylphenol	ND	0.11	0.31		mg/Kg	1	11/4/2019 2:57:34 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.095	0.41		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2,4-Dinitrophenol	ND	0.074	0.51		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2,4-Dinitrotoluene	ND	0.12	0.51		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2,6-Dinitrotoluene	ND	0.13	0.51		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Fluoranthene	ND	0.11	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Fluorene	ND	0.12	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Hexachlorobenzene	ND	0.13	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Hexachlorocyclopentadiene	ND	0.12	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.10	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Isophorone	ND	0.15	0.41		mg/Kg	1	11/4/2019 2:57:34 PM	48494
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (10-12')
Project: SWMU 13
Collection Date: 10/24/2019 1:15:00 PM
Lab ID: 1910E04-006
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.41		mg/Kg	1	11/4/2019 2:57:34 PM	48494
3+4-Methylphenol	ND	0.13	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
N-Nitrosodi-n-propylamine	ND	0.15	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
N-Nitrosodiphenylamine	ND	0.11	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Naphthalene	ND	0.15	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2-Nitroaniline	ND	0.15	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
4-Nitroaniline	ND	0.13	0.41		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Nitrobenzene	ND	0.14	0.41		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2-Nitrophenol	ND	0.14	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
4-Nitrophenol	ND	0.14	0.26		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Pentachlorophenol	ND	0.11	0.41		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Phenanthrene	ND	0.11	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Phenol	ND	0.13	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Pyrene	ND	0.096	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Pyridine	ND	0.12	0.41		mg/Kg	1	11/4/2019 2:57:34 PM	48494
1,2,4-Trichlorobenzene	ND	0.16	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
2,4,6-Trichlorophenol	ND	0.11	0.20		mg/Kg	1	11/4/2019 2:57:34 PM	48494
Surr: 2-Fluorophenol	60.2		26.7-85.9		%Rec	1	11/4/2019 2:57:34 PM	48494
Surr: Phenol-d5	67.2		18.5-101		%Rec	1	11/4/2019 2:57:34 PM	48494
Surr: 2,4,6-Tribromophenol	64.9		35.8-85.6		%Rec	1	11/4/2019 2:57:34 PM	48494
Surr: Nitrobenzene-d5	63.6		40.8-95.2		%Rec	1	11/4/2019 2:57:34 PM	48494
Surr: 2-Fluorobiphenyl	63.1		34.7-85.2		%Rec	1	11/4/2019 2:57:34 PM	48494
Surr: 4-Terphenyl-d14	79.9		37.4-91.3		%Rec	1	11/4/2019 2:57:34 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0020	0.012		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Toluene	ND	0.0023	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Ethylbenzene	ND	0.0014	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0058	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0022	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0024	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0025	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0022	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Naphthalene	ND	0.0049	0.049		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1-Methylnaphthalene	ND	0.014	0.097		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
2-Methylnaphthalene	ND	0.011	0.097		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Acetone	ND	0.020	0.37		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Bromobenzene	ND	0.0023	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (10-12')
Project: SWMU 13
Collection Date: 10/24/2019 1:15:00 PM
Lab ID: 1910E04-006
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0022	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Bromoform	ND	0.0022	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Bromomethane	ND	0.0059	0.073		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
2-Butanone	ND	0.028	0.24		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Carbon disulfide	ND	0.0080	0.24		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Carbon tetrachloride	ND	0.0023	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Chlorobenzene	ND	0.0031	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Chloroethane	ND	0.0036	0.049		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Chloroform	ND	0.0020	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Chloromethane	ND	0.0023	0.073		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
2-Chlorotoluene	ND	0.0021	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
4-Chlorotoluene	ND	0.0020	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
cis-1,2-DCE	ND	0.0033	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
cis-1,3-Dichloropropene	ND	0.0021	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0025	0.049		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Dibromochloromethane	ND	0.0017	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Dibromomethane	ND	0.0026	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,2-Dichlorobenzene	ND	0.0020	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,3-Dichlorobenzene	ND	0.0021	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,4-Dichlorobenzene	ND	0.0020	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Dichlorodifluoromethane	ND	0.0057	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,1-Dichloroethane	ND	0.0016	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,1-Dichloroethene	ND	0.0097	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,2-Dichloropropane	ND	0.0018	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,3-Dichloropropane	ND	0.0026	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
2,2-Dichloropropane	ND	0.0079	0.049		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,1-Dichloropropene	ND	0.0022	0.049		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Hexachlorobutadiene	ND	0.0025	0.049		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
2-Hexanone	ND	0.0040	0.24		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Isopropylbenzene	ND	0.0018	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
4-Isopropyltoluene	ND	0.0020	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
4-Methyl-2-pentanone	ND	0.0046	0.24		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Methylene chloride	0.0069	0.0043	0.073	J	mg/Kg	1	10/29/2019 3:11:16 PM	A64063
n-Butylbenzene	ND	0.0023	0.073		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
n-Propylbenzene	ND	0.0019	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
sec-Butylbenzene	ND	0.0027	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Styrene	ND	0.0019	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
tert-Butylbenzene	ND	0.0023	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0016	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (10-12')
Project: SWMU 13
Collection Date: 10/24/2019 1:15:00 PM
Lab ID: 1910E04-006
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0025	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Tetrachloroethene (PCE)	ND	0.0019	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
trans-1,2-DCE	ND	0.0022	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
trans-1,3-Dichloropropene	ND	0.0026	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0021	0.049		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0025	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,1,1-Trichloroethane	ND	0.0022	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,1,2-Trichloroethane	ND	0.0017	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Trichloroethene (TCE)	ND	0.0028	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Trichlorofluoromethane	ND	0.0083	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
1,2,3-Trichloropropane	ND	0.0039	0.049		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Vinyl chloride	ND	0.0016	0.024		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Xylenes, Total	ND	0.0061	0.049		mg/Kg	1	10/29/2019 3:11:16 PM	A64063
Surr: Dibromofluoromethane	107		70-130		%Rec	1	10/29/2019 3:11:16 PM	A64063
Surr: 1,2-Dichloroethane-d4	94.9		70-130		%Rec	1	10/29/2019 3:11:16 PM	A64063
Surr: Toluene-d8	97.9		70-130		%Rec	1	10/29/2019 3:11:16 PM	A64063
Surr: 4-Bromofluorobenzene	91.7		70-130		%Rec	1	10/29/2019 3:11:16 PM	A64063

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (12-13")
Project: SWMU 13
Collection Date: 10/24/2019 1:25:00 PM
Lab ID: 1910E04-007
Matrix: SOIL
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.8	9.0		mg/Kg	1	10/31/2019 8:53:32 AM	48458
Motor Oil Range Organics (MRO)	ND	45	45		mg/Kg	1	10/31/2019 8:53:32 AM	48458
Surr: DNOP	98.0	0	70-130		%Rec	1	10/31/2019 8:53:32 AM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.5	4.9		mg/Kg	1	10/30/2019 1:47:53 PM	48446
Surr: BFB	97.4	0	77.4-118		%Rec	1	10/30/2019 1:47:53 PM	48446
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0029	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:17:52 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.70	4.8		mg/Kg	2	11/18/2019 8:11:21 PM	48604
Arsenic	ND	2.7	4.8		mg/Kg	2	11/19/2019 6:26:41 PM	48604
Barium	270	0.044	0.19		mg/Kg	2	11/18/2019 8:11:21 PM	48604
Beryllium	1.3	0.018	0.29		mg/Kg	2	11/18/2019 8:11:21 PM	48604
Cadmium	ND	0.046	0.19		mg/Kg	2	11/18/2019 8:11:21 PM	48604
Chromium	14	0.15	0.57		mg/Kg	2	11/18/2019 8:11:21 PM	48604
Cobalt	5.6	0.20	0.57		mg/Kg	2	11/18/2019 8:11:21 PM	48604
Iron	18000	70	240		mg/Kg	100	11/18/2019 8:13:02 PM	48604
Lead	2.8	0.47	0.48		mg/Kg	2	11/18/2019 8:11:21 PM	48604
Manganese	300	0.040	0.19		mg/Kg	2	11/18/2019 8:11:21 PM	48604
Nickel	12	0.29	0.96		mg/Kg	2	11/18/2019 8:11:21 PM	48604
Selenium	ND	2.5	5.1		mg/Kg	2	11/25/2019 6:35:36 PM	48977
Silver	ND	0.061	0.48		mg/Kg	2	11/18/2019 8:11:21 PM	48604
Vanadium	22	0.13	4.8		mg/Kg	2	11/18/2019 8:11:21 PM	48604
Zinc	18	0.76	4.8		mg/Kg	2	11/18/2019 8:11:21 PM	48604
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Aniline	ND	0.13	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Anthracene	ND	0.11	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Azobenzene	ND	0.14	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Benz(a)anthracene	ND	0.096	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Benzo(a)pyrene	ND	0.088	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Benzo(b)fluoranthene	ND	0.088	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Benzo(g,h,i)perylene	ND	0.085	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Benzo(k)fluoranthene	ND	0.090	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Benzoic acid	ND	0.10	0.50		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494

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CLIENT: Marathon
Client Sample ID: SWMU 13-7 (12-13")
Project: SWMU 13
Collection Date: 10/24/2019 1:25:00 PM
Lab ID: 1910E04-007
Matrix: SOIL
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.14	0.50		mg/Kg	1	11/4/2019 3:45:36 PM	48494
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Carbazole	ND	0.12	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
4-Chloro-3-methylphenol	ND	0.15	0.50		mg/Kg	1	11/4/2019 3:45:36 PM	48494
4-Chloroaniline	ND	0.14	0.50		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2-Chloronaphthalene	ND	0.12	0.25		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Chrysene	ND	0.088	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Di-n-butyl phthalate	ND	0.15	0.40		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Di-n-octyl phthalate	ND	0.10	0.40		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Dibenz(a,h)anthracene	ND	0.090	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
3,3´-Dichlorobenzidine	ND	0.088	0.25		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2,4-Dichlorophenol	ND	0.12	0.40		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	11/4/2019 3:45:36 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.092	0.40		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2,4-Dinitrophenol	ND	0.072	0.50		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2,6-Dinitrotoluene	ND	0.13	0.50		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Fluoranthene	ND	0.11	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Fluorene	ND	0.11	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.099	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Isophorone	ND	0.15	0.40		mg/Kg	1	11/4/2019 3:45:36 PM	48494
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (12-13")
Project: SWMU 13
Collection Date: 10/24/2019 1:25:00 PM
Lab ID: 1910E04-007
Matrix: SOIL
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.40		mg/Kg	1	11/4/2019 3:45:36 PM	48494
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Naphthalene	ND	0.15	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Nitrobenzene	ND	0.14	0.40		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2-Nitrophenol	ND	0.14	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
4-Nitrophenol	ND	0.13	0.25		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Pentachlorophenol	ND	0.10	0.40		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Phenanthrene	ND	0.11	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Phenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Pyrene	ND	0.093	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Pyridine	ND	0.12	0.40		mg/Kg	1	11/4/2019 3:45:36 PM	48494
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	11/4/2019 3:45:36 PM	48494
Surr: 2-Fluorophenol	57.0		26.7-85.9		%Rec	1	11/4/2019 3:45:36 PM	48494
Surr: Phenol-d5	60.4		18.5-101		%Rec	1	11/4/2019 3:45:36 PM	48494
Surr: 2,4,6-Tribromophenol	58.0		35.8-85.6		%Rec	1	11/4/2019 3:45:36 PM	48494
Surr: Nitrobenzene-d5	58.7		40.8-95.2		%Rec	1	11/4/2019 3:45:36 PM	48494
Surr: 2-Fluorobiphenyl	54.6		34.7-85.2		%Rec	1	11/4/2019 3:45:36 PM	48494
Surr: 4-Terphenyl-d14	66.4		37.4-91.3		%Rec	1	11/4/2019 3:45:36 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0040	0.024		mg/Kg	1	10/30/2019 11:12:06 A	48446
Toluene	ND	0.0047	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Ethylbenzene	ND	0.0028	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Methyl tert-butyl ether (MTBE)	ND	0.012	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,2,4-Trimethylbenzene	ND	0.0045	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,3,5-Trimethylbenzene	ND	0.0047	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,2-Dichloroethane (EDC)	ND	0.0050	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,2-Dibromoethane (EDB)	ND	0.0045	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Naphthalene	ND	0.0098	0.098		mg/Kg	1	10/30/2019 11:12:06 A	48446
1-Methylnaphthalene	ND	0.028	0.20		mg/Kg	1	10/30/2019 11:12:06 A	48446
2-Methylnaphthalene	ND	0.021	0.20		mg/Kg	1	10/30/2019 11:12:06 A	48446
Acetone	ND	0.041	0.73		mg/Kg	1	10/30/2019 11:12:06 A	48446
Bromobenzene	ND	0.0047	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (12-13")
Project: SWMU 13
Collection Date: 10/24/2019 1:25:00 PM
Lab ID: 1910E04-007
Matrix: SOIL
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0045	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Bromoform	ND	0.0044	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Bromomethane	ND	0.012	0.15		mg/Kg	1	10/30/2019 11:12:06 A	48446
2-Butanone	0.061	0.057	0.49	J	mg/Kg	1	10/30/2019 11:12:06 A	48446
Carbon disulfide	ND	0.016	0.49		mg/Kg	1	10/30/2019 11:12:06 A	48446
Carbon tetrachloride	ND	0.0046	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Chlorobenzene	ND	0.0063	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Chloroethane	ND	0.0072	0.098		mg/Kg	1	10/30/2019 11:12:06 A	48446
Chloroform	ND	0.0039	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Chloromethane	ND	0.0047	0.15		mg/Kg	1	10/30/2019 11:12:06 A	48446
2-Chlorotoluene	ND	0.0043	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
4-Chlorotoluene	ND	0.0040	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
cis-1,2-DCE	ND	0.0067	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
cis-1,3-Dichloropropene	ND	0.0041	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,2-Dibromo-3-chloropropane	ND	0.0050	0.098		mg/Kg	1	10/30/2019 11:12:06 A	48446
Dibromochloromethane	ND	0.0035	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Dibromomethane	ND	0.0053	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,2-Dichlorobenzene	ND	0.0040	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,3-Dichlorobenzene	ND	0.0042	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,4-Dichlorobenzene	ND	0.0041	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Dichlorodifluoromethane	ND	0.011	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,1-Dichloroethane	ND	0.0031	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,1-Dichloroethene	ND	0.020	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,2-Dichloropropane	ND	0.0036	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,3-Dichloropropane	ND	0.0053	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
2,2-Dichloropropane	ND	0.016	0.098		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,1-Dichloropropene	ND	0.0045	0.098		mg/Kg	1	10/30/2019 11:12:06 A	48446
Hexachlorobutadiene	ND	0.0050	0.098		mg/Kg	1	10/30/2019 11:12:06 A	48446
2-Hexanone	ND	0.0081	0.49		mg/Kg	1	10/30/2019 11:12:06 A	48446
Isopropylbenzene	ND	0.0035	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
4-Isopropyltoluene	ND	0.0040	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
4-Methyl-2-pentanone	ND	0.0092	0.49		mg/Kg	1	10/30/2019 11:12:06 A	48446
Methylene chloride	ND	0.0086	0.15		mg/Kg	1	10/30/2019 11:12:06 A	48446
n-Butylbenzene	ND	0.0046	0.15		mg/Kg	1	10/30/2019 11:12:06 A	48446
n-Propylbenzene	ND	0.0039	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
sec-Butylbenzene	ND	0.0055	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Styrene	ND	0.0038	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
tert-Butylbenzene	ND	0.0046	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,1,1,2-Tetrachloroethane	ND	0.0033	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (12-13")
Project: SWMU 13
Collection Date: 10/24/2019 1:25:00 PM
Lab ID: 1910E04-007
Matrix: SOIL
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0050	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Tetrachloroethene (PCE)	ND	0.0039	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
trans-1,2-DCE	ND	0.0045	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
trans-1,3-Dichloropropene	ND	0.0052	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,2,3-Trichlorobenzene	ND	0.0043	0.098		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,2,4-Trichlorobenzene	ND	0.0049	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,1,1-Trichloroethane	ND	0.0044	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,1,2-Trichloroethane	ND	0.0034	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Trichloroethene (TCE)	ND	0.0057	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Trichlorofluoromethane	ND	0.017	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
1,2,3-Trichloropropane	ND	0.0079	0.098		mg/Kg	1	10/30/2019 11:12:06 A	48446
Vinyl chloride	ND	0.0032	0.049		mg/Kg	1	10/30/2019 11:12:06 A	48446
Xylenes, Total	ND	0.012	0.098		mg/Kg	1	10/30/2019 11:12:06 A	48446
Surr: Dibromofluoromethane	102		70-130		%Rec	1	10/30/2019 11:12:06 A	48446
Surr: 1,2-Dichloroethane-d4	91.3		70-130		%Rec	1	10/30/2019 11:12:06 A	48446
Surr: Toluene-d8	99.1		70-130		%Rec	1	10/30/2019 11:12:06 A	48446
Surr: 4-Bromofluorobenzene	88.1		70-130		%Rec	1	10/30/2019 11:12:06 A	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (17.5-18')
Project: SWMU 13
Collection Date: 10/24/2019 1:30:00 PM
Lab ID: 1910E04-008
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.9	9.3		mg/Kg	1	10/31/2019 9:15:33 AM	48458
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	10/31/2019 9:15:33 AM	48458
Surr: DNOP	96.4	0	70-130		%Rec	1	10/31/2019 9:15:33 AM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.66	2.2		mg/Kg	1	10/29/2019 10:40:36 P	G64058
Surr: BFB	113	0	77.4-118		%Rec	1	10/29/2019 10:40:36 P	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0023	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:19:51 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.74	5.1		mg/Kg	2	11/18/2019 8:14:37 PM	48604
Arsenic	ND	2.9	5.1		mg/Kg	2	11/19/2019 6:29:47 PM	48604
Barium	370	0.047	0.20		mg/Kg	2	11/18/2019 8:14:37 PM	48604
Beryllium	1.2	0.019	0.30		mg/Kg	2	11/18/2019 8:14:37 PM	48604
Cadmium	ND	0.049	0.20		mg/Kg	2	11/18/2019 8:14:37 PM	48604
Chromium	12	0.16	0.61		mg/Kg	2	11/18/2019 8:14:37 PM	48604
Cobalt	5.5	0.21	0.61		mg/Kg	2	11/18/2019 8:14:37 PM	48604
Iron	16000	73	250		mg/Kg	100	11/18/2019 8:16:12 PM	48604
Lead	3.1	0.49	0.51		mg/Kg	2	11/18/2019 8:14:37 PM	48604
Manganese	620	0.42	2.0		mg/Kg	20	11/19/2019 6:28:13 PM	48604
Nickel	11	0.30	1.0		mg/Kg	2	11/18/2019 8:14:37 PM	48604
Selenium	ND	2.6	5.2		mg/Kg	2	11/25/2019 6:37:26 PM	48977
Silver	ND	0.065	0.51		mg/Kg	2	11/18/2019 8:14:37 PM	48604
Vanadium	20	0.13	5.1		mg/Kg	2	11/18/2019 8:14:37 PM	48604
Zinc	19	0.80	5.1		mg/Kg	2	11/18/2019 8:14:37 PM	48604
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Aniline	ND	0.13	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Anthracene	ND	0.10	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Azobenzene	ND	0.14	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Benz(a)anthracene	ND	0.094	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Benzo(a)pyrene	ND	0.087	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Benzo(b)fluoranthene	ND	0.087	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Benzo(g,h,i)perylene	ND	0.084	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Benzo(k)fluoranthene	ND	0.089	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Benzoic acid	ND	0.10	0.49		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (17.5-18')
Project: SWMU 13
Collection Date: 10/24/2019 1:30:00 PM
Lab ID: 1910E04-008
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	11/4/2019 4:14:39 PM	48494
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Carbazole	ND	0.11	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	11/4/2019 4:14:39 PM	48494
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Chrysene	ND	0.086	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Di-n-butyl phthalate	ND	0.15	0.39		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Di-n-octyl phthalate	ND	0.10	0.39		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Dibenz(a,h)anthracene	ND	0.089	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
1,4-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
3,3´-Dichlorobenzidine	ND	0.087	0.24		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	11/4/2019 4:14:39 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Fluoranthene	ND	0.11	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Fluorene	ND	0.11	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.097	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Isophorone	ND	0.14	0.39		mg/Kg	1	11/4/2019 4:14:39 PM	48494
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (17.5-18')
Project: SWMU 13
Collection Date: 10/24/2019 1:30:00 PM
Lab ID: 1910E04-008
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	11/4/2019 4:14:39 PM	48494
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Naphthalene	ND	0.15	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Nitrobenzene	ND	0.14	0.39		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Phenanthrene	ND	0.11	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Phenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Pyrene	ND	0.092	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Pyridine	ND	0.12	0.39		mg/Kg	1	11/4/2019 4:14:39 PM	48494
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	11/4/2019 4:14:39 PM	48494
Surr: 2-Fluorophenol	49.5		26.7-85.9		%Rec	1	11/4/2019 4:14:39 PM	48494
Surr: Phenol-d5	51.1		18.5-101		%Rec	1	11/4/2019 4:14:39 PM	48494
Surr: 2,4,6-Tribromophenol	50.1		35.8-85.6		%Rec	1	11/4/2019 4:14:39 PM	48494
Surr: Nitrobenzene-d5	53.0		40.8-95.2		%Rec	1	11/4/2019 4:14:39 PM	48494
Surr: 2-Fluorobiphenyl	42.1		34.7-85.2		%Rec	1	11/4/2019 4:14:39 PM	48494
Surr: 4-Terphenyl-d14	57.1		37.4-91.3		%Rec	1	11/4/2019 4:14:39 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0018	0.011		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Toluene	ND	0.0021	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Ethylbenzene	ND	0.0013	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0052	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0020	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0021	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0022	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0020	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Naphthalene	ND	0.0044	0.044		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1-Methylnaphthalene	ND	0.013	0.087		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
2-Methylnaphthalene	ND	0.0096	0.087		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Acetone	ND	0.018	0.33		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Bromobenzene	ND	0.0021	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (17.5-18')
Project: SWMU 13
Collection Date: 10/24/2019 1:30:00 PM
Lab ID: 1910E04-008
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0020	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Bromoform	ND	0.0020	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Bromomethane	ND	0.0053	0.066		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
2-Butanone	ND	0.025	0.22		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Carbon disulfide	ND	0.0072	0.22		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Carbon tetrachloride	ND	0.0021	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Chlorobenzene	ND	0.0028	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Chloroethane	ND	0.0032	0.044		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Chloroform	ND	0.0018	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Chloromethane	ND	0.0021	0.066		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
2-Chlorotoluene	ND	0.0019	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
4-Chlorotoluene	ND	0.0018	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
cis-1,2-DCE	ND	0.0030	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
cis-1,3-Dichloropropene	ND	0.0018	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0022	0.044		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Dibromochloromethane	ND	0.0016	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Dibromomethane	ND	0.0024	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,2-Dichlorobenzene	ND	0.0018	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,3-Dichlorobenzene	ND	0.0019	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,4-Dichlorobenzene	ND	0.0018	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Dichlorodifluoromethane	ND	0.0051	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,1-Dichloroethane	ND	0.0014	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,1-Dichloroethene	ND	0.0087	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,2-Dichloropropane	ND	0.0016	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,3-Dichloropropane	ND	0.0024	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
2,2-Dichloropropane	ND	0.0071	0.044		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,1-Dichloropropene	ND	0.0020	0.044		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Hexachlorobutadiene	ND	0.0022	0.044		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
2-Hexanone	ND	0.0036	0.22		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Isopropylbenzene	ND	0.0016	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
4-Isopropyltoluene	ND	0.0018	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
4-Methyl-2-pentanone	ND	0.0041	0.22		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Methylene chloride	0.0063	0.0039	0.066	J	mg/Kg	1	10/29/2019 3:41:06 PM	A64063
n-Butylbenzene	ND	0.0020	0.066		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
n-Propylbenzene	ND	0.0017	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
sec-Butylbenzene	ND	0.0025	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Styrene	ND	0.0017	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
tert-Butylbenzene	ND	0.0021	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0015	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-7 (17.5-18')
Project: SWMU 13
Collection Date: 10/24/2019 1:30:00 PM
Lab ID: 1910E04-008
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0022	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Tetrachloroethene (PCE)	ND	0.0017	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
trans-1,2-DCE	ND	0.0020	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
trans-1,3-Dichloropropene	ND	0.0023	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0019	0.044		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0022	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,1,1-Trichloroethane	ND	0.0020	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,1,2-Trichloroethane	ND	0.0015	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Trichloroethene (TCE)	ND	0.0025	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Trichlorofluoromethane	ND	0.0074	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
1,2,3-Trichloropropane	ND	0.0035	0.044		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Vinyl chloride	ND	0.0014	0.022		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Xylenes, Total	ND	0.0055	0.044		mg/Kg	1	10/29/2019 3:41:06 PM	A64063
Surr: Dibromofluoromethane	106		70-130		%Rec	1	10/29/2019 3:41:06 PM	A64063
Surr: 1,2-Dichloroethane-d4	96.0		70-130		%Rec	1	10/29/2019 3:41:06 PM	A64063
Surr: Toluene-d8	100		70-130		%Rec	1	10/29/2019 3:41:06 PM	A64063
Surr: 4-Bromofluorobenzene	87.0		70-130		%Rec	1	10/29/2019 3:41:06 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-8 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 2:35:00 PM
Lab ID: 1910E04-009
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	45	1.8	8.9		mg/Kg	1	11/4/2019 1:32:40 PM	48458
Motor Oil Range Organics (MRO)	79	44	44		mg/Kg	1	11/4/2019 1:32:40 PM	48458
Surr: DNOP	99.0	0	70-130		%Rec	1	11/4/2019 1:32:40 PM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.0	3.4		mg/Kg	1	10/29/2019 11:04:28 P	G64058
Surr: BFB	102	0	77.4-118		%Rec	1	10/29/2019 11:04:28 P	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.19	0.0018	0.033		mg/Kg	1	11/4/2019 6:21:51 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Arsenic	ND	2.9	5.0		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Barium	280	0.046	0.20		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Beryllium	1.2	0.018	0.30		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Cadmium	ND	0.049	0.20		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Chromium	32	0.16	0.60		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Cobalt	6.0	0.21	0.60		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Iron	19000	73	250		mg/Kg	100	11/18/2019 8:19:20 PM	48433
Lead	ND	0.49	0.50		mg/Kg	2	11/18/2019 8:17:46 PM	48433
Manganese	450	0.042	0.20		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Nickel	12	0.30	1.0		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Selenium	ND	2.5	5.0		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Silver	ND	0.064	0.50		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Vanadium	30	0.13	5.0		mg/Kg	2	11/7/2019 3:22:26 PM	48433
Zinc	66	0.79	5.0		mg/Kg	2	11/7/2019 3:22:26 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.61	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Acenaphthylene	ND	0.56	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Aniline	ND	0.65	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Anthracene	ND	0.54	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Azobenzene	ND	0.71	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Benz(a)anthracene	ND	0.49	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Benzo(a)pyrene	ND	0.45	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Benzo(b)fluoranthene	ND	0.45	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Benzo(g,h,i)perylene	ND	0.43	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Benzo(k)fluoranthene	ND	0.46	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Benzoic acid	ND	0.52	2.5		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Benzyl alcohol	ND	0.63	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-8 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 2:35:00 PM
Lab ID: 1910E04-009
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.75	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Bis(2-chloroethyl)ether	ND	0.62	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.58	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.73	2.5		mg/Kg	1	11/4/2019 4:43:38 PM	48494
4-Bromophenyl phenyl ether	ND	0.60	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Butyl benzyl phthalate	ND	0.52	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Carbazole	ND	0.59	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
4-Chloro-3-methylphenol	ND	0.78	2.5		mg/Kg	1	11/4/2019 4:43:38 PM	48494
4-Chloroaniline	ND	0.72	2.5		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2-Chloronaphthalene	ND	0.63	1.3		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2-Chlorophenol	ND	0.63	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
4-Chlorophenyl phenyl ether	ND	0.55	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Chrysene	ND	0.45	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Di-n-butyl phthalate	ND	0.76	2.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Di-n-octyl phthalate	ND	0.52	2.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Dibenz(a,h)anthracene	ND	0.46	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Dibenzofuran	ND	0.66	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
1,2-Dichlorobenzene	ND	0.61	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
1,3-Dichlorobenzene	ND	0.53	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
1,4-Dichlorobenzene	ND	0.54	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
3,3´-Dichlorobenzidine	ND	0.45	1.3		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Diethyl phthalate	ND	0.72	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Dimethyl phthalate	ND	0.68	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2,4-Dichlorophenol	ND	0.59	2.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2,4-Dimethylphenol	ND	0.56	1.5		mg/Kg	1	11/4/2019 4:43:38 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.47	2.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2,4-Dinitrophenol	ND	0.37	2.5		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2,4-Dinitrotoluene	ND	0.60	2.5		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2,6-Dinitrotoluene	ND	0.67	2.5		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Fluoranthene	ND	0.57	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Fluorene	ND	0.58	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Hexachlorobenzene	ND	0.63	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Hexachlorobutadiene	ND	0.71	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Hexachlorocyclopentadiene	ND	0.58	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Hexachloroethane	ND	0.56	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.50	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Isophorone	ND	0.75	2.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
1-Methylnaphthalene	ND	0.76	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2-Methylnaphthalene	ND	0.74	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-8 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 2:35:00 PM
Lab ID: 1910E04-009
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.60	2.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
3+4-Methylphenol	ND	0.62	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
N-Nitrosodi-n-propylamine	ND	0.72	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
N-Nitrosodiphenylamine	ND	0.53	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Naphthalene	ND	0.77	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2-Nitroaniline	ND	0.72	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
3-Nitroaniline	ND	0.70	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
4-Nitroaniline	ND	0.65	2.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Nitrobenzene	ND	0.70	2.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2-Nitrophenol	ND	0.69	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
4-Nitrophenol	ND	0.69	1.3		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Pentachlorophenol	ND	0.52	2.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Phenanthrene	ND	0.55	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Phenol	ND	0.63	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Pyrene	ND	0.48	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Pyridine	ND	0.61	2.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
1,2,4-Trichlorobenzene	ND	0.79	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2,4,5-Trichlorophenol	ND	0.66	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
2,4,6-Trichlorophenol	ND	0.53	1.0		mg/Kg	1	11/4/2019 4:43:38 PM	48494
Surr: 2-Fluorophenol	83.8		26.7-85.9		%Rec	1	11/4/2019 4:43:38 PM	48494
Surr: Phenol-d5	84.1		18.5-101		%Rec	1	11/4/2019 4:43:38 PM	48494
Surr: 2,4,6-Tribromophenol	82.3		35.8-85.6		%Rec	1	11/4/2019 4:43:38 PM	48494
Surr: Nitrobenzene-d5	86.1		40.8-95.2		%Rec	1	11/4/2019 4:43:38 PM	48494
Surr: 2-Fluorobiphenyl	88.7		34.7-85.2	S	%Rec	1	11/4/2019 4:43:38 PM	48494
Surr: 4-Terphenyl-d14	96.0		37.4-91.3	S	%Rec	1	11/4/2019 4:43:38 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0028	0.017		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Toluene	ND	0.0032	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Ethylbenzene	ND	0.0020	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0080	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0031	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0033	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0034	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0031	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Naphthalene	ND	0.0068	0.068		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1-Methylnaphthalene	ND	0.019	0.14		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
2-Methylnaphthalene	ND	0.015	0.14		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Acetone	ND	0.028	0.51		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Bromobenzene	ND	0.0032	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-8 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 2:35:00 PM
Lab ID: 1910E04-009
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0031	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Bromoform	ND	0.0031	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Bromomethane	ND	0.0082	0.10		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
2-Butanone	ND	0.039	0.34		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Carbon disulfide	ND	0.011	0.34		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Carbon tetrachloride	ND	0.0032	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Chlorobenzene	ND	0.0043	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Chloroethane	ND	0.0050	0.068		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Chloroform	ND	0.0027	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Chloromethane	ND	0.0032	0.10		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
2-Chlorotoluene	ND	0.0029	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
4-Chlorotoluene	ND	0.0028	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
cis-1,2-DCE	ND	0.0046	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
cis-1,3-Dichloropropene	ND	0.0029	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0035	0.068		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Dibromochloromethane	ND	0.0024	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Dibromomethane	ND	0.0036	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,2-Dichlorobenzene	ND	0.0028	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,3-Dichlorobenzene	ND	0.0029	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,4-Dichlorobenzene	ND	0.0028	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Dichlorodifluoromethane	ND	0.0078	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,1-Dichloroethane	ND	0.0022	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,1-Dichloroethene	ND	0.014	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,2-Dichloropropane	ND	0.0025	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,3-Dichloropropane	ND	0.0037	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
2,2-Dichloropropane	ND	0.011	0.068		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,1-Dichloropropene	ND	0.0031	0.068		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Hexachlorobutadiene	ND	0.0034	0.068		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
2-Hexanone	ND	0.0056	0.34		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Isopropylbenzene	ND	0.0024	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
4-Isopropyltoluene	ND	0.0028	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
4-Methyl-2-pentanone	ND	0.0064	0.34		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Methylene chloride	ND	0.0060	0.10		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
n-Butylbenzene	ND	0.0032	0.10		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
n-Propylbenzene	ND	0.0027	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
sec-Butylbenzene	ND	0.0038	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Styrene	ND	0.0027	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
tert-Butylbenzene	ND	0.0032	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0023	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-8 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 2:35:00 PM
Lab ID: 1910E04-009
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0034	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Tetrachloroethene (PCE)	ND	0.0027	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
trans-1,2-DCE	ND	0.0031	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
trans-1,3-Dichloropropene	ND	0.0036	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0030	0.068		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0034	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,1,1-Trichloroethane	ND	0.0031	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,1,2-Trichloroethane	ND	0.0024	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Trichloroethene (TCE)	ND	0.0039	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Trichlorofluoromethane	ND	0.011	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
1,2,3-Trichloropropane	ND	0.0055	0.068		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Vinyl chloride	ND	0.0022	0.034		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Xylenes, Total	ND	0.0085	0.068		mg/Kg	1	10/29/2019 4:10:19 PM	A64063
Surr: Dibromofluoromethane	105		70-130		%Rec	1	10/29/2019 4:10:19 PM	A64063
Surr: 1,2-Dichloroethane-d4	92.1		70-130		%Rec	1	10/29/2019 4:10:19 PM	A64063
Surr: Toluene-d8	97.2		70-130		%Rec	1	10/29/2019 4:10:19 PM	A64063
Surr: 4-Bromofluorobenzene	87.5		70-130		%Rec	1	10/29/2019 4:10:19 PM	A64063

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-8 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 2:45:00 PM
Lab ID: 1910E04-010
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.9	9.4		mg/Kg	1	10/31/2019 9:59:15 AM	48458
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	10/31/2019 9:59:15 AM	48458
Surr: DNOP	97.8	0	70-130		%Rec	1	10/31/2019 9:59:15 AM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.78	2.6		mg/Kg	1	10/29/2019 11:28:20 P	G64058
Surr: BFB	110	0	77.4-118		%Rec	1	10/29/2019 11:28:20 P	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0067	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:23:51 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **rde**	
Antimony	ND	0.72	4.9		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Arsenic	ND	2.8	4.9		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Barium	170	0.045	0.20		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Beryllium	1.4	0.018	0.29		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Cadmium	ND	0.048	0.20		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Chromium	13	0.16	0.59		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Cobalt	5.5	0.21	0.59		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Iron	19000	71	250		mg/Kg	100	11/18/2019 8:28:51 PM	48433
Lead	4.2	0.48	0.49		mg/Kg	2	11/19/2019 6:56:32 PM	48433
Manganese	300	0.041	0.20		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Nickel	13	0.29	0.98		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Selenium	ND	2.5	4.9		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Silver	ND	0.063	0.49		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Vanadium	20	0.13	4.9		mg/Kg	2	11/7/2019 3:24:06 PM	48433
Zinc	18	0.78	4.9		mg/Kg	2	11/7/2019 3:24:06 PM	48433
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Acenaphthylene	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Aniline	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Anthracene	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Azobenzene	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Benz(a)anthracene	ND	0.093	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Benzo(a)pyrene	ND	0.086	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Benzo(b)fluoranthene	ND	0.085	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Benzo(g,h,i)perylene	ND	0.083	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Benzo(k)fluoranthene	ND	0.088	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Benzoic acid	ND	0.10	0.48		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-8 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 2:45:00 PM
Lab ID: 1910E04-010
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.14	0.48		mg/Kg	1	11/4/2019 5:14:31 PM	48494
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Butyl benzyl phthalate	ND	0.099	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Carbazole	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
4-Chloro-3-methylphenol	ND	0.15	0.48		mg/Kg	1	11/4/2019 5:14:31 PM	48494
4-Chloroaniline	ND	0.14	0.48		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
4-Chlorophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Chrysene	ND	0.085	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Di-n-butyl phthalate	0.20	0.14	0.39	J	mg/Kg	1	11/4/2019 5:14:31 PM	48494
Di-n-octyl phthalate	ND	0.098	0.39		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Dibenz(a,h)anthracene	ND	0.088	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Dibenzofuran	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
1,2-Dichlorobenzene	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
3,3´-Dichlorobenzidine	ND	0.086	0.24		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	11/4/2019 5:14:31 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.089	0.39		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2,4-Dinitrophenol	ND	0.070	0.48		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2,4-Dinitrotoluene	ND	0.11	0.48		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2,6-Dinitrotoluene	ND	0.13	0.48		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Fluoranthene	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Fluorene	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Hexachlorobutadiene	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.096	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Isophorone	ND	0.14	0.39		mg/Kg	1	11/4/2019 5:14:31 PM	48494
1-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-8 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 2:45:00 PM
Lab ID: 1910E04-010
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.11	0.39		mg/Kg	1	11/4/2019 5:14:31 PM	48494
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Naphthalene	ND	0.15	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Nitrobenzene	ND	0.13	0.39		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Pentachlorophenol	ND	0.099	0.39		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Phenanthrene	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Phenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Pyrene	ND	0.091	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Pyridine	ND	0.12	0.39		mg/Kg	1	11/4/2019 5:14:31 PM	48494
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2,4,5-Trichlorophenol	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:14:31 PM	48494
Surr: 2-Fluorophenol	52.8		26.7-85.9		%Rec	1	11/4/2019 5:14:31 PM	48494
Surr: Phenol-d5	55.1		18.5-101		%Rec	1	11/4/2019 5:14:31 PM	48494
Surr: 2,4,6-Tribromophenol	58.6		35.8-85.6		%Rec	1	11/4/2019 5:14:31 PM	48494
Surr: Nitrobenzene-d5	58.1		40.8-95.2		%Rec	1	11/4/2019 5:14:31 PM	48494
Surr: 2-Fluorobiphenyl	54.0		34.7-85.2		%Rec	1	11/4/2019 5:14:31 PM	48494
Surr: 4-Terphenyl-d14	67.7		37.4-91.3		%Rec	1	11/4/2019 5:14:31 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0021	0.013		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Toluene	ND	0.0025	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Ethylbenzene	ND	0.0015	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0061	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0024	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0025	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0026	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0024	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Naphthalene	ND	0.0052	0.052		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1-Methylnaphthalene	ND	0.015	0.10		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
2-Methylnaphthalene	ND	0.011	0.10		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Acetone	ND	0.021	0.39		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Bromobenzene	ND	0.0025	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-8 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 2:45:00 PM
Lab ID: 1910E04-010
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0024	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Bromoform	ND	0.0023	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Bromomethane	ND	0.0062	0.078		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
2-Butanone	ND	0.030	0.26		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Carbon disulfide	ND	0.0085	0.26		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Carbon tetrachloride	ND	0.0025	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Chlorobenzene	ND	0.0033	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Chloroethane	ND	0.0038	0.052		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Chloroform	ND	0.0021	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Chloromethane	ND	0.0025	0.078		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
2-Chlorotoluene	ND	0.0023	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
4-Chlorotoluene	ND	0.0021	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
cis-1,2-DCE	ND	0.0035	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
cis-1,3-Dichloropropene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0027	0.052		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Dibromochloromethane	ND	0.0018	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Dibromomethane	ND	0.0028	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,2-Dichlorobenzene	ND	0.0021	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,3-Dichlorobenzene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,4-Dichlorobenzene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Dichlorodifluoromethane	ND	0.0060	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,1-Dichloroethane	ND	0.0017	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,1-Dichloroethene	ND	0.010	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,2-Dichloropropane	ND	0.0019	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,3-Dichloropropane	ND	0.0028	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
2,2-Dichloropropane	ND	0.0084	0.052		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,1-Dichloropropene	ND	0.0024	0.052		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Hexachlorobutadiene	ND	0.0026	0.052		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
2-Hexanone	ND	0.0043	0.26		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Isopropylbenzene	ND	0.0019	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
4-Isopropyltoluene	ND	0.0021	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
4-Methyl-2-pentanone	ND	0.0049	0.26		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Methylene chloride	ND	0.0046	0.078		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
n-Butylbenzene	ND	0.0024	0.078		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
n-Propylbenzene	ND	0.0021	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
sec-Butylbenzene	ND	0.0029	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Styrene	ND	0.0020	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
tert-Butylbenzene	ND	0.0024	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0017	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-8 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 2:45:00 PM
Lab ID: 1910E04-010
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0026	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Tetrachloroethene (PCE)	ND	0.0021	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
trans-1,2-DCE	ND	0.0024	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
trans-1,3-Dichloropropene	ND	0.0027	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0023	0.052		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0026	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,1,1-Trichloroethane	ND	0.0023	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,1,2-Trichloroethane	ND	0.0018	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Trichloroethene (TCE)	ND	0.0030	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Trichlorofluoromethane	ND	0.0088	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
1,2,3-Trichloropropane	ND	0.0042	0.052		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Vinyl chloride	ND	0.0017	0.026		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Xylenes, Total	ND	0.0065	0.052		mg/Kg	1	10/29/2019 4:39:22 PM	A64063
Surr: Dibromofluoromethane	106		70-130		%Rec	1	10/29/2019 4:39:22 PM	A64063
Surr: 1,2-Dichloroethane-d4	94.3		70-130		%Rec	1	10/29/2019 4:39:22 PM	A64063
Surr: Toluene-d8	102		70-130		%Rec	1	10/29/2019 4:39:22 PM	A64063
Surr: 4-Bromofluorobenzene	92.2		70-130		%Rec	1	10/29/2019 4:39:22 PM	A64063

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-8 (2-3')
Project: SWMU 13
Collection Date: 10/24/2019 2:50:00 PM
Lab ID: 1910E04-011
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.9	9.4		mg/Kg	1	10/31/2019 10:21:11 A	48458
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	10/31/2019 10:21:11 A	48458
Surr: DNOP	94.3	0	70-130		%Rec	1	10/31/2019 10:21:11 A	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.78	2.6		mg/Kg	1	10/29/2019 11:52:09 P	G64058
Surr: BFB	106	0	77.4-118		%Rec	1	10/29/2019 11:52:09 P	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0035	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:25:51 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/21/2019 7:39:13 PM	48434
Arsenic	ND	2.9	5.1		mg/Kg	2	11/19/2019 5:15:47 PM	48434
Barium	270	0.047	0.20		mg/Kg	2	11/22/2019 4:28:38 PM	48434
Beryllium	1.3	0.019	0.30		mg/Kg	2	11/19/2019 5:15:47 PM	48434
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 5:15:47 PM	48434
Chromium	14	0.16	0.61		mg/Kg	2	11/19/2019 5:15:47 PM	48434
Cobalt	5.8	0.21	0.61		mg/Kg	2	11/19/2019 5:15:47 PM	48434
Iron	19000	74	250		mg/Kg	100	11/20/2019 4:26:46 PM	48434
Lead	3.0	0.49	0.51		mg/Kg	2	11/19/2019 5:15:47 PM	48434
Manganese	290	0.042	0.20		mg/Kg	2	11/22/2019 4:28:38 PM	48434
Nickel	13	0.30	1.0		mg/Kg	2	11/19/2019 5:15:47 PM	48434
Selenium	ND	2.5	5.1		mg/Kg	2	11/22/2019 4:28:38 PM	48434
Silver	ND	0.065	0.51		mg/Kg	2	11/22/2019 4:28:38 PM	48434
Vanadium	23	0.14	5.1		mg/Kg	2	11/19/2019 5:15:47 PM	48434
Zinc	19	0.80	5.1		mg/Kg	2	11/19/2019 5:15:47 PM	48434
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Acenaphthylene	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Aniline	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Anthracene	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Azobenzene	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Benz(a)anthracene	ND	0.093	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Benzo(a)pyrene	ND	0.086	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Benzo(b)fluoranthene	ND	0.085	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Benzo(g,h,i)perylene	ND	0.083	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Benzo(k)fluoranthene	ND	0.088	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Benzoic acid	ND	0.099	0.48		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494

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Hall Environmental Analysis Laboratory, Inc.

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Matrix: MEOH (SOIL)
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Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Bis(2-ethylhexyl)phthalate	0.14	0.14	0.48	J	mg/Kg	1	11/4/2019 5:43:45 PM	48494
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Butyl benzyl phthalate	ND	0.098	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Carbazole	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
4-Chloro-3-methylphenol	ND	0.15	0.48		mg/Kg	1	11/4/2019 5:43:45 PM	48494
4-Chloroaniline	ND	0.14	0.48		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
4-Chlorophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Chrysene	ND	0.085	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Di-n-butyl phthalate	0.26	0.14	0.39	J	mg/Kg	1	11/4/2019 5:43:45 PM	48494
Di-n-octyl phthalate	ND	0.098	0.39		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Dibenz(a,h)anthracene	ND	0.088	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Dibenzofuran	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
1,2-Dichlorobenzene	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
3,3´-Dichlorobenzidine	ND	0.086	0.24		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	11/4/2019 5:43:45 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.089	0.39		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2,4-Dinitrophenol	ND	0.070	0.48		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2,4-Dinitrotoluene	ND	0.11	0.48		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2,6-Dinitrotoluene	ND	0.13	0.48		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Fluoranthene	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Fluorene	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Hexachlorobutadiene	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.096	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Isophorone	ND	0.14	0.39		mg/Kg	1	11/4/2019 5:43:45 PM	48494
1-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494

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H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
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CLIENT: Marathon
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Project: SWMU 13
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Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.11	0.39		mg/Kg	1	11/4/2019 5:43:45 PM	48494
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Naphthalene	ND	0.15	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Nitrobenzene	ND	0.13	0.39		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Pentachlorophenol	ND	0.099	0.39		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Phenanthrene	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Phenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Pyrene	ND	0.090	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Pyridine	ND	0.12	0.39		mg/Kg	1	11/4/2019 5:43:45 PM	48494
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2,4,5-Trichlorophenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	11/4/2019 5:43:45 PM	48494
Surr: 2-Fluorophenol	48.1		26.7-85.9		%Rec	1	11/4/2019 5:43:45 PM	48494
Surr: Phenol-d5	52.1		18.5-101		%Rec	1	11/4/2019 5:43:45 PM	48494
Surr: 2,4,6-Tribromophenol	55.5		35.8-85.6		%Rec	1	11/4/2019 5:43:45 PM	48494
Surr: Nitrobenzene-d5	56.7		40.8-95.2		%Rec	1	11/4/2019 5:43:45 PM	48494
Surr: 2-Fluorobiphenyl	50.5		34.7-85.2		%Rec	1	11/4/2019 5:43:45 PM	48494
Surr: 4-Terphenyl-d14	67.1		37.4-91.3		%Rec	1	11/4/2019 5:43:45 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0021	0.013		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Toluene	ND	0.0025	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Ethylbenzene	ND	0.0015	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0061	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0024	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0025	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0026	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0023	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Naphthalene	ND	0.0052	0.051		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1-Methylnaphthalene	ND	0.015	0.10		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
2-Methylnaphthalene	ND	0.011	0.10		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Acetone	ND	0.021	0.39		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Bromobenzene	ND	0.0025	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063

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EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0023	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Bromoform	ND	0.0023	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Bromomethane	ND	0.0062	0.077		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
2-Butanone	ND	0.030	0.26		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Carbon disulfide	ND	0.0085	0.26		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Carbon tetrachloride	ND	0.0024	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Chlorobenzene	ND	0.0033	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Chloroethane	ND	0.0038	0.051		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Chloroform	ND	0.0021	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Chloromethane	ND	0.0025	0.077		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
2-Chlorotoluene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
4-Chlorotoluene	ND	0.0021	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
cis-1,2-DCE	ND	0.0035	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
cis-1,3-Dichloropropene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0026	0.051		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Dibromochloromethane	ND	0.0018	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Dibromomethane	ND	0.0028	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,2-Dichlorobenzene	ND	0.0021	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,3-Dichlorobenzene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,4-Dichlorobenzene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Dichlorodifluoromethane	ND	0.0060	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,1-Dichloroethane	ND	0.0016	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,1-Dichloroethene	ND	0.010	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,2-Dichloropropane	ND	0.0019	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,3-Dichloropropane	ND	0.0028	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
2,2-Dichloropropane	ND	0.0084	0.051		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,1-Dichloropropene	ND	0.0023	0.051		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Hexachlorobutadiene	ND	0.0026	0.051		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
2-Hexanone	ND	0.0043	0.26		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Isopropylbenzene	ND	0.0019	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
4-Isopropyltoluene	ND	0.0021	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
4-Methyl-2-pentanone	ND	0.0049	0.26		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Methylene chloride	0.0073	0.0045	0.077	J	mg/Kg	1	10/29/2019 5:08:36 PM	A64063
n-Butylbenzene	ND	0.0024	0.077		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
n-Propylbenzene	ND	0.0021	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
sec-Butylbenzene	ND	0.0029	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Styrene	ND	0.0020	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
tert-Butylbenzene	ND	0.0024	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0017	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063

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EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0026	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Tetrachloroethene (PCE)	ND	0.0021	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
trans-1,2-DCE	ND	0.0024	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
trans-1,3-Dichloropropene	ND	0.0027	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0023	0.051		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0026	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,1,1-Trichloroethane	ND	0.0023	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,1,2-Trichloroethane	ND	0.0018	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Trichloroethene (TCE)	ND	0.0030	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Trichlorofluoromethane	ND	0.0087	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
1,2,3-Trichloropropane	ND	0.0042	0.051		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Vinyl chloride	ND	0.0017	0.026		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Xylenes, Total	ND	0.0065	0.051		mg/Kg	1	10/29/2019 5:08:36 PM	A64063
Surr: Dibromofluoromethane	109		70-130		%Rec	1	10/29/2019 5:08:36 PM	A64063
Surr: 1,2-Dichloroethane-d4	98.0		70-130		%Rec	1	10/29/2019 5:08:36 PM	A64063
Surr: Toluene-d8	101		70-130		%Rec	1	10/29/2019 5:08:36 PM	A64063
Surr: 4-Bromofluorobenzene	89.0		70-130		%Rec	1	10/29/2019 5:08:36 PM	A64063

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-9 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 3:35:00 PM
Lab ID: 1910E04-012
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	2400	19	94		mg/Kg	10	11/4/2019 1:54:52 PM	48458
Motor Oil Range Organics (MRO)	1900	470	470		mg/Kg	10	11/4/2019 1:54:52 PM	48458
Surr: DNOP	0	0	70-130	S	%Rec	10	11/4/2019 1:54:52 PM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.98	3.2		mg/Kg	1	10/30/2019 12:15:58 A	G64058
Surr: BFB	102	0	77.4-118		%Rec	1	10/30/2019 12:15:58 A	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	8.3	0.090	1.6		mg/Kg	50	11/4/2019 6:58:05 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Arsenic	8.3	2.9	5.1		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Barium	260	0.047	0.20		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Beryllium	0.91	0.019	0.30		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Chromium	270	0.16	0.61		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Cobalt	6.8	0.21	0.61		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Iron	16000	74	250		mg/Kg	100	11/20/2019 4:28:19 PM	48434
Lead	7.5	0.49	0.51		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Manganese	170	0.042	0.20		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Nickel	18	0.30	1.0		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Selenium	7.8	2.5	5.1		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Silver	ND	0.065	0.51		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Vanadium	27	0.14	5.1		mg/Kg	2	11/19/2019 5:22:03 PM	48434
Zinc	390	0.80	5.1		mg/Kg	2	11/19/2019 5:22:03 PM	48434
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	5.8	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Acenaphthylene	ND	5.3	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Aniline	ND	6.2	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Anthracene	ND	5.2	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Azobenzene	ND	6.7	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Benz(a)anthracene	ND	4.6	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Benzo(a)pyrene	ND	4.3	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Benzo(b)fluoranthene	ND	4.3	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Benzo(g,h,i)perylene	ND	4.1	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Benzo(k)fluoranthene	ND	4.4	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Benzoic acid	ND	5.0	24	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Benzyl alcohol	ND	6.0	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-9 (0-0.5')
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Collection Date: 10/24/2019 3:35:00 PM
Lab ID: 1910E04-012
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	7.1	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Bis(2-chloroethyl)ether	ND	5.9	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Bis(2-chloroisopropyl)ether	ND	5.5	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Bis(2-ethylhexyl)phthalate	ND	6.9	24	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
4-Bromophenyl phenyl ether	ND	5.7	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Butyl benzyl phthalate	ND	4.9	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Carbazole	ND	5.6	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
4-Chloro-3-methylphenol	ND	7.4	24	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
4-Chloroaniline	ND	6.8	24	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2-Chloronaphthalene	ND	6.0	12	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2-Chlorophenol	ND	6.0	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
4-Chlorophenyl phenyl ether	ND	5.3	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Chrysene	ND	4.2	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Di-n-butyl phthalate	ND	7.2	19	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Di-n-octyl phthalate	ND	4.9	19	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Dibenz(a,h)anthracene	ND	4.4	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Dibenzofuran	ND	6.3	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
1,2-Dichlorobenzene	ND	5.8	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
1,3-Dichlorobenzene	ND	5.1	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
1,4-Dichlorobenzene	ND	5.1	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
3,3´-Dichlorobenzidine	ND	4.3	12	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Diethyl phthalate	ND	6.9	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Dimethyl phthalate	ND	6.4	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2,4-Dichlorophenol	ND	5.6	19	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2,4-Dimethylphenol	ND	5.3	14	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
4,6-Dinitro-2-methylphenol	ND	4.4	19	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2,4-Dinitrophenol	ND	3.5	24	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2,4-Dinitrotoluene	ND	5.7	24	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2,6-Dinitrotoluene	ND	6.3	24	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Fluoranthene	ND	5.4	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Fluorene	ND	5.5	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Hexachlorobenzene	ND	6.0	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Hexachlorobutadiene	ND	6.7	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Hexachlorocyclopentadiene	ND	5.5	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Hexachloroethane	ND	5.4	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Indeno(1,2,3-cd)pyrene	ND	4.8	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Isophorone	ND	7.1	19	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
1-Methylnaphthalene	ND	7.2	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2-Methylnaphthalene	ND	7.0	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-9 (0-0.5')
Project: SWMU 13
Collection Date: 10/24/2019 3:35:00 PM
Lab ID: 1910E04-012
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	5.7	19	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
3+4-Methylphenol	ND	5.9	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
N-Nitrosodi-n-propylamine	ND	6.9	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
N-Nitrosodiphenylamine	ND	5.1	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Naphthalene	ND	7.3	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2-Nitroaniline	ND	6.9	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
3-Nitroaniline	ND	6.6	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
4-Nitroaniline	ND	6.2	19	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Nitrobenzene	ND	6.7	19	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2-Nitrophenol	ND	6.6	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
4-Nitrophenol	ND	6.5	12	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Pentachlorophenol	ND	5.0	19	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Phenanthrene	ND	5.2	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Phenol	ND	6.0	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Pyrene	ND	4.5	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Pyridine	ND	5.8	19	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
1,2,4-Trichlorobenzene	ND	7.5	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2,4,5-Trichlorophenol	ND	6.2	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
2,4,6-Trichlorophenol	ND	5.1	9.6	D	mg/Kg	5	11/4/2019 6:12:58 PM	48494
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	5	11/4/2019 6:12:58 PM	48494
Surr: Phenol-d5	0		18.5-101	SD	%Rec	5	11/4/2019 6:12:58 PM	48494
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	5	11/4/2019 6:12:58 PM	48494
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	5	11/4/2019 6:12:58 PM	48494
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	5	11/4/2019 6:12:58 PM	48494
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	5	11/4/2019 6:12:58 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0026	0.016		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Toluene	ND	0.0031	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Ethylbenzene	ND	0.0019	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0077	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0029	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0031	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0033	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0029	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Naphthalene	ND	0.0065	0.065		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1-Methylnaphthalene	ND	0.019	0.13		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
2-Methylnaphthalene	ND	0.014	0.13		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Acetone	ND	0.027	0.48		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Bromobenzene	ND	0.0031	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063

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CLIENT: Marathon
Client Sample ID: SWMU 13-9 (0-0.5')
Project: SWMU 13
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Lab ID: 1910E04-012
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0029	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Bromoform	ND	0.0029	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Bromomethane	ND	0.0078	0.097		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
2-Butanone	ND	0.037	0.32		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Carbon disulfide	ND	0.011	0.32		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Carbon tetrachloride	ND	0.0031	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Chlorobenzene	ND	0.0041	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Chloroethane	ND	0.0048	0.065		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Chloroform	ND	0.0026	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Chloromethane	ND	0.0031	0.097		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
2-Chlorotoluene	ND	0.0028	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
4-Chlorotoluene	ND	0.0026	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
cis-1,2-DCE	ND	0.0044	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
cis-1,3-Dichloropropene	ND	0.0027	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0033	0.065		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Dibromochloromethane	ND	0.0023	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Dibromomethane	ND	0.0035	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,2-Dichlorobenzene	ND	0.0026	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,3-Dichlorobenzene	ND	0.0028	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,4-Dichlorobenzene	ND	0.0027	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Dichlorodifluoromethane	ND	0.0075	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,1-Dichloroethane	ND	0.0021	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,1-Dichloroethene	ND	0.013	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,2-Dichloropropane	ND	0.0024	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,3-Dichloropropane	ND	0.0035	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
2,2-Dichloropropane	ND	0.010	0.065		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,1-Dichloropropene	ND	0.0029	0.065		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Hexachlorobutadiene	ND	0.0033	0.065		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
2-Hexanone	ND	0.0054	0.32		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Isopropylbenzene	ND	0.0023	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
4-Isopropyltoluene	ND	0.0027	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
4-Methyl-2-pentanone	ND	0.0061	0.32		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Methylene chloride	ND	0.0057	0.097		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
n-Butylbenzene	ND	0.0030	0.097		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
n-Propylbenzene	ND	0.0026	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
sec-Butylbenzene	ND	0.0036	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Styrene	ND	0.0025	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
tert-Butylbenzene	ND	0.0030	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0022	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063

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Lab ID: 1910E04-012
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Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0033	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Tetrachloroethene (PCE)	ND	0.0026	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
trans-1,2-DCE	ND	0.0030	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
trans-1,3-Dichloropropene	ND	0.0034	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0028	0.065		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0033	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,1,1-Trichloroethane	ND	0.0029	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,1,2-Trichloroethane	ND	0.0023	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Trichloroethene (TCE)	ND	0.0037	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Trichlorofluoromethane	ND	0.011	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
1,2,3-Trichloropropane	ND	0.0052	0.065		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Vinyl chloride	ND	0.0021	0.032		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Xylenes, Total	ND	0.0081	0.065		mg/Kg	1	10/29/2019 5:38:01 PM	A64063
Surr: Dibromofluoromethane	107		70-130		%Rec	1	10/29/2019 5:38:01 PM	A64063
Surr: 1,2-Dichloroethane-d4	93.2		70-130		%Rec	1	10/29/2019 5:38:01 PM	A64063
Surr: Toluene-d8	97.7		70-130		%Rec	1	10/29/2019 5:38:01 PM	A64063
Surr: 4-Bromofluorobenzene	90.5		70-130		%Rec	1	10/29/2019 5:38:01 PM	A64063

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-9 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 3:45:00 PM
Lab ID: 1910E04-013
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	20	1.7	8.7		mg/Kg	1	11/1/2019 1:51:43 PM	48458
Motor Oil Range Organics (MRO)	ND	43	43		mg/Kg	1	11/1/2019 1:51:43 PM	48458
Surr: DNOP	110	0	70-130		%Rec	1	11/1/2019 1:51:43 PM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.83	2.7		mg/Kg	1	10/30/2019 12:39:44 A	G64058
Surr: BFB	112	0	77.4-118		%Rec	1	10/30/2019 12:39:44 A	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0045	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:30:01 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.72	4.9		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Arsenic	ND	2.8	4.9		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Barium	210	0.045	0.20		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Beryllium	1.4	0.018	0.29		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Cadmium	ND	0.048	0.20		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Chromium	18	0.16	0.59		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Cobalt	6.0	0.21	0.59		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Iron	19000	71	240		mg/Kg	100	11/20/2019 4:29:54 PM	48434
Lead	1.6	0.48	0.49		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Manganese	270	0.041	0.20		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Nickel	13	0.29	0.98		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Selenium	ND	2.5	4.9		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Silver	ND	0.063	0.49		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Vanadium	24	0.13	4.9		mg/Kg	2	11/19/2019 5:25:01 PM	48434
Zinc	22	0.77	4.9		mg/Kg	2	11/19/2019 5:25:01 PM	48434
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.25	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Acenaphthylene	ND	0.23	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Aniline	ND	0.27	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Anthracene	ND	0.22	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Azobenzene	ND	0.29	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Benz(a)anthracene	ND	0.20	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Benzo(a)pyrene	ND	0.18	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Benzo(b)fluoranthene	ND	0.18	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Benzo(g,h,i)perylene	ND	0.18	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Benzo(k)fluoranthene	ND	0.19	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Benzoic acid	ND	0.21	1.0		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Benzyl alcohol	ND	0.26	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
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P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-9 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 3:45:00 PM
Lab ID: 1910E04-013
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.31	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Bis(2-chloroethyl)ether	ND	0.25	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.24	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.30	1.0		mg/Kg	1	11/4/2019 6:42:07 PM	48494
4-Bromophenyl phenyl ether	ND	0.24	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Butyl benzyl phthalate	ND	0.21	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Carbazole	ND	0.24	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
4-Chloro-3-methylphenol	ND	0.32	1.0		mg/Kg	1	11/4/2019 6:42:07 PM	48494
4-Chloroaniline	ND	0.29	1.0		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2-Chloronaphthalene	ND	0.26	0.52		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2-Chlorophenol	ND	0.26	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
4-Chlorophenyl phenyl ether	ND	0.23	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Chrysene	ND	0.18	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Di-n-butyl phthalate	ND	0.31	0.83		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Di-n-octyl phthalate	ND	0.21	0.83		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Dibenz(a,h)anthracene	ND	0.19	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Dibenzofuran	ND	0.27	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
1,2-Dichlorobenzene	ND	0.25	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
1,3-Dichlorobenzene	ND	0.22	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
1,4-Dichlorobenzene	ND	0.22	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
3,3´-Dichlorobenzidine	ND	0.18	0.52		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Diethyl phthalate	ND	0.29	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Dimethyl phthalate	ND	0.28	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2,4-Dichlorophenol	ND	0.24	0.83		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2,4-Dimethylphenol	ND	0.23	0.62		mg/Kg	1	11/4/2019 6:42:07 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.19	0.83		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2,4-Dinitrophenol	ND	0.15	1.0		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2,4-Dinitrotoluene	ND	0.24	1.0		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2,6-Dinitrotoluene	ND	0.27	1.0		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Fluoranthene	ND	0.23	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Fluorene	ND	0.24	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Hexachlorobenzene	ND	0.26	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Hexachlorobutadiene	ND	0.29	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Hexachlorocyclopentadiene	ND	0.24	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Hexachloroethane	ND	0.23	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.21	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Isophorone	ND	0.30	0.83		mg/Kg	1	11/4/2019 6:42:07 PM	48494
1-Methylnaphthalene	ND	0.31	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2-Methylnaphthalene	ND	0.30	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494

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CLIENT: Marathon
Client Sample ID: SWMU 13-9 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 3:45:00 PM
Lab ID: 1910E04-013
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.24	0.83		mg/Kg	1	11/4/2019 6:42:07 PM	48494
3+4-Methylphenol	ND	0.25	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
N-Nitrosodi-n-propylamine	ND	0.29	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
N-Nitrosodiphenylamine	ND	0.22	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Naphthalene	ND	0.31	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2-Nitroaniline	ND	0.29	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
3-Nitroaniline	ND	0.28	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
4-Nitroaniline	ND	0.26	0.83		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Nitrobenzene	ND	0.29	0.83		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2-Nitrophenol	ND	0.28	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
4-Nitrophenol	ND	0.28	0.52		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Pentachlorophenol	ND	0.21	0.83		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Phenanthrene	ND	0.22	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Phenol	ND	0.26	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Pyrene	ND	0.19	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Pyridine	ND	0.25	0.83		mg/Kg	1	11/4/2019 6:42:07 PM	48494
1,2,4-Trichlorobenzene	ND	0.32	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2,4,5-Trichlorophenol	ND	0.27	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
2,4,6-Trichlorophenol	ND	0.22	0.41		mg/Kg	1	11/4/2019 6:42:07 PM	48494
Surr: 2-Fluorophenol	64.9		26.7-85.9		%Rec	1	11/4/2019 6:42:07 PM	48494
Surr: Phenol-d5	66.1		18.5-101		%Rec	1	11/4/2019 6:42:07 PM	48494
Surr: 2,4,6-Tribromophenol	65.4		35.8-85.6		%Rec	1	11/4/2019 6:42:07 PM	48494
Surr: Nitrobenzene-d5	68.5		40.8-95.2		%Rec	1	11/4/2019 6:42:07 PM	48494
Surr: 2-Fluorobiphenyl	64.0		34.7-85.2		%Rec	1	11/4/2019 6:42:07 PM	48494
Surr: 4-Terphenyl-d14	76.5		37.4-91.3		%Rec	1	11/4/2019 6:42:07 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0022	0.014		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Toluene	ND	0.0026	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Ethylbenzene	ND	0.0016	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0065	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0025	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0026	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0028	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0025	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Naphthalene	ND	0.0055	0.055		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1-Methylnaphthalene	ND	0.016	0.11		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Acetone	ND	0.023	0.41		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Bromobenzene	ND	0.0026	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063

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Project: SWMU 13
Collection Date: 10/24/2019 3:45:00 PM
Lab ID: 1910E04-013
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0025	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Bromoform	ND	0.0025	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Bromomethane	ND	0.0066	0.082		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
2-Butanone	ND	0.032	0.27		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Carbon disulfide	ND	0.0090	0.27		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Carbon tetrachloride	ND	0.0026	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Chlorobenzene	ND	0.0035	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Chloroethane	ND	0.0040	0.055		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Chloroform	ND	0.0022	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Chloromethane	ND	0.0026	0.082		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
2-Chlorotoluene	ND	0.0024	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
4-Chlorotoluene	ND	0.0022	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
cis-1,2-DCE	ND	0.0037	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
cis-1,3-Dichloropropene	ND	0.0023	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0028	0.055		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Dibromochloromethane	ND	0.0019	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Dibromomethane	ND	0.0029	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,2-Dichlorobenzene	ND	0.0022	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,3-Dichlorobenzene	ND	0.0024	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,4-Dichlorobenzene	ND	0.0023	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Dichlorodifluoromethane	ND	0.0064	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,1-Dichloroethane	ND	0.0017	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,1-Dichloroethene	ND	0.011	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,2-Dichloropropane	ND	0.0020	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,3-Dichloropropane	ND	0.0030	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
2,2-Dichloropropane	ND	0.0089	0.055		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,1-Dichloropropene	ND	0.0025	0.055		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Hexachlorobutadiene	ND	0.0028	0.055		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
2-Hexanone	ND	0.0045	0.27		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Isopropylbenzene	ND	0.0020	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
4-Isopropyltoluene	ND	0.0023	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
4-Methyl-2-pentanone	ND	0.0052	0.27		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Methylene chloride	ND	0.0048	0.082		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
n-Butylbenzene	ND	0.0026	0.082		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
n-Propylbenzene	ND	0.0022	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
sec-Butylbenzene	ND	0.0031	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Styrene	ND	0.0021	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
tert-Butylbenzene	ND	0.0026	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0018	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-9 (1.5-2')
Project: SWMU 13
Collection Date: 10/24/2019 3:45:00 PM
Lab ID: 1910E04-013
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0028	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Tetrachloroethene (PCE)	ND	0.0022	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
trans-1,2-DCE	ND	0.0025	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
trans-1,3-Dichloropropene	ND	0.0029	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0024	0.055		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0028	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,1,1-Trichloroethane	ND	0.0025	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,1,2-Trichloroethane	ND	0.0019	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Trichloroethene (TCE)	ND	0.0032	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Trichlorofluoromethane	ND	0.0093	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
1,2,3-Trichloropropane	ND	0.0044	0.055		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Vinyl chloride	ND	0.0018	0.027		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Xylenes, Total	ND	0.0069	0.055		mg/Kg	1	10/29/2019 6:07:06 PM	A64063
Surr: Dibromofluoromethane	105		70-130		%Rec	1	10/29/2019 6:07:06 PM	A64063
Surr: 1,2-Dichloroethane-d4	93.0		70-130		%Rec	1	10/29/2019 6:07:06 PM	A64063
Surr: Toluene-d8	100		70-130		%Rec	1	10/29/2019 6:07:06 PM	A64063
Surr: 4-Bromofluorobenzene	93.5		70-130		%Rec	1	10/29/2019 6:07:06 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-9 (2-3')
Project: SWMU 13
Collection Date: 10/24/2019 3:55:00 PM
Lab ID: 1910E04-014
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	20	1.8	9.1		mg/Kg	1	11/1/2019 2:00:53 PM	48458
Motor Oil Range Organics (MRO)	ND	45	45		mg/Kg	1	11/1/2019 2:00:53 PM	48458
Surr: DNOP	103	0	70-130		%Rec	1	11/1/2019 2:00:53 PM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.80	2.6		mg/Kg	1	10/30/2019 1:03:31 AM	G64058
Surr: BFB	124	0	77.4-118	S	%Rec	1	10/30/2019 1:03:31 AM	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0030	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:36:12 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.73	5.0		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Arsenic	ND	2.8	5.0		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Barium	210	0.046	0.20		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Beryllium	1.3	0.018	0.30		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Cadmium	ND	0.048	0.20		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Chromium	13	0.16	0.60		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Cobalt	5.6	0.21	0.60		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Iron	19000	72	250		mg/Kg	100	11/20/2019 4:31:27 PM	48434
Lead	2.7	0.48	0.50		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Manganese	340	0.041	0.20		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Nickel	12	0.30	1.0		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Selenium	ND	2.5	5.0		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Silver	ND	0.064	0.50		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Vanadium	21	0.13	5.0		mg/Kg	2	11/19/2019 5:28:07 PM	48434
Zinc	18	0.79	5.0		mg/Kg	2	11/19/2019 5:28:07 PM	48434
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Acenaphthylene	ND	0.11	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Aniline	ND	0.12	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Anthracene	ND	0.10	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Azobenzene	ND	0.14	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Benz(a)anthracene	ND	0.093	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Benzo(a)pyrene	ND	0.086	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Benzo(b)fluoranthene	ND	0.086	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Benzo(g,h,i)perylene	ND	0.083	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Benzo(k)fluoranthene	ND	0.088	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Benzoic acid	ND	0.10	0.49		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-9 (2-3')
Project: SWMU 13
Collection Date: 10/24/2019 3:55:00 PM
Lab ID: 1910E04-014
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	11/4/2019 7:11:16 PM	48494
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Butyl benzyl phthalate	ND	0.099	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Carbazole	ND	0.11	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	11/4/2019 7:11:16 PM	48494
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
4-Chlorophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Chrysene	ND	0.086	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Di-n-butyl phthalate	0.23	0.14	0.39	J	mg/Kg	1	11/4/2019 7:11:16 PM	48494
Di-n-octyl phthalate	ND	0.099	0.39		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Dibenz(a,h)anthracene	ND	0.088	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Dibenzofuran	ND	0.13	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
1,2-Dichlorobenzene	ND	0.12	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
3,3´-Dichlorobenzidine	ND	0.086	0.24		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	11/4/2019 7:11:16 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2,4-Dinitrotoluene	ND	0.11	0.49		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Fluoranthene	ND	0.11	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Fluorene	ND	0.11	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Hexachlorobutadiene	ND	0.14	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.097	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Isophorone	ND	0.14	0.39		mg/Kg	1	11/4/2019 7:11:16 PM	48494
1-Methylnaphthalene	ND	0.15	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-9 (2-3')
Project: SWMU 13
Collection Date: 10/24/2019 3:55:00 PM
Lab ID: 1910E04-014
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	11/4/2019 7:11:16 PM	48494
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Naphthalene	ND	0.15	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Nitrobenzene	ND	0.13	0.39		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Phenanthrene	ND	0.11	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Phenol	0.14	0.12	0.19	J	mg/Kg	1	11/4/2019 7:11:16 PM	48494
Pyrene	ND	0.091	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Pyridine	ND	0.12	0.39		mg/Kg	1	11/4/2019 7:11:16 PM	48494
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2,4,5-Trichlorophenol	ND	0.13	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	11/4/2019 7:11:16 PM	48494
Surr: 2-Fluorophenol	56.4		26.7-85.9		%Rec	1	11/4/2019 7:11:16 PM	48494
Surr: Phenol-d5	57.4		18.5-101		%Rec	1	11/4/2019 7:11:16 PM	48494
Surr: 2,4,6-Tribromophenol	57.9		35.8-85.6		%Rec	1	11/4/2019 7:11:16 PM	48494
Surr: Nitrobenzene-d5	59.0		40.8-95.2		%Rec	1	11/4/2019 7:11:16 PM	48494
Surr: 2-Fluorobiphenyl	53.4		34.7-85.2		%Rec	1	11/4/2019 7:11:16 PM	48494
Surr: 4-Terphenyl-d14	67.7		37.4-91.3		%Rec	1	11/4/2019 7:11:16 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0022	0.013		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Toluene	ND	0.0025	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Ethylbenzene	ND	0.0015	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0063	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0024	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0026	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0027	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0024	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Naphthalene	ND	0.0053	0.053		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1-Methylnaphthalene	ND	0.015	0.11		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Acetone	ND	0.022	0.40		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Bromobenzene	ND	0.0025	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-9 (2-3')
Project: SWMU 13
Collection Date: 10/24/2019 3:55:00 PM
Lab ID: 1910E04-014
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0024	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Bromoform	ND	0.0024	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Bromomethane	ND	0.0064	0.079		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
2-Butanone	ND	0.031	0.26		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Carbon disulfide	ND	0.0087	0.26		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Carbon tetrachloride	ND	0.0025	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Chlorobenzene	ND	0.0034	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Chloroethane	ND	0.0039	0.053		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Chloroform	ND	0.0021	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Chloromethane	ND	0.0025	0.079		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
2-Chlorotoluene	ND	0.0023	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
4-Chlorotoluene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
cis-1,2-DCE	ND	0.0036	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
cis-1,3-Dichloropropene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0027	0.053		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Dibromochloromethane	ND	0.0019	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Dibromomethane	ND	0.0029	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,2-Dichlorobenzene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,3-Dichlorobenzene	ND	0.0023	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,4-Dichlorobenzene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Dichlorodifluoromethane	ND	0.0061	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,1-Dichloroethane	ND	0.0017	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,1-Dichloroethene	ND	0.011	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,2-Dichloropropane	ND	0.0019	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,3-Dichloropropane	ND	0.0029	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
2,2-Dichloropropane	ND	0.0086	0.053		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,1-Dichloropropene	ND	0.0024	0.053		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Hexachlorobutadiene	ND	0.0027	0.053		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
2-Hexanone	ND	0.0044	0.26		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Isopropylbenzene	ND	0.0019	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
4-Isopropyltoluene	ND	0.0022	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
4-Methyl-2-pentanone	ND	0.0050	0.26		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Methylene chloride	ND	0.0047	0.079		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
n-Butylbenzene	ND	0.0025	0.079		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
n-Propylbenzene	ND	0.0021	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
sec-Butylbenzene	ND	0.0030	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Styrene	ND	0.0021	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
tert-Butylbenzene	ND	0.0025	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0018	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-9 (2-3')
Project: SWMU 13
Collection Date: 10/24/2019 3:55:00 PM
Lab ID: 1910E04-014
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0027	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Tetrachloroethene (PCE)	ND	0.0021	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
trans-1,2-DCE	ND	0.0024	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
trans-1,3-Dichloropropene	ND	0.0028	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0023	0.053		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0027	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,1,1-Trichloroethane	ND	0.0024	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,1,2-Trichloroethane	ND	0.0019	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Trichloroethene (TCE)	ND	0.0031	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Trichlorofluoromethane	ND	0.0090	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
1,2,3-Trichloropropane	ND	0.0043	0.053		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Vinyl chloride	ND	0.0017	0.026		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Xylenes, Total	ND	0.0067	0.053		mg/Kg	1	10/29/2019 6:36:12 PM	A64063
Surr: Dibromofluoromethane	105		70-130		%Rec	1	10/29/2019 6:36:12 PM	A64063
Surr: 1,2-Dichloroethane-d4	95.4		70-130		%Rec	1	10/29/2019 6:36:12 PM	A64063
Surr: Toluene-d8	103		70-130		%Rec	1	10/29/2019 6:36:12 PM	A64063
Surr: 4-Bromofluorobenzene	90.3		70-130		%Rec	1	10/29/2019 6:36:12 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP03
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-015
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	3.2	1.6	7.9	J	mg/Kg	1	11/1/2019 2:10:02 PM	48458
Motor Oil Range Organics (MRO)	ND	39	39		mg/Kg	1	11/1/2019 2:10:02 PM	48458
Surr: DNOP	103	0	70-130		%Rec	1	11/1/2019 2:10:02 PM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.89	3.0		mg/Kg	1	10/30/2019 1:27:19 AM	G64058
Surr: BFB	110	0	77.4-118		%Rec	1	10/30/2019 1:27:19 AM	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0070	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:38:14 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Arsenic	ND	2.9	5.0		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Barium	260	0.047	0.20		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Beryllium	1.0	0.019	0.30		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Chromium	8.9	0.16	0.60		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Cobalt	4.4	0.21	0.60		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Iron	15000	73	250		mg/Kg	100	11/20/2019 4:33:02 PM	48434
Lead	3.0	0.49	0.50		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Manganese	370	0.042	0.20		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Nickel	8.9	0.30	1.0		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Selenium	ND	2.5	5.0		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Silver	ND	0.065	0.50		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Vanadium	17	0.13	5.0		mg/Kg	2	11/19/2019 5:37:52 PM	48434
Zinc	16	0.80	5.0		mg/Kg	2	11/19/2019 5:37:52 PM	48434
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.24	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Acenaphthylene	ND	0.22	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Aniline	ND	0.26	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Anthracene	ND	0.22	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Azobenzene	ND	0.28	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Benz(a)anthracene	ND	0.20	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Benzo(a)pyrene	ND	0.18	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Benzo(b)fluoranthene	ND	0.18	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Benzo(g,h,i)perylene	ND	0.17	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Benzo(k)fluoranthene	ND	0.18	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Benzoic acid	ND	0.21	1.0		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Benzyl alcohol	ND	0.25	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP03
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-015
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.30	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Bis(2-chloroethyl)ether	ND	0.25	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.23	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.29	1.0		mg/Kg	1	11/4/2019 7:40:23 PM	48494
4-Bromophenyl phenyl ether	ND	0.24	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Butyl benzyl phthalate	ND	0.21	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Carbazole	ND	0.24	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
4-Chloro-3-methylphenol	ND	0.31	1.0		mg/Kg	1	11/4/2019 7:40:23 PM	48494
4-Chloroaniline	ND	0.29	1.0		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2-Chloronaphthalene	ND	0.25	0.51		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2-Chlorophenol	ND	0.25	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
4-Chlorophenyl phenyl ether	ND	0.22	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Chrysene	ND	0.18	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Di-n-butyl phthalate	ND	0.30	0.81		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Di-n-octyl phthalate	ND	0.21	0.81		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Dibenz(a,h)anthracene	ND	0.18	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Dibenzofuran	ND	0.27	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
1,2-Dichlorobenzene	ND	0.24	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
1,3-Dichlorobenzene	ND	0.21	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
1,4-Dichlorobenzene	ND	0.22	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
3,3´-Dichlorobenzidine	ND	0.18	0.51		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Diethyl phthalate	ND	0.29	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Dimethyl phthalate	ND	0.27	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2,4-Dichlorophenol	ND	0.24	0.81		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2,4-Dimethylphenol	ND	0.22	0.61		mg/Kg	1	11/4/2019 7:40:23 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.19	0.81		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2,4-Dinitrophenol	ND	0.15	1.0		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2,4-Dinitrotoluene	ND	0.24	1.0		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2,6-Dinitrotoluene	ND	0.27	1.0		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Fluoranthene	ND	0.23	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Fluorene	ND	0.23	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Hexachlorobenzene	ND	0.25	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Hexachlorobutadiene	ND	0.28	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Hexachlorocyclopentadiene	ND	0.23	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Hexachloroethane	ND	0.23	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.20	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Isophorone	ND	0.30	0.81		mg/Kg	1	11/4/2019 7:40:23 PM	48494
1-Methylnaphthalene	ND	0.30	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2-Methylnaphthalene	ND	0.29	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP03
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-015
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.24	0.81		mg/Kg	1	11/4/2019 7:40:23 PM	48494
3+4-Methylphenol	ND	0.25	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
N-Nitrosodi-n-propylamine	ND	0.29	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
N-Nitrosodiphenylamine	ND	0.21	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Naphthalene	ND	0.31	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2-Nitroaniline	ND	0.29	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
3-Nitroaniline	ND	0.28	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
4-Nitroaniline	ND	0.26	0.81		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Nitrobenzene	ND	0.28	0.81		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2-Nitrophenol	ND	0.28	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
4-Nitrophenol	ND	0.27	0.51		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Pentachlorophenol	ND	0.21	0.81		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Phenanthrene	ND	0.22	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Phenol	ND	0.25	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Pyrene	ND	0.19	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Pyridine	ND	0.24	0.81		mg/Kg	1	11/4/2019 7:40:23 PM	48494
1,2,4-Trichlorobenzene	ND	0.31	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2,4,5-Trichlorophenol	ND	0.26	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
2,4,6-Trichlorophenol	ND	0.21	0.40		mg/Kg	1	11/4/2019 7:40:23 PM	48494
Surr: 2-Fluorophenol	78.6		26.7-85.9		%Rec	1	11/4/2019 7:40:23 PM	48494
Surr: Phenol-d5	85.1		18.5-101		%Rec	1	11/4/2019 7:40:23 PM	48494
Surr: 2,4,6-Tribromophenol	85.7		35.8-85.6	S	%Rec	1	11/4/2019 7:40:23 PM	48494
Surr: Nitrobenzene-d5	85.4		40.8-95.2		%Rec	1	11/4/2019 7:40:23 PM	48494
Surr: 2-Fluorobiphenyl	83.4		34.7-85.2		%Rec	1	11/4/2019 7:40:23 PM	48494
Surr: 4-Terphenyl-d14	95.4		37.4-91.3	S	%Rec	1	11/4/2019 7:40:23 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0024	0.015		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Toluene	ND	0.0028	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Ethylbenzene	ND	0.0017	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0070	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0027	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0029	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0030	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0027	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Naphthalene	ND	0.0059	0.059		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1-Methylnaphthalene	ND	0.017	0.12		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
2-Methylnaphthalene	ND	0.013	0.12		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Acetone	ND	0.024	0.44		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Bromobenzene	ND	0.0028	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP03
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-015
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0027	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Bromoform	ND	0.0027	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Bromomethane	ND	0.0071	0.089		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
2-Butanone	ND	0.034	0.30		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Carbon disulfide	ND	0.0097	0.30		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Carbon tetrachloride	ND	0.0028	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Chlorobenzene	ND	0.0038	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Chloroethane	ND	0.0043	0.059		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Chloroform	ND	0.0024	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Chloromethane	ND	0.0028	0.089		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
2-Chlorotoluene	ND	0.0026	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
4-Chlorotoluene	ND	0.0024	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
cis-1,2-DCE	ND	0.0040	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
cis-1,3-Dichloropropene	ND	0.0025	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0030	0.059		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Dibromochloromethane	ND	0.0021	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Dibromomethane	ND	0.0032	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,2-Dichlorobenzene	ND	0.0024	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,3-Dichlorobenzene	ND	0.0026	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,4-Dichlorobenzene	ND	0.0025	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Dichlorodifluoromethane	ND	0.0069	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,1-Dichloroethane	ND	0.0019	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,1-Dichloroethene	ND	0.012	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,2-Dichloropropane	ND	0.0022	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,3-Dichloropropane	ND	0.0032	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
2,2-Dichloropropane	ND	0.0096	0.059		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,1-Dichloropropene	ND	0.0027	0.059		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Hexachlorobutadiene	ND	0.0030	0.059		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
2-Hexanone	ND	0.0049	0.30		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Isopropylbenzene	ND	0.0021	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
4-Isopropyltoluene	ND	0.0024	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
4-Methyl-2-pentanone	ND	0.0056	0.30		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Methylene chloride	ND	0.0052	0.089		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
n-Butylbenzene	ND	0.0028	0.089		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
n-Propylbenzene	ND	0.0024	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
sec-Butylbenzene	ND	0.0033	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Styrene	ND	0.0023	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
tert-Butylbenzene	ND	0.0028	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0020	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP03
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-015
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0030	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Tetrachloroethene (PCE)	ND	0.0024	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
trans-1,2-DCE	ND	0.0027	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
trans-1,3-Dichloropropene	ND	0.0031	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0026	0.059		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0030	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,1,1-Trichloroethane	ND	0.0027	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,1,2-Trichloroethane	ND	0.0021	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Trichloroethene (TCE)	ND	0.0034	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Trichlorofluoromethane	ND	0.010	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
1,2,3-Trichloropropane	ND	0.0048	0.059		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Vinyl chloride	ND	0.0019	0.030		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Xylenes, Total	ND	0.0074	0.059		mg/Kg	1	10/29/2019 7:05:49 PM	A64063
Surr: Dibromofluoromethane	108		70-130		%Rec	1	10/29/2019 7:05:49 PM	A64063
Surr: 1,2-Dichloroethane-d4	93.9		70-130		%Rec	1	10/29/2019 7:05:49 PM	A64063
Surr: Toluene-d8	98.8		70-130		%Rec	1	10/29/2019 7:05:49 PM	A64063
Surr: 4-Bromofluorobenzene	89.7		70-130		%Rec	1	10/29/2019 7:05:49 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP04
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-016
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	6.5	1.9	9.4	J	mg/Kg	1	10/31/2019 12:10:59 P	48458
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	10/31/2019 12:10:59 P	48458
Surr: DNOP	94.9	0	70-130		%Rec	1	10/31/2019 12:10:59 P	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.76	2.5		mg/Kg	1	10/30/2019 1:50:58 AM	G64058
Surr: BFB	106	0	77.4-118		%Rec	1	10/30/2019 1:50:58 AM	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0047	0.0018	0.033	J	mg/Kg	1	11/4/2019 6:40:18 PM	48571
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Arsenic	ND	2.9	5.1		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Barium	240	0.047	0.20		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Beryllium	1.4	0.019	0.30		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Chromium	18	0.16	0.61		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Cobalt	6.7	0.21	0.61		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Iron	20000	74	250		mg/Kg	100	11/20/2019 4:34:36 PM	48434
Lead	1.8	0.49	0.51		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Manganese	310	0.042	0.20		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Nickel	14	0.30	1.0		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Selenium	ND	2.5	5.1		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Silver	ND	0.065	0.51		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Vanadium	25	0.14	5.1		mg/Kg	2	11/19/2019 5:41:01 PM	48434
Zinc	22	0.80	5.1		mg/Kg	2	11/19/2019 5:41:01 PM	48434
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Aniline	ND	0.13	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Anthracene	ND	0.10	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Azobenzene	ND	0.14	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Benz(a)anthracene	ND	0.095	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Benzo(a)pyrene	ND	0.087	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Benzo(b)fluoranthene	ND	0.087	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Benzo(g,h,i)perylene	ND	0.084	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Benzo(k)fluoranthene	ND	0.089	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Benzoic acid	ND	0.10	0.49		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP04
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-016
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.15	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Bis(2-ethylhexyl)phthalate	0.18	0.14	0.49	J	mg/Kg	1	11/4/2019 8:09:21 PM	48494
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Carbazole	ND	0.12	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	11/4/2019 8:09:21 PM	48494
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2-Chloronaphthalene	ND	0.12	0.25		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Chrysene	ND	0.087	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Di-n-butyl phthalate	0.21	0.15	0.39	J	mg/Kg	1	11/4/2019 8:09:21 PM	48494
Di-n-octyl phthalate	ND	0.10	0.39		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Dibenz(a,h)anthracene	ND	0.089	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
1,4-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
3,3´-Dichlorobenzidine	ND	0.087	0.25		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	11/4/2019 8:09:21 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.091	0.39		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Fluoranthene	ND	0.11	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Fluorene	ND	0.11	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.098	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Isophorone	ND	0.14	0.39		mg/Kg	1	11/4/2019 8:09:21 PM	48494
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP04
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-016
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	11/4/2019 8:09:21 PM	48494
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Naphthalene	ND	0.15	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Nitrobenzene	ND	0.14	0.39		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
4-Nitrophenol	ND	0.13	0.25		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Phenanthrene	ND	0.11	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Phenol	ND	0.12	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Pyrene	ND	0.092	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Pyridine	ND	0.12	0.39		mg/Kg	1	11/4/2019 8:09:21 PM	48494
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	11/4/2019 8:09:21 PM	48494
Surr: 2-Fluorophenol	64.4		26.7-85.9		%Rec	1	11/4/2019 8:09:21 PM	48494
Surr: Phenol-d5	64.7		18.5-101		%Rec	1	11/4/2019 8:09:21 PM	48494
Surr: 2,4,6-Tribromophenol	65.7		35.8-85.6		%Rec	1	11/4/2019 8:09:21 PM	48494
Surr: Nitrobenzene-d5	69.7		40.8-95.2		%Rec	1	11/4/2019 8:09:21 PM	48494
Surr: 2-Fluorobiphenyl	58.2		34.7-85.2		%Rec	1	11/4/2019 8:09:21 PM	48494
Surr: 4-Terphenyl-d14	77.0		37.4-91.3		%Rec	1	11/4/2019 8:09:21 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0021	0.013		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Toluene	ND	0.0024	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Ethylbenzene	ND	0.0015	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0060	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0023	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0024	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0026	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0023	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Naphthalene	ND	0.0050	0.050		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1-Methylnaphthalene	ND	0.014	0.10		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
2-Methylnaphthalene	ND	0.011	0.10		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Acetone	ND	0.021	0.38		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Bromobenzene	ND	0.0024	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP04
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-016
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0023	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Bromoform	ND	0.0023	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Bromomethane	ND	0.0061	0.076		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
2-Butanone	ND	0.029	0.25		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Carbon disulfide	ND	0.0083	0.25		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Carbon tetrachloride	ND	0.0024	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Chlorobenzene	ND	0.0032	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Chloroethane	ND	0.0037	0.050		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Chloroform	ND	0.0020	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Chloromethane	ND	0.0024	0.076		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
2-Chlorotoluene	ND	0.0022	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
4-Chlorotoluene	ND	0.0021	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
cis-1,2-DCE	ND	0.0034	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
cis-1,3-Dichloropropene	ND	0.0021	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0026	0.050		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Dibromochloromethane	ND	0.0018	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Dibromomethane	ND	0.0027	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,2-Dichlorobenzene	ND	0.0021	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,3-Dichlorobenzene	ND	0.0022	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,4-Dichlorobenzene	ND	0.0021	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Dichlorodifluoromethane	ND	0.0058	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,1-Dichloroethane	ND	0.0016	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,1-Dichloroethene	ND	0.010	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,2-Dichloropropane	ND	0.0018	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,3-Dichloropropane	ND	0.0027	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
2,2-Dichloropropane	ND	0.0082	0.050		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,1-Dichloropropene	ND	0.0023	0.050		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Hexachlorobutadiene	ND	0.0026	0.050		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
2-Hexanone	ND	0.0042	0.25		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Isopropylbenzene	ND	0.0018	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
4-Isopropyltoluene	ND	0.0021	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
4-Methyl-2-pentanone	ND	0.0048	0.25		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Methylene chloride	ND	0.0045	0.076		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
n-Butylbenzene	ND	0.0024	0.076		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
n-Propylbenzene	ND	0.0020	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
sec-Butylbenzene	ND	0.0028	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Styrene	ND	0.0020	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
tert-Butylbenzene	ND	0.0024	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0017	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP04
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-016
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0026	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Tetrachloroethene (PCE)	ND	0.0020	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
trans-1,2-DCE	ND	0.0023	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
trans-1,3-Dichloropropene	ND	0.0027	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0022	0.050		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0025	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,1,1-Trichloroethane	ND	0.0023	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,1,2-Trichloroethane	ND	0.0018	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Trichloroethene (TCE)	ND	0.0029	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Trichlorofluoromethane	ND	0.0086	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
1,2,3-Trichloropropane	ND	0.0041	0.050		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Vinyl chloride	ND	0.0016	0.025		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Xylenes, Total	ND	0.0064	0.050		mg/Kg	1	10/29/2019 7:34:41 PM	A64063
Surr: Dibromofluoromethane	110		70-130		%Rec	1	10/29/2019 7:34:41 PM	A64063
Surr: 1,2-Dichloroethane-d4	100		70-130		%Rec	1	10/29/2019 7:34:41 PM	A64063
Surr: Toluene-d8	103		70-130		%Rec	1	10/29/2019 7:34:41 PM	A64063
Surr: 4-Bromofluorobenzene	93.8		70-130		%Rec	1	10/29/2019 7:34:41 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-017
Matrix: MEOH BLAN
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0041	0.025		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Toluene	ND	0.0048	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Ethylbenzene	ND	0.0029	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.012	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0046	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0048	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0051	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0046	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Naphthalene	ND	0.010	0.10		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1-Methylnaphthalene	ND	0.029	0.20		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
2-Methylnaphthalene	ND	0.022	0.20		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Acetone	ND	0.041	0.75		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Bromobenzene	ND	0.0048	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Bromodichloromethane	ND	0.0046	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Bromoform	ND	0.0045	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Bromomethane	ND	0.012	0.15		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
2-Butanone	ND	0.058	0.50		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Carbon disulfide	ND	0.017	0.50		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Carbon tetrachloride	ND	0.0047	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Chlorobenzene	ND	0.0064	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Chloroethane	ND	0.0074	0.10		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Chloroform	ND	0.0040	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Chloromethane	ND	0.0048	0.15		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
2-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
4-Chlorotoluene	ND	0.0041	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
cis-1,2-DCE	ND	0.0068	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
cis-1,3-Dichloropropene	ND	0.0042	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0051	0.10		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Dibromochloromethane	ND	0.0035	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Dibromomethane	ND	0.0054	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,2-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,3-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,4-Dichlorobenzene	ND	0.0042	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Dichlorodifluoromethane	ND	0.012	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,1-Dichloroethane	ND	0.0032	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,3-Dichloropropane	ND	0.0054	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
2,2-Dichloropropane	ND	0.016	0.10		mg/Kg	1	10/29/2019 8:03:55 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank
Project: SWMU 13
Collection Date: 10/24/2019
Lab ID: 1910E04-017
Matrix: MEOH BLAN
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1-Dichloropropene	ND	0.0046	0.10		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Hexachlorobutadiene	ND	0.0051	0.10		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
2-Hexanone	ND	0.0083	0.50		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Isopropylbenzene	ND	0.0036	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
4-Isopropyltoluene	ND	0.0041	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
4-Methyl-2-pentanone	ND	0.0094	0.50		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Methylene chloride	ND	0.0088	0.15		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
n-Butylbenzene	ND	0.0047	0.15		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
n-Propylbenzene	ND	0.0040	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
sec-Butylbenzene	ND	0.0056	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Styrene	ND	0.0039	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
tert-Butylbenzene	ND	0.0047	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0034	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,1,2,2-Tetrachloroethane	ND	0.0051	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
trans-1,2-DCE	ND	0.0046	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
trans-1,3-Dichloropropene	ND	0.0053	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0044	0.10		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0051	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,1,1-Trichloroethane	ND	0.0045	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,1,2-Trichloroethane	ND	0.0035	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Trichloroethene (TCE)	ND	0.0058	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Trichlorofluoromethane	ND	0.017	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
1,2,3-Trichloropropane	ND	0.0081	0.10		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Vinyl chloride	ND	0.0033	0.050		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Xylenes, Total	ND	0.013	0.10		mg/Kg	1	10/29/2019 8:03:55 PM	A64063
Surr: Dibromofluoromethane	108		70-130		%Rec	1	10/29/2019 8:03:55 PM	A64063
Surr: 1,2-Dichloroethane-d4	97.4		70-130		%Rec	1	10/29/2019 8:03:55 PM	A64063
Surr: Toluene-d8	103		70-130		%Rec	1	10/29/2019 8:03:55 PM	A64063
Surr: 4-Bromofluorobenzene	87.3		70-130		%Rec	1	10/29/2019 8:03:55 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102419
Project: SWMU 13
Collection Date: 10/24/2019 1:45:00 PM
Lab ID: 1910E04-018
Matrix: AQUEOUS
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	0.35	1.0		mg/L	1	10/30/2019 2:27:01 PM	48464
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	10/30/2019 2:27:01 PM	48464
Surr: DNOP	106	0	70-130		%Rec	1	10/30/2019 2:27:01 PM	48464
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/1/2019 5:40:59 PM	R64171
Surr: BFB	99.7	0	65.8-143		%Rec	1	11/1/2019 5:40:59 PM	R64171
EPA METHOD 7470: MERCURY							Analyst: **rde**	
Mercury	0.00011	0.000038	0.00020	J	mg/L	1	11/8/2019 2:55:59 PM	48664
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Antimony	ND	0.0081	0.050		mg/L	1	11/14/2019 5:24:42 PM	48486
Arsenic	ND	0.015	0.020		mg/L	1	11/25/2019 4:14:42 PM	48486
Barium	ND	0.0012	0.020		mg/L	1	11/13/2019 8:04:24 PM	48486
Beryllium	ND	0.00025	0.0030		mg/L	1	11/13/2019 8:04:24 PM	48486
Cadmium	ND	0.00055	0.0020		mg/L	1	11/13/2019 8:04:24 PM	48486
Chromium	ND	0.00086	0.0060		mg/L	1	11/13/2019 8:04:24 PM	48486
Cobalt	ND	0.0012	0.0060		mg/L	1	11/14/2019 5:24:42 PM	48486
Iron	ND	0.0093	0.020		mg/L	1	11/13/2019 8:04:24 PM	48486
Lead	ND	0.0035	0.0050		mg/L	1	11/13/2019 8:04:24 PM	48486
Manganese	0.0011	0.00041	0.0020	J	mg/L	1	11/14/2019 5:24:42 PM	48486
Nickel	ND	0.0028	0.010		mg/L	1	11/13/2019 8:04:24 PM	48486
Selenium	ND	0.035	0.050		mg/L	1	11/13/2019 8:04:24 PM	48486
Silver	ND	0.00055	0.0050		mg/L	1	11/13/2019 8:04:24 PM	48486
Vanadium	ND	0.00086	0.050		mg/L	1	11/13/2019 8:04:24 PM	48486
Zinc	ND	0.011	0.020		mg/L	1	11/13/2019 8:04:24 PM	48486
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	3.0	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Acenaphthylene	ND	2.4	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Aniline	ND	3.6	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Anthracene	ND	2.7	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Azobenzene	ND	3.3	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Benz(a)anthracene	ND	3.6	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Benzo(a)pyrene	ND	3.5	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Benzo(b)fluoranthene	ND	3.4	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Benzo(g,h,i)perylene	ND	2.2	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Benzo(k)fluoranthene	ND	2.9	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Benzoic acid	ND	11	20		µg/L	1	10/31/2019 3:51:30 PM	48439
Benzyl alcohol	ND	2.4	10		µg/L	1	10/31/2019 3:51:30 PM	48439

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102419
Project: SWMU 13
Collection Date: 10/24/2019 1:45:00 PM
Lab ID: 1910E04-018
Matrix: AQUEOUS
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	2.6	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Bis(2-chloroethyl)ether	ND	3.2	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Bis(2-chloroisopropyl)ether	ND	3.9	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Bis(2-ethylhexyl)phthalate	ND	4.3	10		µg/L	1	10/31/2019 3:51:30 PM	48439
4-Bromophenyl phenyl ether	ND	3.0	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Butyl benzyl phthalate	ND	3.3	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Carbazole	ND	2.9	10		µg/L	1	10/31/2019 3:51:30 PM	48439
4-Chloro-3-methylphenol	ND	3.4	10		µg/L	1	10/31/2019 3:51:30 PM	48439
4-Chloroaniline	ND	2.3	10		µg/L	1	10/31/2019 3:51:30 PM	48439
2-Chloronaphthalene	ND	3.1	10		µg/L	1	10/31/2019 3:51:30 PM	48439
2-Chlorophenol	ND	2.7	10		µg/L	1	10/31/2019 3:51:30 PM	48439
4-Chlorophenyl phenyl ether	ND	2.4	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Chrysene	ND	2.8	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Di-n-butyl phthalate	ND	2.7	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Di-n-octyl phthalate	ND	3.5	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Dibenz(a,h)anthracene	ND	3.0	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Dibenzofuran	ND	3.2	10		µg/L	1	10/31/2019 3:51:30 PM	48439
1,2-Dichlorobenzene	ND	4.8	10		µg/L	1	10/31/2019 3:51:30 PM	48439
1,3-Dichlorobenzene	ND	5.3	10		µg/L	1	10/31/2019 3:51:30 PM	48439
1,4-Dichlorobenzene	ND	4.4	10		µg/L	1	10/31/2019 3:51:30 PM	48439
3,3´-Dichlorobenzidine	ND	2.8	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Diethyl phthalate	ND	2.9	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Dimethyl phthalate	ND	3.2	10		µg/L	1	10/31/2019 3:51:30 PM	48439
2,4-Dichlorophenol	ND	2.9	20		µg/L	1	10/31/2019 3:51:30 PM	48439
2,4-Dimethylphenol	ND	3.0	10		µg/L	1	10/31/2019 3:51:30 PM	48439
4,6-Dinitro-2-methylphenol	ND	2.9	20		µg/L	1	10/31/2019 3:51:30 PM	48439
2,4-Dinitrophenol	ND	2.6	20		µg/L	1	10/31/2019 3:51:30 PM	48439
2,4-Dinitrotoluene	ND	3.8	10		µg/L	1	10/31/2019 3:51:30 PM	48439
2,6-Dinitrotoluene	ND	2.4	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Fluoranthene	ND	2.4	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Fluorene	ND	2.9	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Hexachlorobenzene	ND	3.1	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Hexachlorobutadiene	ND	4.7	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Hexachlorocyclopentadiene	ND	3.6	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Hexachloroethane	ND	4.8	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Indeno(1,2,3-cd)pyrene	ND	2.7	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Isophorone	ND	3.0	10		µg/L	1	10/31/2019 3:51:30 PM	48439
1-Methylnaphthalene	ND	3.1	10		µg/L	1	10/31/2019 3:51:30 PM	48439
2-Methylnaphthalene	ND	3.0	10		µg/L	1	10/31/2019 3:51:30 PM	48439

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102419
Project: SWMU 13
Collection Date: 10/24/2019 1:45:00 PM
Lab ID: 1910E04-018
Matrix: AQUEOUS
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	2.9	10		µg/L	1	10/31/2019 3:51:30 PM	48439
3+4-Methylphenol	ND	3.6	10		µg/L	1	10/31/2019 3:51:30 PM	48439
N-Nitrosodi-n-propylamine	ND	6.5	10		µg/L	1	10/31/2019 3:51:30 PM	48439
N-Nitrosodimethylamine	ND	5.0	10		µg/L	1	10/31/2019 3:51:30 PM	48439
N-Nitrosodiphenylamine	ND	2.4	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Naphthalene	ND	4.1	10		µg/L	1	10/31/2019 3:51:30 PM	48439
2-Nitroaniline	ND	3.2	10		µg/L	1	10/31/2019 3:51:30 PM	48439
3-Nitroaniline	ND	3.2	10		µg/L	1	10/31/2019 3:51:30 PM	48439
4-Nitroaniline	ND	2.7	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Nitrobenzene	ND	2.8	10		µg/L	1	10/31/2019 3:51:30 PM	48439
2-Nitrophenol	ND	3.0	10		µg/L	1	10/31/2019 3:51:30 PM	48439
4-Nitrophenol	ND	7.6	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Pentachlorophenol	ND	2.7	20		µg/L	1	10/31/2019 3:51:30 PM	48439
Phenanthrene	ND	2.8	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Phenol	ND	8.0	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Pyrene	ND	2.5	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Pyridine	ND	9.6	10		µg/L	1	10/31/2019 3:51:30 PM	48439
1,2,4-Trichlorobenzene	ND	4.0	10		µg/L	1	10/31/2019 3:51:30 PM	48439
2,4,5-Trichlorophenol	ND	3.0	10		µg/L	1	10/31/2019 3:51:30 PM	48439
2,4,6-Trichlorophenol	ND	2.3	10		µg/L	1	10/31/2019 3:51:30 PM	48439
Surr: 2-Fluorophenol	55.5	0	15-101		%Rec	1	10/31/2019 3:51:30 PM	48439
Surr: Phenol-d5	40.5	0	15-84.6		%Rec	1	10/31/2019 3:51:30 PM	48439
Surr: 2,4,6-Tribromophenol	70.2	0	27.8-112		%Rec	1	10/31/2019 3:51:30 PM	48439
Surr: Nitrobenzene-d5	81.6	0	33-113		%Rec	1	10/31/2019 3:51:30 PM	48439
Surr: 2-Fluorobiphenyl	70.9	0	26.6-107		%Rec	1	10/31/2019 3:51:30 PM	48439
Surr: 4-Terphenyl-d14	57.5	0	18.7-148		%Rec	1	10/31/2019 3:51:30 PM	48439
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.17	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Toluene	ND	0.35	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Ethylbenzene	ND	0.13	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Naphthalene	ND	0.28	2.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Acetone	ND	1.2	10		µg/L	1	10/30/2019 7:15:29 AM	R64075

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102419
Project: SWMU 13
Collection Date: 10/24/2019 1:45:00 PM
Lab ID: 1910E04-018
Matrix: AQUEOUS
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Bromobenzene	ND	0.24	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Bromodichloromethane	ND	0.13	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Bromoform	ND	0.29	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Bromomethane	ND	0.27	3.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
2-Butanone	ND	2.1	10		µg/L	1	10/30/2019 7:15:29 AM	R64075
Carbon disulfide	ND	0.45	10		µg/L	1	10/30/2019 7:15:29 AM	R64075
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Chlorobenzene	ND	0.19	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Chloroethane	ND	0.18	2.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Chloroform	ND	0.12	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Chloromethane	ND	0.32	3.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,2-Dibromo-3-chloropropane	ND	0.33	2.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Dibromochloromethane	ND	0.24	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Dibromomethane	ND	0.21	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
2-Hexanone	ND	1.5	10		µg/L	1	10/30/2019 7:15:29 AM	R64075
Isopropylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	10/30/2019 7:15:29 AM	R64075
Methylene Chloride	ND	0.15	3.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
n-Butylbenzene	ND	0.23	3.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
n-Propylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Styrene	ND	0.19	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102419
Project: SWMU 13
Collection Date: 10/24/2019 1:45:00 PM
Lab ID: 1910E04-018
Matrix: AQUEOUS
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
1,2,3-Trichloropropane	ND	0.30	2.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Vinyl chloride	ND	0.18	1.0		µg/L	1	10/30/2019 7:15:29 AM	R64075
Xylenes, Total	ND	0.45	1.5		µg/L	1	10/30/2019 7:15:29 AM	R64075
Surr: 1,2-Dichloroethane-d4	95.4	0	70-130		%Rec	1	10/30/2019 7:15:29 AM	R64075
Surr: 4-Bromofluorobenzene	89.4	0	70-130		%Rec	1	10/30/2019 7:15:29 AM	R64075
Surr: Dibromofluoromethane	102	0	70-130		%Rec	1	10/30/2019 7:15:29 AM	R64075
Surr: Toluene-d8	103	0	70-130		%Rec	1	10/30/2019 7:15:29 AM	R64075

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 10:00:00 AM
Lab ID: 1910E04-019
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	2300	37	190		mg/Kg	20	11/4/2019 2:16:55 PM	48458
Motor Oil Range Organics (MRO)	2600	930	930		mg/Kg	20	11/4/2019 2:16:55 PM	48458
Surr: DNOP	0	0	70-130	S	%Rec	20	11/4/2019 2:16:55 PM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.92	3.0		mg/Kg	1	10/30/2019 2:14:33 AM	G64058
Surr: BFB	100	0	77.4-118		%Rec	1	10/30/2019 2:14:33 AM	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	1.6	0.018	0.33		mg/Kg	10	11/4/2019 6:47:52 PM	48570
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.76	5.1		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Arsenic	5.6	2.9	5.1		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Barium	220	0.048	0.21		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Beryllium	1.2	0.019	0.31		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Cadmium	ND	0.050	0.21		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Chromium	160	0.16	0.62		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Cobalt	8.1	0.22	0.62		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Iron	21000	75	260		mg/Kg	100	11/20/2019 4:44:00 PM	48434
Lead	3.4	0.50	0.51		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Manganese	270	0.043	0.21		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Nickel	19	0.31	1.0		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Selenium	4.0	2.6	5.1	J	mg/Kg	2	11/19/2019 5:44:09 PM	48434
Silver	ND	0.066	0.51		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Vanadium	36	0.14	5.1		mg/Kg	2	11/19/2019 5:44:09 PM	48434
Zinc	310	0.82	5.1		mg/Kg	2	11/19/2019 5:44:09 PM	48434
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	5.9	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Acenaphthylene	ND	5.4	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Aniline	ND	6.3	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Anthracene	ND	5.2	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Azobenzene	ND	6.8	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Benz(a)anthracene	ND	4.7	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Benzo(a)pyrene	ND	4.3	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Benzo(b)fluoranthene	ND	4.3	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Benzo(g,h,i)perylene	ND	4.2	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Benzo(k)fluoranthene	ND	4.4	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Benzoic acid	ND	5.0	24	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Benzyl alcohol	ND	6.1	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 10:00:00 AM
Lab ID: 1910E04-019
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	7.2	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Bis(2-chloroethyl)ether	ND	5.9	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Bis(2-chloroisopropyl)ether	ND	5.6	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Bis(2-ethylhexyl)phthalate	ND	7.0	24	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
4-Bromophenyl phenyl ether	ND	5.7	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Butyl benzyl phthalate	ND	5.0	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Carbazole	ND	5.7	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
4-Chloro-3-methylphenol	ND	7.5	24	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
4-Chloroaniline	ND	6.9	24	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2-Chloronaphthalene	ND	6.1	12	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2-Chlorophenol	ND	6.1	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
4-Chlorophenyl phenyl ether	ND	5.3	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Chrysene	ND	4.3	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Di-n-butyl phthalate	ND	7.3	20	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Di-n-octyl phthalate	ND	5.0	20	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Dibenz(a,h)anthracene	ND	4.4	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Dibenzofuran	ND	6.4	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
1,2-Dichlorobenzene	ND	5.9	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
1,3-Dichlorobenzene	ND	5.1	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
1,4-Dichlorobenzene	ND	5.2	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
3,3´-Dichlorobenzidine	ND	4.3	12	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Diethyl phthalate	ND	7.0	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Dimethyl phthalate	ND	6.5	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2,4-Dichlorophenol	ND	5.7	20	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2,4-Dimethylphenol	ND	5.4	15	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
4,6-Dinitro-2-methylphenol	ND	4.5	20	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2,4-Dinitrophenol	ND	3.5	24	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2,4-Dinitrotoluene	ND	5.8	24	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2,6-Dinitrotoluene	ND	6.4	24	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Fluoranthene	ND	5.5	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Fluorene	ND	5.6	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Hexachlorobenzene	ND	6.0	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Hexachlorobutadiene	ND	6.8	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Hexachlorocyclopentadiene	ND	5.6	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Hexachloroethane	ND	5.4	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Indeno(1,2,3-cd)pyrene	ND	4.9	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Isophorone	ND	7.2	20	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
1-Methylnaphthalene	ND	7.3	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2-Methylnaphthalene	ND	7.1	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 10:00:00 AM
Lab ID: 1910E04-019
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	5.8	20	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
3+4-Methylphenol	ND	6.0	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
N-Nitrosodi-n-propylamine	ND	7.0	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
N-Nitrosodiphenylamine	ND	5.1	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Naphthalene	ND	7.4	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2-Nitroaniline	ND	7.0	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
3-Nitroaniline	ND	6.7	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
4-Nitroaniline	ND	6.2	20	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Nitrobenzene	ND	6.8	20	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2-Nitrophenol	ND	6.7	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
4-Nitrophenol	ND	6.6	12	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Pentachlorophenol	ND	5.0	20	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Phenanthrene	ND	5.3	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Phenol	ND	6.1	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Pyrene	ND	4.6	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Pyridine	ND	5.9	20	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
1,2,4-Trichlorobenzene	ND	7.6	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2,4,5-Trichlorophenol	ND	6.3	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
2,4,6-Trichlorophenol	ND	5.1	9.8	D	mg/Kg	5	11/4/2019 8:38:23 PM	48494
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	5	11/4/2019 8:38:23 PM	48494
Surr: Phenol-d5	0		18.5-101	SD	%Rec	5	11/4/2019 8:38:23 PM	48494
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	5	11/4/2019 8:38:23 PM	48494
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	5	11/4/2019 8:38:23 PM	48494
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	5	11/4/2019 8:38:23 PM	48494
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	5	11/4/2019 8:38:23 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0025	0.015		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Toluene	ND	0.0029	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Ethylbenzene	ND	0.0018	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0072	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0028	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0029	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0031	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0028	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Naphthalene	ND	0.0061	0.061		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1-Methylnaphthalene	ND	0.017	0.12		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
2-Methylnaphthalene	ND	0.013	0.12		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Acetone	ND	0.025	0.46		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Bromobenzene	ND	0.0029	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 10:00:00 AM
Lab ID: 1910E04-019
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0028	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Bromoform	ND	0.0027	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Bromomethane	ND	0.0073	0.091		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
2-Butanone	ND	0.035	0.30		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Carbon disulfide	ND	0.010	0.30		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Carbon tetrachloride	ND	0.0029	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Chlorobenzene	ND	0.0039	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Chloroethane	ND	0.0045	0.061		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Chloroform	ND	0.0024	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Chloromethane	ND	0.0029	0.091		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
2-Chlorotoluene	ND	0.0026	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
4-Chlorotoluene	ND	0.0025	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
cis-1,2-DCE	ND	0.0042	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
cis-1,3-Dichloropropene	ND	0.0026	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0031	0.061		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Dibromochloromethane	ND	0.0022	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Dibromomethane	ND	0.0033	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,2-Dichlorobenzene	ND	0.0025	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,3-Dichlorobenzene	ND	0.0026	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,4-Dichlorobenzene	ND	0.0025	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Dichlorodifluoromethane	ND	0.0070	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,1-Dichloroethane	ND	0.0019	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,1-Dichloroethene	ND	0.012	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,2-Dichloropropane	ND	0.0022	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,3-Dichloropropane	ND	0.0033	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
2,2-Dichloropropane	ND	0.0099	0.061		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,1-Dichloropropene	ND	0.0028	0.061		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Hexachlorobutadiene	ND	0.0031	0.061		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
2-Hexanone	ND	0.0050	0.30		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Isopropylbenzene	ND	0.0022	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
4-Isopropyltoluene	ND	0.0025	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
4-Methyl-2-pentanone	ND	0.0057	0.30		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Methylene chloride	0.0083	0.0054	0.091	J	mg/Kg	1	10/29/2019 8:33:27 PM	A64063
n-Butylbenzene	ND	0.0028	0.091		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
n-Propylbenzene	ND	0.0024	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
sec-Butylbenzene	ND	0.0034	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Styrene	ND	0.0024	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
tert-Butylbenzene	ND	0.0029	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0021	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 10:00:00 AM
Lab ID: 1910E04-019
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0031	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Tetrachloroethene (PCE)	ND	0.0024	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
trans-1,2-DCE	ND	0.0028	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
trans-1,3-Dichloropropene	ND	0.0032	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0027	0.061		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0031	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,1,1-Trichloroethane	ND	0.0027	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,1,2-Trichloroethane	ND	0.0021	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Trichloroethene (TCE)	ND	0.0035	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Trichlorofluoromethane	ND	0.010	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
1,2,3-Trichloropropane	ND	0.0049	0.061		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Vinyl chloride	ND	0.0020	0.030		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Xylenes, Total	ND	0.0077	0.061		mg/Kg	1	10/29/2019 8:33:27 PM	A64063
Surr: Dibromofluoromethane	108		70-130		%Rec	1	10/29/2019 8:33:27 PM	A64063
Surr: 1,2-Dichloroethane-d4	93.8		70-130		%Rec	1	10/29/2019 8:33:27 PM	A64063
Surr: Toluene-d8	98.1		70-130		%Rec	1	10/29/2019 8:33:27 PM	A64063
Surr: 4-Bromofluorobenzene	87.2		70-130		%Rec	1	10/29/2019 8:33:27 PM	A64063

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RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 10:15:00 AM
Lab ID: 1910E04-020
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	21	1.7	8.6		mg/Kg	1	11/1/2019 2:56:04 PM	48458
Motor Oil Range Organics (MRO)	ND	43	43		mg/Kg	1	11/1/2019 2:56:04 PM	48458
Surr: DNOP	110	0	70-130		%Rec	1	11/1/2019 2:56:04 PM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.81	2.7		mg/Kg	1	10/30/2019 2:38:06 AM	G64058
Surr: BFB	113	0	77.4-118		%Rec	1	10/30/2019 2:38:06 AM	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0051	0.0018	0.033	J	mg/Kg	1	11/4/2019 7:04:12 PM	48570
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.73	4.9		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Arsenic	ND	2.8	4.9		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Barium	150	0.046	0.20		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Beryllium	1.3	0.018	0.30		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Cadmium	ND	0.048	0.20		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Chromium	16	0.16	0.59		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Cobalt	5.5	0.21	0.59		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Iron	18000	72	250		mg/Kg	100	11/20/2019 4:45:37 PM	48434
Lead	3.4	0.48	0.49		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Manganese	360	0.041	0.20		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Nickel	13	0.30	0.99		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Selenium	ND	2.5	4.9		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Silver	ND	0.063	0.49		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Vanadium	22	0.13	4.9		mg/Kg	2	11/19/2019 5:47:17 PM	48434
Zinc	23	0.78	4.9		mg/Kg	2	11/19/2019 5:47:17 PM	48434
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.24	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Acenaphthylene	ND	0.22	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Aniline	ND	0.25	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Anthracene	ND	0.21	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Azobenzene	ND	0.28	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Benz(a)anthracene	ND	0.19	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Benzo(a)pyrene	ND	0.18	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Benzo(b)fluoranthene	ND	0.18	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Benzo(g,h,i)perylene	ND	0.17	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Benzo(k)fluoranthene	ND	0.18	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Benzoic acid	ND	0.20	0.99		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Benzyl alcohol	ND	0.25	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 10:15:00 AM
Lab ID: 1910E04-020
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.29	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Bis(2-chloroethyl)ether	ND	0.24	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.23	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.28	0.99		mg/Kg	1	11/4/2019 9:07:19 PM	48494
4-Bromophenyl phenyl ether	ND	0.23	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Butyl benzyl phthalate	ND	0.20	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Carbazole	ND	0.23	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
4-Chloro-3-methylphenol	ND	0.30	0.99		mg/Kg	1	11/4/2019 9:07:19 PM	48494
4-Chloroaniline	ND	0.28	0.99		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2-Chloronaphthalene	ND	0.25	0.50		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2-Chlorophenol	ND	0.25	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
4-Chlorophenyl phenyl ether	ND	0.22	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Chrysene	ND	0.17	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Di-n-butyl phthalate	ND	0.30	0.79		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Di-n-octyl phthalate	ND	0.20	0.79		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Dibenz(a,h)anthracene	ND	0.18	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Dibenzofuran	ND	0.26	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
1,2-Dichlorobenzene	ND	0.24	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
1,3-Dichlorobenzene	ND	0.21	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
1,4-Dichlorobenzene	ND	0.21	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
3,3´-Dichlorobenzidine	ND	0.18	0.50		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Diethyl phthalate	ND	0.28	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Dimethyl phthalate	ND	0.26	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2,4-Dichlorophenol	ND	0.23	0.79		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2,4-Dimethylphenol	ND	0.22	0.59		mg/Kg	1	11/4/2019 9:07:19 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.18	0.79		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2,4-Dinitrophenol	ND	0.14	0.99		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2,4-Dinitrotoluene	ND	0.23	0.99		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2,6-Dinitrotoluene	ND	0.26	0.99		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Fluoranthene	ND	0.22	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Fluorene	ND	0.23	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Hexachlorobenzene	ND	0.25	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Hexachlorobutadiene	ND	0.28	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Hexachlorocyclopentadiene	ND	0.23	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Hexachloroethane	ND	0.22	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.20	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Isophorone	ND	0.29	0.79		mg/Kg	1	11/4/2019 9:07:19 PM	48494
1-Methylnaphthalene	ND	0.30	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2-Methylnaphthalene	ND	0.29	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 10:15:00 AM
Lab ID: 1910E04-020
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.23	0.79		mg/Kg	1	11/4/2019 9:07:19 PM	48494
3+4-Methylphenol	ND	0.24	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
N-Nitrosodi-n-propylamine	ND	0.28	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
N-Nitrosodiphenylamine	ND	0.21	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Naphthalene	ND	0.30	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2-Nitroaniline	ND	0.28	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
3-Nitroaniline	ND	0.27	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
4-Nitroaniline	ND	0.25	0.79		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Nitrobenzene	ND	0.27	0.79		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2-Nitrophenol	ND	0.27	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
4-Nitrophenol	ND	0.27	0.50		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Pentachlorophenol	ND	0.20	0.79		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Phenanthrene	ND	0.21	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Phenol	ND	0.25	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Pyrene	ND	0.19	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Pyridine	ND	0.24	0.79		mg/Kg	1	11/4/2019 9:07:19 PM	48494
1,2,4-Trichlorobenzene	ND	0.31	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2,4,5-Trichlorophenol	ND	0.26	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
2,4,6-Trichlorophenol	ND	0.21	0.40		mg/Kg	1	11/4/2019 9:07:19 PM	48494
Surr: 2-Fluorophenol	70.8		26.7-85.9		%Rec	1	11/4/2019 9:07:19 PM	48494
Surr: Phenol-d5	71.6		18.5-101		%Rec	1	11/4/2019 9:07:19 PM	48494
Surr: 2,4,6-Tribromophenol	71.0		35.8-85.6		%Rec	1	11/4/2019 9:07:19 PM	48494
Surr: Nitrobenzene-d5	72.7		40.8-95.2		%Rec	1	11/4/2019 9:07:19 PM	48494
Surr: 2-Fluorobiphenyl	67.6		34.7-85.2		%Rec	1	11/4/2019 9:07:19 PM	48494
Surr: 4-Terphenyl-d14	81.8		37.4-91.3		%Rec	1	11/4/2019 9:07:19 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0022	0.013		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Toluene	ND	0.0026	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Ethylbenzene	ND	0.0016	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0064	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,2,4-Trimethylbenzene	ND	0.0025	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,3,5-Trimethylbenzene	ND	0.0026	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,2-Dichloroethane (EDC)	ND	0.0027	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,2-Dibromoethane (EDB)	ND	0.0025	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Naphthalene	ND	0.0054	0.054		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1-Methylnaphthalene	ND	0.015	0.11		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Acetone	ND	0.022	0.40		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Bromobenzene	ND	0.0026	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063

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Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 10:15:00 AM
Lab ID: 1910E04-020
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0025	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Bromoform	ND	0.0024	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Bromomethane	ND	0.0065	0.081		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
2-Butanone	ND	0.031	0.27		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Carbon disulfide	ND	0.0089	0.27		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Carbon tetrachloride	ND	0.0025	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Chlorobenzene	ND	0.0034	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Chloroethane	ND	0.0040	0.054		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Chloroform	ND	0.0022	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Chloromethane	ND	0.0026	0.081		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
2-Chlorotoluene	ND	0.0023	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
4-Chlorotoluene	ND	0.0022	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
cis-1,2-DCE	ND	0.0037	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
cis-1,3-Dichloropropene	ND	0.0023	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,2-Dibromo-3-chloropropane	ND	0.0028	0.054		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Dibromochloromethane	ND	0.0019	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Dibromomethane	ND	0.0029	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,2-Dichlorobenzene	ND	0.0022	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,3-Dichlorobenzene	ND	0.0023	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,4-Dichlorobenzene	ND	0.0022	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Dichlorodifluoromethane	ND	0.0062	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,1-Dichloroethane	ND	0.0017	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,1-Dichloroethene	ND	0.011	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,2-Dichloropropane	ND	0.0020	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,3-Dichloropropane	ND	0.0029	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
2,2-Dichloropropane	ND	0.0087	0.054		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,1-Dichloropropene	ND	0.0024	0.054		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Hexachlorobutadiene	ND	0.0027	0.054		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
2-Hexanone	ND	0.0045	0.27		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Isopropylbenzene	ND	0.0019	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
4-Isopropyltoluene	ND	0.0022	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
4-Methyl-2-pentanone	ND	0.0051	0.27		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Methylene chloride	ND	0.0048	0.081		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
n-Butylbenzene	ND	0.0025	0.081		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
n-Propylbenzene	ND	0.0021	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
sec-Butylbenzene	ND	0.0030	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Styrene	ND	0.0021	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
tert-Butylbenzene	ND	0.0025	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,1,1,2-Tetrachloroethane	ND	0.0018	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 10:15:00 AM
Lab ID: 1910E04-020
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0027	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Tetrachloroethene (PCE)	ND	0.0021	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
trans-1,2-DCE	ND	0.0025	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
trans-1,3-Dichloropropene	ND	0.0028	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,2,3-Trichlorobenzene	ND	0.0024	0.054		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,2,4-Trichlorobenzene	ND	0.0027	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,1,1-Trichloroethane	ND	0.0024	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,1,2-Trichloroethane	ND	0.0019	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Trichloroethene (TCE)	ND	0.0031	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Trichlorofluoromethane	ND	0.0091	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
1,2,3-Trichloropropane	ND	0.0044	0.054		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Vinyl chloride	ND	0.0018	0.027		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Xylenes, Total	ND	0.0068	0.054		mg/Kg	1	10/29/2019 9:02:23 PM	A64063
Surr: Dibromofluoromethane	101		70-130		%Rec	1	10/29/2019 9:02:23 PM	A64063
Surr: 1,2-Dichloroethane-d4	87.2		70-130		%Rec	1	10/29/2019 9:02:23 PM	A64063
Surr: Toluene-d8	98.4		70-130		%Rec	1	10/29/2019 9:02:23 PM	A64063
Surr: 4-Bromofluorobenzene	88.4		70-130		%Rec	1	10/29/2019 9:02:23 PM	A64063

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 10:30:00 AM
Lab ID: 1910E04-021
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	2.7	1.3	6.7	J	mg/Kg	1	10/31/2019 1:38:55 PM	48458
Motor Oil Range Organics (MRO)	ND	34	34		mg/Kg	1	10/31/2019 1:38:55 PM	48458
Surr: DNOP	100	0	70-130		%Rec	1	10/31/2019 1:38:55 PM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.83	2.7		mg/Kg	1	10/30/2019 3:01:34 AM	G64058
Surr: BFB	105	0	77.4-118		%Rec	1	10/30/2019 3:01:34 AM	G64058
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0035	0.0018	0.032	J	mg/Kg	1	11/4/2019 7:06:11 PM	48570
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.77	5.2		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Arsenic	3.5	3.0	5.2	J	mg/Kg	2	11/19/2019 5:50:24 PM	48434
Barium	240	0.049	0.21		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Beryllium	1.2	0.019	0.31		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Cadmium	ND	0.051	0.21		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Chromium	12	0.17	0.63		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Cobalt	5.2	0.22	0.63		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Iron	17000	76	260		mg/Kg	100	11/20/2019 4:47:11 PM	48434
Lead	3.0	0.51	0.52		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Manganese	350	0.044	0.21		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Nickel	12	0.31	1.0		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Selenium	ND	2.6	5.2		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Silver	ND	0.067	0.52		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Vanadium	20	0.14	5.2		mg/Kg	2	11/19/2019 5:50:24 PM	48434
Zinc	17	0.83	5.2		mg/Kg	2	11/19/2019 5:50:24 PM	48434
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Acenaphthylene	ND	0.11	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Aniline	ND	0.12	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Anthracene	ND	0.10	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Azobenzene	ND	0.14	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Benz(a)anthracene	ND	0.094	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Benzo(a)pyrene	ND	0.086	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Benzo(b)fluoranthene	ND	0.086	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Benzo(g,h,i)perylene	ND	0.083	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Benzo(k)fluoranthene	ND	0.088	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Benzoic acid	ND	0.10	0.49		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 10:30:00 AM
Lab ID: 1910E04-021
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	11/4/2019 9:36:13 PM	48494
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Butyl benzyl phthalate	ND	0.099	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Carbazole	ND	0.11	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	11/4/2019 9:36:13 PM	48494
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
4-Chlorophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Chrysene	ND	0.086	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Di-n-butyl phthalate	ND	0.15	0.39		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Di-n-octyl phthalate	ND	0.099	0.39		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Dibenz(a,h)anthracene	ND	0.088	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Dibenzofuran	ND	0.13	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
1,2-Dichlorobenzene	ND	0.12	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
3,3´-Dichlorobenzidine	ND	0.086	0.24		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	11/4/2019 9:36:13 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2,4-Dinitrotoluene	ND	0.11	0.49		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Fluoranthene	ND	0.11	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Fluorene	ND	0.11	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Hexachlorobutadiene	ND	0.14	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.097	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Isophorone	ND	0.14	0.39		mg/Kg	1	11/4/2019 9:36:13 PM	48494
1-Methylnaphthalene	ND	0.15	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 10:30:00 AM
Lab ID: 1910E04-021
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	11/4/2019 9:36:13 PM	48494
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Naphthalene	ND	0.15	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Nitrobenzene	ND	0.13	0.39		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Phenanthrene	ND	0.11	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Phenol	ND	0.12	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Pyrene	ND	0.091	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Pyridine	ND	0.12	0.39		mg/Kg	1	11/4/2019 9:36:13 PM	48494
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2,4,5-Trichlorophenol	ND	0.13	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	11/4/2019 9:36:13 PM	48494
Surr: 2-Fluorophenol	71.5		26.7-85.9		%Rec	1	11/4/2019 9:36:13 PM	48494
Surr: Phenol-d5	76.6		18.5-101		%Rec	1	11/4/2019 9:36:13 PM	48494
Surr: 2,4,6-Tribromophenol	70.6		35.8-85.6		%Rec	1	11/4/2019 9:36:13 PM	48494
Surr: Nitrobenzene-d5	79.2		40.8-95.2		%Rec	1	11/4/2019 9:36:13 PM	48494
Surr: 2-Fluorobiphenyl	70.9		34.7-85.2		%Rec	1	11/4/2019 9:36:13 PM	48494
Surr: 4-Terphenyl-d14	73.4		37.4-91.3		%Rec	1	11/4/2019 9:36:13 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0022	0.014		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Toluene	ND	0.0026	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Ethylbenzene	ND	0.0016	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0065	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,2,4-Trimethylbenzene	ND	0.0025	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,3,5-Trimethylbenzene	ND	0.0027	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,2-Dichloroethane (EDC)	ND	0.0028	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,2-Dibromoethane (EDB)	ND	0.0025	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Naphthalene	ND	0.0055	0.055		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1-Methylnaphthalene	ND	0.016	0.11		mg/Kg	1	10/29/2019 11:29:03 P	A64063
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Acetone	ND	0.023	0.41		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Bromobenzene	ND	0.0026	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 10:30:00 AM
Lab ID: 1910E04-021
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0025	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Bromoform	ND	0.0025	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Bromomethane	ND	0.0066	0.082		mg/Kg	1	10/29/2019 11:29:03 P	A64063
2-Butanone	ND	0.032	0.27		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Carbon disulfide	ND	0.0091	0.27		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Carbon tetrachloride	ND	0.0026	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Chlorobenzene	ND	0.0035	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Chloroethane	ND	0.0040	0.055		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Chloroform	ND	0.0022	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Chloromethane	ND	0.0026	0.082		mg/Kg	1	10/29/2019 11:29:03 P	A64063
2-Chlorotoluene	ND	0.0024	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
4-Chlorotoluene	ND	0.0023	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
cis-1,2-DCE	ND	0.0038	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
cis-1,3-Dichloropropene	ND	0.0023	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,2-Dibromo-3-chloropropane	ND	0.0028	0.055		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Dibromochloromethane	ND	0.0020	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Dibromomethane	ND	0.0030	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,2-Dichlorobenzene	ND	0.0023	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,3-Dichlorobenzene	ND	0.0024	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,4-Dichlorobenzene	ND	0.0023	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Dichlorodifluoromethane	ND	0.0064	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,1-Dichloroethane	ND	0.0018	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,1-Dichloroethene	ND	0.011	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,2-Dichloropropane	ND	0.0020	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,3-Dichloropropane	ND	0.0030	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
2,2-Dichloropropane	ND	0.0089	0.055		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,1-Dichloropropene	ND	0.0025	0.055		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Hexachlorobutadiene	ND	0.0028	0.055		mg/Kg	1	10/29/2019 11:29:03 P	A64063
2-Hexanone	ND	0.0046	0.27		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Isopropylbenzene	ND	0.0020	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
4-Isopropyltoluene	ND	0.0023	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
4-Methyl-2-pentanone	ND	0.0052	0.27		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Methylene chloride	ND	0.0049	0.082		mg/Kg	1	10/29/2019 11:29:03 P	A64063
n-Butylbenzene	ND	0.0026	0.082		mg/Kg	1	10/29/2019 11:29:03 P	A64063
n-Propylbenzene	ND	0.0022	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
sec-Butylbenzene	ND	0.0031	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Styrene	ND	0.0022	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
tert-Butylbenzene	ND	0.0026	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,1,1,2-Tetrachloroethane	ND	0.0019	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-10 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 10:30:00 AM
Lab ID: 1910E04-021
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0028	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Tetrachloroethene (PCE)	ND	0.0022	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
trans-1,2-DCE	ND	0.0025	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
trans-1,3-Dichloropropene	ND	0.0029	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,2,3-Trichlorobenzene	ND	0.0024	0.055		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,2,4-Trichlorobenzene	ND	0.0028	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,1,1-Trichloroethane	ND	0.0025	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,1,2-Trichloroethane	ND	0.0019	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Trichloroethene (TCE)	ND	0.0032	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Trichlorofluoromethane	ND	0.0093	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
1,2,3-Trichloropropane	ND	0.0044	0.055		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Vinyl chloride	ND	0.0018	0.027		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Xylenes, Total	ND	0.0069	0.055		mg/Kg	1	10/29/2019 11:29:03 P	A64063
Surr: Dibromofluoromethane	111		70-130		%Rec	1	10/29/2019 11:29:03 P	A64063
Surr: 1,2-Dichloroethane-d4	96.4		70-130		%Rec	1	10/29/2019 11:29:03 P	A64063
Surr: Toluene-d8	100		70-130		%Rec	1	10/29/2019 11:29:03 P	A64063
Surr: 4-Bromofluorobenzene	89.7		70-130		%Rec	1	10/29/2019 11:29:03 P	A64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 11:30:00 AM
Lab ID: 1910E04-022
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	4300	90	450		mg/Kg	50	11/1/2019 2:46:49 PM	48458
Motor Oil Range Organics (MRO)	4400	2200	2200		mg/Kg	50	11/1/2019 2:46:49 PM	48458
Surr: DNOP	0	0	70-130	S	%Rec	50	11/1/2019 2:46:49 PM	48458
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.2	4.1		mg/Kg	1	10/30/2019 8:30:31 PM	G64077
Surr: BFB	89.4	0	77.4-118		%Rec	1	10/30/2019 8:30:31 PM	G64077
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	1.1	0.0091	0.16		mg/Kg	5	11/4/2019 7:12:16 PM	48570
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.74	5.1		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Arsenic	ND	2.9	5.1		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Barium	310	0.047	0.20		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Beryllium	1.3	0.019	0.30		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Chromium	81	0.16	0.61		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Cobalt	7.2	0.21	0.61		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Iron	21000	74	250		mg/Kg	100	11/20/2019 4:48:45 PM	48434
Lead	3.8	0.49	0.51		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Manganese	300	0.042	0.20		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Nickel	16	0.30	1.0		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Selenium	ND	2.5	5.1		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Silver	ND	0.065	0.51		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Vanadium	37	0.13	5.1		mg/Kg	2	11/19/2019 6:01:13 PM	48434
Zinc	140	0.80	5.1		mg/Kg	2	11/19/2019 6:01:13 PM	48434
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	5.8	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Acenaphthylene	ND	5.3	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Aniline	ND	6.2	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Anthracene	ND	5.2	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Azobenzene	ND	6.7	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Benz(a)anthracene	ND	4.6	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Benzo(a)pyrene	ND	4.3	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Benzo(b)fluoranthene	ND	4.3	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Benzo(g,h,i)perylene	ND	4.1	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Benzo(k)fluoranthene	ND	4.4	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Benzoic acid	ND	5.0	24	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Benzyl alcohol	ND	6.0	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 11:30:00 AM
Lab ID: 1910E04-022
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	7.1	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Bis(2-chloroethyl)ether	ND	5.9	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Bis(2-chloroisopropyl)ether	ND	5.5	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Bis(2-ethylhexyl)phthalate	ND	6.9	24	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
4-Bromophenyl phenyl ether	ND	5.7	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Butyl benzyl phthalate	ND	4.9	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Carbazole	ND	5.7	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
4-Chloro-3-methylphenol	ND	7.4	24	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
4-Chloroaniline	ND	6.8	24	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2-Chloronaphthalene	ND	6.0	12	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2-Chlorophenol	ND	6.0	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
4-Chlorophenyl phenyl ether	ND	5.3	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Chrysene	ND	4.3	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Di-n-butyl phthalate	ND	7.2	19	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Di-n-octyl phthalate	ND	4.9	19	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Dibenz(a,h)anthracene	ND	4.4	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Dibenzofuran	ND	6.3	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
1,2-Dichlorobenzene	ND	5.8	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
1,3-Dichlorobenzene	ND	5.1	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
1,4-Dichlorobenzene	ND	5.1	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
3,3´-Dichlorobenzidine	ND	4.3	12	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Diethyl phthalate	ND	6.9	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Dimethyl phthalate	ND	6.4	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2,4-Dichlorophenol	ND	5.6	19	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2,4-Dimethylphenol	ND	5.3	14	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
4,6-Dinitro-2-methylphenol	ND	4.5	19	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2,4-Dinitrophenol	ND	3.5	24	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2,4-Dinitrotoluene	ND	5.7	24	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2,6-Dinitrotoluene	ND	6.3	24	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Fluoranthene	ND	5.4	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Fluorene	ND	5.5	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Hexachlorobenzene	ND	6.0	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Hexachlorobutadiene	ND	6.7	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Hexachlorocyclopentadiene	ND	5.5	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Hexachloroethane	ND	5.4	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Indeno(1,2,3-cd)pyrene	ND	4.8	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Isophorone	ND	7.1	19	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
1-Methylnaphthalene	ND	7.2	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2-Methylnaphthalene	ND	7.0	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 11:30:00 AM
Lab ID: 1910E04-022
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	5.7	19	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
3+4-Methylphenol	ND	5.9	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
N-Nitrosodi-n-propylamine	ND	6.9	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
N-Nitrosodiphenylamine	ND	5.1	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Naphthalene	ND	7.3	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2-Nitroaniline	ND	6.9	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
3-Nitroaniline	ND	6.7	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
4-Nitroaniline	ND	6.2	19	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Nitrobenzene	ND	6.7	19	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2-Nitrophenol	ND	6.6	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
4-Nitrophenol	ND	6.5	12	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Pentachlorophenol	ND	5.0	19	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Phenanthrene	ND	5.2	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Phenol	ND	6.0	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Pyrene	ND	4.5	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Pyridine	ND	5.8	19	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
1,2,4-Trichlorobenzene	ND	7.5	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2,4,5-Trichlorophenol	ND	6.2	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
2,4,6-Trichlorophenol	ND	5.1	9.6	D	mg/Kg	5	11/4/2019 10:05:05 PM	48494
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	5	11/4/2019 10:05:05 PM	48494
Surr: Phenol-d5	0		18.5-101	SD	%Rec	5	11/4/2019 10:05:05 PM	48494
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	5	11/4/2019 10:05:05 PM	48494
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	5	11/4/2019 10:05:05 PM	48494
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	5	11/4/2019 10:05:05 PM	48494
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	5	11/4/2019 10:05:05 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0033	0.020		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Toluene	ND	0.0039	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Ethylbenzene	ND	0.0024	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0096	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,2,4-Trimethylbenzene	ND	0.0037	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,3,5-Trimethylbenzene	ND	0.0039	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,2-Dichloroethane (EDC)	ND	0.0041	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,2-Dibromoethane (EDB)	ND	0.0037	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Naphthalene	ND	0.0081	0.081		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1-Methylnaphthalene	ND	0.023	0.16		mg/Kg	1	10/29/2019 11:58:35 P	A64063
2-Methylnaphthalene	ND	0.018	0.16		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Acetone	ND	0.034	0.61		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Bromobenzene	ND	0.0039	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 11:30:00 AM
Lab ID: 1910E04-022
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0037	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Bromoform	ND	0.0037	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Bromomethane	ND	0.0098	0.12		mg/Kg	1	10/29/2019 11:58:35 P	A64063
2-Butanone	ND	0.047	0.41		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Carbon disulfide	ND	0.013	0.41		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Carbon tetrachloride	ND	0.0039	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Chlorobenzene	ND	0.0052	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Chloroethane	ND	0.0060	0.081		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Chloroform	ND	0.0033	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Chloromethane	ND	0.0039	0.12		mg/Kg	1	10/29/2019 11:58:35 P	A64063
2-Chlorotoluene	ND	0.0035	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
4-Chlorotoluene	ND	0.0033	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
cis-1,2-DCE	ND	0.0056	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
cis-1,3-Dichloropropene	ND	0.0034	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,2-Dibromo-3-chloropropane	ND	0.0042	0.081		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Dibromochloromethane	ND	0.0029	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Dibromomethane	ND	0.0044	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,2-Dichlorobenzene	ND	0.0033	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,3-Dichlorobenzene	ND	0.0035	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,4-Dichlorobenzene	ND	0.0034	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Dichlorodifluoromethane	ND	0.0094	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,1-Dichloroethane	ND	0.0026	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,1-Dichloroethene	ND	0.016	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,2-Dichloropropane	ND	0.0030	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,3-Dichloropropane	ND	0.0044	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
2,2-Dichloropropane	ND	0.013	0.081		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,1-Dichloropropene	ND	0.0037	0.081		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Hexachlorobutadiene	ND	0.0041	0.081		mg/Kg	1	10/29/2019 11:58:35 P	A64063
2-Hexanone	ND	0.0067	0.41		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Isopropylbenzene	ND	0.0029	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
4-Isopropyltoluene	ND	0.0034	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
4-Methyl-2-pentanone	ND	0.0077	0.41		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Methylene chloride	0.011	0.0072	0.12	J	mg/Kg	1	10/29/2019 11:58:35 P	A64063
n-Butylbenzene	ND	0.0038	0.12		mg/Kg	1	10/29/2019 11:58:35 P	A64063
n-Propylbenzene	ND	0.0032	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
sec-Butylbenzene	ND	0.0046	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Styrene	ND	0.0032	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
tert-Butylbenzene	ND	0.0038	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,1,1,2-Tetrachloroethane	ND	0.0027	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 11:30:00 AM
Lab ID: 1910E04-022
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0041	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Tetrachloroethene (PCE)	ND	0.0032	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
trans-1,2-DCE	ND	0.0037	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
trans-1,3-Dichloropropene	ND	0.0043	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,2,3-Trichlorobenzene	ND	0.0036	0.081		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,2,4-Trichlorobenzene	ND	0.0041	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,1,1-Trichloroethane	ND	0.0037	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,1,2-Trichloroethane	ND	0.0029	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Trichloroethene (TCE)	ND	0.0047	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Trichlorofluoromethane	ND	0.014	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
1,2,3-Trichloropropane	ND	0.0066	0.081		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Vinyl chloride	ND	0.0027	0.041		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Xylenes, Total	ND	0.010	0.081		mg/Kg	1	10/29/2019 11:58:35 P	A64063
Surr: Dibromofluoromethane	107		70-130		%Rec	1	10/29/2019 11:58:35 P	A64063
Surr: 1,2-Dichloroethane-d4	95.2		70-130		%Rec	1	10/29/2019 11:58:35 P	A64063
Surr: Toluene-d8	97.2		70-130		%Rec	1	10/29/2019 11:58:35 P	A64063
Surr: 4-Bromofluorobenzene	89.7		70-130		%Rec	1	10/29/2019 11:58:35 P	A64063

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 11:45:00 AM
Lab ID: 1910E04-023
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.9	9.3		mg/Kg	1	10/30/2019 7:33:14 PM	48459
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	10/30/2019 7:33:14 PM	48459
Surr: DNOP	102	0	70-130		%Rec	1	10/30/2019 7:33:14 PM	48459
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.96	3.2		mg/Kg	1	10/30/2019 9:38:44 PM	G64077
Surr: BFB	92.0	0	77.4-118		%Rec	1	10/30/2019 9:38:44 PM	G64077
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0042	0.0018	0.033	J	mg/Kg	1	11/4/2019 7:14:14 PM	48570
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.74	5.1		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Arsenic	ND	2.9	5.1		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Barium	170	0.047	0.20		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Beryllium	1.4	0.019	0.30		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Chromium	16	0.16	0.61		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Cobalt	6.3	0.21	0.61		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Iron	22000	74	250		mg/Kg	100	11/20/2019 4:50:19 PM	48519
Lead	1.7	0.49	0.51		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Manganese	310	0.042	0.20		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Nickel	14	0.30	1.0		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Selenium	ND	2.5	5.1		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Silver	ND	0.065	0.51		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Vanadium	25	0.13	5.1		mg/Kg	2	11/19/2019 6:31:21 PM	48519
Zinc	21	0.80	5.1		mg/Kg	2	11/19/2019 6:31:21 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.24	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Acenaphthylene	ND	0.22	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Aniline	ND	0.26	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Anthracene	ND	0.22	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Azobenzene	ND	0.28	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Benz(a)anthracene	ND	0.19	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Benzo(a)pyrene	ND	0.18	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Benzo(b)fluoranthene	ND	0.18	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Benzo(g,h,i)perylene	ND	0.17	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Benzo(k)fluoranthene	ND	0.18	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Benzoic acid	ND	0.21	1.0		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Benzyl alcohol	ND	0.25	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494

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Qualifiers:

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ND	Not Detected at the Reporting Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 11:45:00 AM
Lab ID: 1910E04-023
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.30	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Bis(2-chloroethyl)ether	ND	0.25	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.23	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.29	1.0		mg/Kg	1	11/7/2019 4:07:35 PM	48494
4-Bromophenyl phenyl ether	ND	0.24	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Butyl benzyl phthalate	ND	0.21	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Carbazole	ND	0.24	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
4-Chloro-3-methylphenol	ND	0.31	1.0		mg/Kg	1	11/7/2019 4:07:35 PM	48494
4-Chloroaniline	ND	0.29	1.0		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2-Chloronaphthalene	ND	0.25	0.51		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2-Chlorophenol	ND	0.25	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
4-Chlorophenyl phenyl ether	ND	0.22	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Chrysene	ND	0.18	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Di-n-butyl phthalate	ND	0.30	0.81		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Di-n-octyl phthalate	ND	0.21	0.81		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Dibenz(a,h)anthracene	ND	0.18	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Dibenzofuran	ND	0.26	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
1,2-Dichlorobenzene	ND	0.24	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
1,3-Dichlorobenzene	ND	0.21	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
1,4-Dichlorobenzene	ND	0.22	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
3,3´-Dichlorobenzidine	ND	0.18	0.51		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Diethyl phthalate	ND	0.29	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Dimethyl phthalate	ND	0.27	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2,4-Dichlorophenol	ND	0.23	0.81		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2,4-Dimethylphenol	ND	0.22	0.61		mg/Kg	1	11/7/2019 4:07:35 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.19	0.81		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2,4-Dinitrophenol	ND	0.15	1.0		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2,4-Dinitrotoluene	ND	0.24	1.0		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2,6-Dinitrotoluene	ND	0.27	1.0		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Fluoranthene	ND	0.23	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Fluorene	ND	0.23	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Hexachlorobenzene	ND	0.25	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Hexachlorobutadiene	ND	0.28	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Hexachlorocyclopentadiene	ND	0.23	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Hexachloroethane	ND	0.23	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.20	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Isophorone	ND	0.30	0.81		mg/Kg	1	11/7/2019 4:07:35 PM	48494
1-Methylnaphthalene	ND	0.30	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2-Methylnaphthalene	ND	0.29	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494

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Qualifiers:

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 11:45:00 AM
Lab ID: 1910E04-023
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.24	0.81		mg/Kg	1	11/7/2019 4:07:35 PM	48494
3+4-Methylphenol	ND	0.25	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
N-Nitrosodi-n-propylamine	ND	0.29	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
N-Nitrosodiphenylamine	ND	0.21	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Naphthalene	ND	0.31	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2-Nitroaniline	ND	0.29	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
3-Nitroaniline	ND	0.28	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
4-Nitroaniline	ND	0.26	0.81		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Nitrobenzene	ND	0.28	0.81		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2-Nitrophenol	ND	0.28	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
4-Nitrophenol	ND	0.27	0.51		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Pentachlorophenol	ND	0.21	0.81		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Phenanthrene	ND	0.22	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Phenol	ND	0.25	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Pyrene	ND	0.19	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Pyridine	ND	0.24	0.81		mg/Kg	1	11/7/2019 4:07:35 PM	48494
1,2,4-Trichlorobenzene	ND	0.31	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2,4,5-Trichlorophenol	ND	0.26	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
2,4,6-Trichlorophenol	ND	0.21	0.40		mg/Kg	1	11/7/2019 4:07:35 PM	48494
Surr: 2-Fluorophenol	65.1		26.7-85.9		%Rec	1	11/7/2019 4:07:35 PM	48494
Surr: Phenol-d5	68.6		18.5-101		%Rec	1	11/7/2019 4:07:35 PM	48494
Surr: 2,4,6-Tribromophenol	73.8		35.8-85.6		%Rec	1	11/7/2019 4:07:35 PM	48494
Surr: Nitrobenzene-d5	74.9		40.8-95.2		%Rec	1	11/7/2019 4:07:35 PM	48494
Surr: 2-Fluorobiphenyl	75.4		34.7-85.2		%Rec	1	11/7/2019 4:07:35 PM	48494
Surr: 4-Terphenyl-d14	80.0		37.4-91.3		%Rec	1	11/7/2019 4:07:35 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0026	0.016		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Toluene	ND	0.0030	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Ethylbenzene	ND	0.0019	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Methyl tert-butyl ether (MTBE)	ND	0.0076	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,2,4-Trimethylbenzene	ND	0.0029	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,3,5-Trimethylbenzene	ND	0.0031	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,2-Dichloroethane (EDC)	ND	0.0033	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,2-Dibromoethane (EDB)	ND	0.0029	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Naphthalene	ND	0.0064	0.064		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1-Methylnaphthalene	ND	0.018	0.13		mg/Kg	1	10/30/2019 12:28:04 A	A64063
2-Methylnaphthalene	ND	0.014	0.13		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Acetone	ND	0.026	0.48		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Bromobenzene	ND	0.0031	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 11:45:00 AM
Lab ID: 1910E04-023
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0029	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Bromoform	ND	0.0029	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Bromomethane	ND	0.0077	0.096		mg/Kg	1	10/30/2019 12:28:04 A	A64063
2-Butanone	ND	0.037	0.32		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Carbon disulfide	ND	0.011	0.32		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Carbon tetrachloride	ND	0.0030	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Chlorobenzene	ND	0.0041	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Chloroethane	ND	0.0047	0.064		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Chloroform	ND	0.0026	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Chloromethane	ND	0.0030	0.096		mg/Kg	1	10/30/2019 12:28:04 A	A64063
2-Chlorotoluene	ND	0.0028	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
4-Chlorotoluene	ND	0.0026	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
cis-1,2-DCE	ND	0.0044	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
cis-1,3-Dichloropropene	ND	0.0027	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,2-Dibromo-3-chloropropane	ND	0.0033	0.064		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Dibromochloromethane	ND	0.0023	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Dibromomethane	ND	0.0034	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,2-Dichlorobenzene	ND	0.0026	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,3-Dichlorobenzene	ND	0.0028	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,4-Dichlorobenzene	ND	0.0027	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Dichlorodifluoromethane	ND	0.0074	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,1-Dichloroethane	ND	0.0020	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,1-Dichloroethene	ND	0.013	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,2-Dichloropropane	ND	0.0023	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,3-Dichloropropane	ND	0.0034	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
2,2-Dichloropropane	ND	0.010	0.064		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,1-Dichloropropene	ND	0.0029	0.064		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Hexachlorobutadiene	ND	0.0032	0.064		mg/Kg	1	10/30/2019 12:28:04 A	A64063
2-Hexanone	ND	0.0053	0.32		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Isopropylbenzene	ND	0.0023	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
4-Isopropyltoluene	ND	0.0026	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
4-Methyl-2-pentanone	ND	0.0060	0.32		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Methylene chloride	ND	0.0056	0.096		mg/Kg	1	10/30/2019 12:28:04 A	A64063
n-Butylbenzene	ND	0.0030	0.096		mg/Kg	1	10/30/2019 12:28:04 A	A64063
n-Propylbenzene	ND	0.0025	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
sec-Butylbenzene	ND	0.0036	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Styrene	ND	0.0025	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
tert-Butylbenzene	ND	0.0030	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,1,1,2-Tetrachloroethane	ND	0.0022	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 11:45:00 AM
Lab ID: 1910E04-023
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0032	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Tetrachloroethene (PCE)	ND	0.0025	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
trans-1,2-DCE	ND	0.0029	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
trans-1,3-Dichloropropene	ND	0.0034	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,2,3-Trichlorobenzene	ND	0.0028	0.064		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,2,4-Trichlorobenzene	ND	0.0032	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,1,1-Trichloroethane	ND	0.0029	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,1,2-Trichloroethane	ND	0.0022	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Trichloroethene (TCE)	ND	0.0037	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Trichlorofluoromethane	ND	0.011	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
1,2,3-Trichloropropane	ND	0.0052	0.064		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Vinyl chloride	ND	0.0021	0.032		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Xylenes, Total	ND	0.0080	0.064		mg/Kg	1	10/30/2019 12:28:04 A	A64063
Surr: Dibromofluoromethane	111		70-130		%Rec	1	10/30/2019 12:28:04 A	A64063
Surr: 1,2-Dichloroethane-d4	95.7		70-130		%Rec	1	10/30/2019 12:28:04 A	A64063
Surr: Toluene-d8	98.5		70-130		%Rec	1	10/30/2019 12:28:04 A	A64063
Surr: 4-Bromofluorobenzene	90.1		70-130		%Rec	1	10/30/2019 12:28:04 A	A64063

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 12:00:00 PM
Lab ID: 1910E04-024
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.9	9.5		mg/Kg	1	10/30/2019 9:00:47 PM	48459
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	10/30/2019 9:00:47 PM	48459
Surr: DNOP	96.1	0	70-130		%Rec	1	10/30/2019 9:00:47 PM	48459
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.91	3.0		mg/Kg	1	10/30/2019 10:01:26 P	G64077
Surr: BFB	92.1	0	77.4-118		%Rec	1	10/30/2019 10:01:26 P	G64077
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0028	0.0018	0.033	J	mg/Kg	1	11/4/2019 7:16:14 PM	48570
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Arsenic	ND	2.9	5.0		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Barium	230	0.047	0.20		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Beryllium	1.3	0.019	0.30		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Chromium	14	0.16	0.60		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Cobalt	5.7	0.21	0.60		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Iron	18000	73	250		mg/Kg	100	11/20/2019 4:51:54 PM	48519
Lead	2.7	0.49	0.50		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Manganese	320	0.042	0.20		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Nickel	13	0.30	1.0		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Selenium	ND	2.5	5.0		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Silver	ND	0.065	0.50		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Vanadium	22	0.13	5.0		mg/Kg	2	11/19/2019 6:34:29 PM	48519
Zinc	18	0.80	5.0		mg/Kg	2	11/19/2019 6:34:29 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Acenaphthylene	ND	0.11	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Aniline	ND	0.13	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Anthracene	ND	0.10	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Azobenzene	ND	0.14	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Benz(a)anthracene	ND	0.094	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Benzo(a)pyrene	ND	0.087	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Benzo(b)fluoranthene	ND	0.087	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Benzo(g,h,i)perylene	ND	0.084	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Benzo(k)fluoranthene	ND	0.089	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Benzoic acid	ND	0.10	0.49		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Benzyl alcohol	ND	0.12	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494

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Qualifiers:

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D	Sample Diluted Due to Matrix
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ND	Not Detected at the Reporting Limit
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 12:00:00 PM
Lab ID: 1910E04-024
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.11	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.14	0.49		mg/Kg	1	11/7/2019 4:36:19 PM	48494
4-Bromophenyl phenyl ether	ND	0.12	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Butyl benzyl phthalate	ND	0.10	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Carbazole	ND	0.11	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
4-Chloro-3-methylphenol	ND	0.15	0.49		mg/Kg	1	11/7/2019 4:36:19 PM	48494
4-Chloroaniline	ND	0.14	0.49		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2-Chlorophenol	ND	0.12	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Chrysene	ND	0.086	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Di-n-butyl phthalate	0.20	0.15	0.39	J	mg/Kg	1	11/7/2019 4:36:19 PM	48494
Di-n-octyl phthalate	ND	0.10	0.39		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Dibenz(a,h)anthracene	ND	0.089	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Dibenzofuran	ND	0.13	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
1,3-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
1,4-Dichlorobenzene	ND	0.10	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
3,3´-Dichlorobenzidine	ND	0.087	0.24		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Diethyl phthalate	ND	0.14	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Dimethyl phthalate	ND	0.13	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2,4-Dichlorophenol	ND	0.11	0.39		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	11/7/2019 4:36:19 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2,4-Dinitrophenol	ND	0.071	0.49		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2,6-Dinitrotoluene	ND	0.13	0.49		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Fluoranthene	ND	0.11	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Fluorene	ND	0.11	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Hexachlorobutadiene	ND	0.14	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Hexachloroethane	ND	0.11	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.097	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Isophorone	ND	0.14	0.39		mg/Kg	1	11/7/2019 4:36:19 PM	48494
1-Methylnaphthalene	ND	0.15	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 12:00:00 PM
Lab ID: 1910E04-024
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.12	0.39		mg/Kg	1	11/7/2019 4:36:19 PM	48494
3+4-Methylphenol	ND	0.12	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
N-Nitrosodi-n-propylamine	ND	0.14	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Naphthalene	ND	0.15	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
3-Nitroaniline	ND	0.14	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Nitrobenzene	ND	0.14	0.39		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Pentachlorophenol	ND	0.10	0.39		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Phenanthrene	ND	0.11	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Phenol	ND	0.12	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Pyrene	ND	0.092	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Pyridine	ND	0.12	0.39		mg/Kg	1	11/7/2019 4:36:19 PM	48494
1,2,4-Trichlorobenzene	ND	0.15	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2,4,5-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
2,4,6-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	11/7/2019 4:36:19 PM	48494
Surr: 2-Fluorophenol	51.4		26.7-85.9		%Rec	1	11/7/2019 4:36:19 PM	48494
Surr: Phenol-d5	60.0		18.5-101		%Rec	1	11/7/2019 4:36:19 PM	48494
Surr: 2,4,6-Tribromophenol	75.2		35.8-85.6		%Rec	1	11/7/2019 4:36:19 PM	48494
Surr: Nitrobenzene-d5	60.5		40.8-95.2		%Rec	1	11/7/2019 4:36:19 PM	48494
Surr: 2-Fluorobiphenyl	66.2		34.7-85.2		%Rec	1	11/7/2019 4:36:19 PM	48494
Surr: 4-Terphenyl-d14	77.0		37.4-91.3		%Rec	1	11/7/2019 4:36:19 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0025	0.015		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Toluene	ND	0.0029	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Ethylbenzene	ND	0.0017	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Methyl tert-butyl ether (MTBE)	ND	0.0071	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,2,4-Trimethylbenzene	ND	0.0027	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,3,5-Trimethylbenzene	ND	0.0029	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,2-Dichloroethane (EDC)	ND	0.0031	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,2-Dibromoethane (EDB)	ND	0.0027	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Naphthalene	ND	0.0060	0.060		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1-Methylnaphthalene	ND	0.017	0.12		mg/Kg	1	10/30/2019 12:57:35 A	B64063
2-Methylnaphthalene	ND	0.013	0.12		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Acetone	ND	0.025	0.45		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Bromobenzene	ND	0.0029	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 12:00:00 PM
Lab ID: 1910E04-024
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0027	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Bromoform	ND	0.0027	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Bromomethane	ND	0.0072	0.090		mg/Kg	1	10/30/2019 12:57:35 A	B64063
2-Butanone	ND	0.035	0.30		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Carbon disulfide	ND	0.0099	0.30		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Carbon tetrachloride	ND	0.0028	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Chlorobenzene	ND	0.0038	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Chloroethane	ND	0.0044	0.060		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Chloroform	ND	0.0024	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Chloromethane	ND	0.0029	0.090		mg/Kg	1	10/30/2019 12:57:35 A	B64063
2-Chlorotoluene	ND	0.0026	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
4-Chlorotoluene	ND	0.0025	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
cis-1,2-DCE	ND	0.0041	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
cis-1,3-Dichloropropene	ND	0.0025	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,2-Dibromo-3-chloropropane	ND	0.0031	0.060		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Dibromochloromethane	ND	0.0021	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Dibromomethane	ND	0.0032	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,2-Dichlorobenzene	ND	0.0025	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,3-Dichlorobenzene	ND	0.0026	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,4-Dichlorobenzene	ND	0.0025	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Dichlorodifluoromethane	ND	0.0070	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,1-Dichloroethane	ND	0.0019	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,1-Dichloroethene	ND	0.012	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,2-Dichloropropane	ND	0.0022	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,3-Dichloropropane	ND	0.0032	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
2,2-Dichloropropane	ND	0.0097	0.060		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,1-Dichloropropene	ND	0.0027	0.060		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Hexachlorobutadiene	ND	0.0030	0.060		mg/Kg	1	10/30/2019 12:57:35 A	B64063
2-Hexanone	ND	0.0050	0.30		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Isopropylbenzene	ND	0.0022	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
4-Isopropyltoluene	ND	0.0025	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
4-Methyl-2-pentanone	ND	0.0057	0.30		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Methylene chloride	ND	0.0053	0.090		mg/Kg	1	10/30/2019 12:57:35 A	B64063
n-Butylbenzene	ND	0.0028	0.090		mg/Kg	1	10/30/2019 12:57:35 A	B64063
n-Propylbenzene	ND	0.0024	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
sec-Butylbenzene	ND	0.0034	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Styrene	ND	0.0024	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
tert-Butylbenzene	ND	0.0028	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,1,1,2-Tetrachloroethane	ND	0.0020	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-11 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 12:00:00 PM
Lab ID: 1910E04-024
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0030	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Tetrachloroethene (PCE)	ND	0.0024	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
trans-1,2-DCE	ND	0.0027	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
trans-1,3-Dichloropropene	ND	0.0032	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,2,3-Trichlorobenzene	ND	0.0026	0.060		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,2,4-Trichlorobenzene	ND	0.0030	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,1,1-Trichloroethane	ND	0.0027	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,1,2-Trichloroethane	ND	0.0021	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Trichloroethene (TCE)	ND	0.0035	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Trichlorofluoromethane	ND	0.010	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
1,2,3-Trichloropropane	ND	0.0048	0.060		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Vinyl chloride	ND	0.0020	0.030		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Xylenes, Total	ND	0.0076	0.060		mg/Kg	1	10/30/2019 12:57:35 A	B64063
Surr: Dibromofluoromethane	112		70-130		%Rec	1	10/30/2019 12:57:35 A	B64063
Surr: 1,2-Dichloroethane-d4	97.2		70-130		%Rec	1	10/30/2019 12:57:35 A	B64063
Surr: Toluene-d8	97.6		70-130		%Rec	1	10/30/2019 12:57:35 A	B64063
Surr: 4-Bromofluorobenzene	92.4		70-130		%Rec	1	10/30/2019 12:57:35 A	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 12:55:00 PM
Lab ID: 1910E04-025
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	39	1.9	9.6		mg/Kg	1	10/31/2019 10:13:56 P	48459
Motor Oil Range Organics (MRO)	65	48	48		mg/Kg	1	10/31/2019 10:13:56 P	48459
Surr: DNOP	99.2	0	70-130		%Rec	1	10/31/2019 10:13:56 P	48459
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.0	3.4		mg/Kg	1	10/30/2019 10:24:03 P	G64077
Surr: BFB	89.7	0	77.4-118		%Rec	1	10/30/2019 10:24:03 P	G64077
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.056	0.0018	0.033		mg/Kg	1	11/4/2019 7:18:14 PM	48570
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/20/2019 4:53:29 PM	48519
Arsenic	ND	2.9	5.0		mg/Kg	2	11/19/2019 7:06:14 PM	48519
Barium	340	0.047	0.20		mg/Kg	2	11/20/2019 4:53:29 PM	48519
Beryllium	1.1	0.018	0.30		mg/Kg	2	11/19/2019 7:06:14 PM	48519
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 7:06:14 PM	48519
Chromium	15	0.16	0.60		mg/Kg	2	11/19/2019 7:06:14 PM	48519
Cobalt	5.4	0.21	0.60		mg/Kg	2	11/19/2019 7:06:14 PM	48519
Iron	17000	73	250		mg/Kg	100	11/20/2019 5:15:46 PM	48519
Lead	3.5	0.49	0.50		mg/Kg	2	11/19/2019 7:06:14 PM	48519
Manganese	520	0.10	0.50		mg/Kg	5	11/20/2019 5:09:25 PM	48519
Nickel	11	0.30	1.0		mg/Kg	2	11/19/2019 7:06:14 PM	48519
Selenium	ND	2.5	5.0		mg/Kg	2	11/20/2019 4:53:29 PM	48519
Silver	ND	0.064	0.50		mg/Kg	2	11/20/2019 4:53:29 PM	48519
Vanadium	26	0.13	5.0		mg/Kg	2	11/19/2019 7:06:14 PM	48519
Zinc	34	0.80	5.0		mg/Kg	2	11/19/2019 7:06:14 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.24	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Acenaphthylene	ND	0.22	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Aniline	ND	0.25	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Anthracene	ND	0.21	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Azobenzene	ND	0.28	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Benz(a)anthracene	ND	0.19	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Benzo(a)pyrene	ND	0.18	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Benzo(b)fluoranthene	ND	0.17	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Benzo(g,h,i)perylene	ND	0.17	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Benzo(k)fluoranthene	ND	0.18	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Benzoic acid	ND	0.20	0.99		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Benzyl alcohol	ND	0.24	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 12:55:00 PM
Lab ID: 1910E04-025
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.29	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Bis(2-chloroethyl)ether	ND	0.24	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Bis(2-chloroisopropyl)ether	ND	0.22	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Bis(2-ethylhexyl)phthalate	ND	0.28	0.99		mg/Kg	1	11/7/2019 5:05:04 PM	48494
4-Bromophenyl phenyl ether	ND	0.23	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Butyl benzyl phthalate	ND	0.20	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Carbazole	ND	0.23	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
4-Chloro-3-methylphenol	ND	0.30	0.99		mg/Kg	1	11/7/2019 5:05:04 PM	48494
4-Chloroaniline	ND	0.28	0.99		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2-Chloronaphthalene	ND	0.25	0.49		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2-Chlorophenol	ND	0.25	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
4-Chlorophenyl phenyl ether	ND	0.21	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Chrysene	ND	0.17	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Di-n-butyl phthalate	ND	0.29	0.79		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Di-n-octyl phthalate	ND	0.20	0.79		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Dibenz(a,h)anthracene	ND	0.18	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Dibenzofuran	ND	0.26	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
1,2-Dichlorobenzene	ND	0.24	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
1,3-Dichlorobenzene	ND	0.21	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
1,4-Dichlorobenzene	ND	0.21	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
3,3´-Dichlorobenzidine	ND	0.18	0.49		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Diethyl phthalate	ND	0.28	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Dimethyl phthalate	ND	0.26	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2,4-Dichlorophenol	ND	0.23	0.79		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2,4-Dimethylphenol	ND	0.22	0.59		mg/Kg	1	11/7/2019 5:05:04 PM	48494
4,6-Dinitro-2-methylphenol	ND	0.18	0.79		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2,4-Dinitrophenol	ND	0.14	0.99		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2,4-Dinitrotoluene	ND	0.23	0.99		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2,6-Dinitrotoluene	ND	0.26	0.99		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Fluoranthene	ND	0.22	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Fluorene	ND	0.22	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Hexachlorobenzene	ND	0.24	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Hexachlorobutadiene	ND	0.27	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Hexachlorocyclopentadiene	ND	0.23	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Hexachloroethane	ND	0.22	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Indeno(1,2,3-cd)pyrene	ND	0.20	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Isophorone	ND	0.29	0.79		mg/Kg	1	11/7/2019 5:05:04 PM	48494
1-Methylnaphthalene	ND	0.29	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2-Methylnaphthalene	ND	0.29	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 12:55:00 PM
Lab ID: 1910E04-025
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.23	0.79		mg/Kg	1	11/7/2019 5:05:04 PM	48494
3+4-Methylphenol	ND	0.24	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
N-Nitrosodi-n-propylamine	ND	0.28	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
N-Nitrosodiphenylamine	ND	0.21	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Naphthalene	ND	0.30	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2-Nitroaniline	ND	0.28	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
3-Nitroaniline	ND	0.27	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
4-Nitroaniline	ND	0.25	0.79		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Nitrobenzene	ND	0.27	0.79		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2-Nitrophenol	ND	0.27	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
4-Nitrophenol	ND	0.27	0.49		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Pentachlorophenol	ND	0.20	0.79		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Phenanthrene	ND	0.21	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Phenol	ND	0.25	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Pyrene	ND	0.19	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Pyridine	ND	0.24	0.79		mg/Kg	1	11/7/2019 5:05:04 PM	48494
1,2,4-Trichlorobenzene	ND	0.31	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2,4,5-Trichlorophenol	ND	0.26	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
2,4,6-Trichlorophenol	ND	0.21	0.39		mg/Kg	1	11/7/2019 5:05:04 PM	48494
Surr: 2-Fluorophenol	64.2		26.7-85.9		%Rec	1	11/7/2019 5:05:04 PM	48494
Surr: Phenol-d5	71.6		18.5-101		%Rec	1	11/7/2019 5:05:04 PM	48494
Surr: 2,4,6-Tribromophenol	71.4		35.8-85.6		%Rec	1	11/7/2019 5:05:04 PM	48494
Surr: Nitrobenzene-d5	71.5		40.8-95.2		%Rec	1	11/7/2019 5:05:04 PM	48494
Surr: 2-Fluorobiphenyl	76.1		34.7-85.2		%Rec	1	11/7/2019 5:05:04 PM	48494
Surr: 4-Terphenyl-d14	79.6		37.4-91.3		%Rec	1	11/7/2019 5:05:04 PM	48494
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0028	0.017		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Toluene	ND	0.0032	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Ethylbenzene	ND	0.0020	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Methyl tert-butyl ether (MTBE)	ND	0.0080	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,2,4-Trimethylbenzene	ND	0.0031	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,3,5-Trimethylbenzene	ND	0.0033	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,2-Dichloroethane (EDC)	ND	0.0034	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,2-Dibromoethane (EDB)	ND	0.0031	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Naphthalene	ND	0.0068	0.068		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1-Methylnaphthalene	ND	0.019	0.14		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
2-Methylnaphthalene	ND	0.015	0.14		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Acetone	ND	0.028	0.51		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Bromobenzene	ND	0.0032	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 12:55:00 PM
Lab ID: 1910E04-025
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0031	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Bromoform	ND	0.0031	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Bromomethane	ND	0.0082	0.10		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
2-Butanone	ND	0.039	0.34		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Carbon disulfide	ND	0.011	0.34		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Carbon tetrachloride	ND	0.0032	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Chlorobenzene	ND	0.0043	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Chloroethane	ND	0.0050	0.068		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Chloroform	ND	0.0027	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Chloromethane	ND	0.0032	0.10		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
2-Chlorotoluene	ND	0.0029	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
4-Chlorotoluene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
cis-1,2-DCE	ND	0.0046	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
cis-1,3-Dichloropropene	ND	0.0029	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,2-Dibromo-3-chloropropane	ND	0.0035	0.068		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Dibromochloromethane	ND	0.0024	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Dibromomethane	ND	0.0036	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,2-Dichlorobenzene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,3-Dichlorobenzene	ND	0.0029	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,4-Dichlorobenzene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Dichlorodifluoromethane	ND	0.0078	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,1-Dichloroethane	ND	0.0022	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,1-Dichloroethene	ND	0.014	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,2-Dichloropropane	ND	0.0025	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,3-Dichloropropane	ND	0.0037	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
2,2-Dichloropropane	ND	0.011	0.068		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,1-Dichloropropene	ND	0.0031	0.068		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Hexachlorobutadiene	ND	0.0034	0.068		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
2-Hexanone	ND	0.0056	0.34		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Isopropylbenzene	ND	0.0024	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
4-Isopropyltoluene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
4-Methyl-2-pentanone	ND	0.0064	0.34		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Methylene chloride	ND	0.0060	0.10		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
n-Butylbenzene	ND	0.0032	0.10		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
n-Propylbenzene	ND	0.0027	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
sec-Butylbenzene	ND	0.0038	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Styrene	ND	0.0027	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
tert-Butylbenzene	ND	0.0032	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,1,1,2-Tetrachloroethane	ND	0.0023	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 12:55:00 PM
Lab ID: 1910E04-025
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0034	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Tetrachloroethene (PCE)	ND	0.0027	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
trans-1,2-DCE	ND	0.0031	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
trans-1,3-Dichloropropene	ND	0.0036	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,2,3-Trichlorobenzene	ND	0.0030	0.068		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,2,4-Trichlorobenzene	ND	0.0034	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,1,1-Trichloroethane	ND	0.0031	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,1,2-Trichloroethane	ND	0.0024	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Trichloroethene (TCE)	ND	0.0039	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Trichlorofluoromethane	ND	0.011	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
1,2,3-Trichloropropane	ND	0.0055	0.068		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Vinyl chloride	ND	0.0022	0.034		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Xylenes, Total	ND	0.0085	0.068		mg/Kg	1	10/30/2019 2:25:51 AM	B64063
Surr: Dibromofluoromethane	105		70-130		%Rec	1	10/30/2019 2:25:51 AM	B64063
Surr: 1,2-Dichloroethane-d4	91.7		70-130		%Rec	1	10/30/2019 2:25:51 AM	B64063
Surr: Toluene-d8	98.9		70-130		%Rec	1	10/30/2019 2:25:51 AM	B64063
Surr: 4-Bromofluorobenzene	89.2		70-130		%Rec	1	10/30/2019 2:25:51 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (0.5-1.5')
Project: SWMU 13
Collection Date: 10/25/2019 1:10:00 PM
Lab ID: 1910E04-026
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	320	9.8	49		mg/Kg	5	10/31/2019 11:01:31 P	48459
Motor Oil Range Organics (MRO)	250	240	240		mg/Kg	5	10/31/2019 11:01:31 P	48459
Surr: DNOP	82.0	0	70-130		%Rec	5	10/31/2019 11:01:31 P	48459
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.0	3.4		mg/Kg	1	10/30/2019 10:46:45 P	G64077
Surr: BFB	92.3	0	77.4-118		%Rec	1	10/30/2019 10:46:45 P	G64077
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.25	0.0018	0.033		mg/Kg	1	11/4/2019 7:20:14 PM	48570
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Arsenic	ND	2.9	5.0		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Barium	260	0.046	0.20		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Beryllium	1.2	0.018	0.30		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Chromium	27	0.16	0.60		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Cobalt	5.4	0.21	0.60		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Iron	18000	73	250		mg/Kg	100	11/20/2019 5:17:20 PM	48519
Lead	ND	0.49	0.50		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Manganese	270	0.041	0.20		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Nickel	12	0.30	1.0		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Selenium	ND	2.5	5.0		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Silver	ND	0.064	0.50		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Vanadium	30	0.13	5.0		mg/Kg	2	11/19/2019 7:12:33 PM	48519
Zinc	66	0.79	5.0		mg/Kg	2	11/19/2019 7:12:33 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	1.2	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Acenaphthylene	ND	1.1	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Aniline	ND	1.3	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Anthracene	ND	1.1	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Azobenzene	ND	1.4	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Benz(a)anthracene	ND	0.95	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Benzo(a)pyrene	ND	0.87	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Benzo(b)fluoranthene	ND	0.87	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Benzo(g,h,i)perylene	ND	0.84	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Benzo(k)fluoranthene	ND	0.89	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Benzoic acid	ND	1.0	4.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Benzyl alcohol	ND	1.2	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (0.5-1.5')
Project: SWMU 13
Collection Date: 10/25/2019 1:10:00 PM
Lab ID: 1910E04-026
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	1.5	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Bis(2-chloroethyl)ether	ND	1.2	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Bis(2-chloroisopropyl)ether	ND	1.1	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Bis(2-ethylhexyl)phthalate	ND	1.4	4.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
4-Bromophenyl phenyl ether	ND	1.2	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Butyl benzyl phthalate	ND	1.0	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Carbazole	ND	1.2	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
4-Chloro-3-methylphenol	ND	1.5	4.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
4-Chloroaniline	ND	1.4	4.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2-Chloronaphthalene	ND	1.2	2.5	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2-Chlorophenol	ND	1.2	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
4-Chlorophenyl phenyl ether	ND	1.1	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Chrysene	ND	0.87	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Di-n-butyl phthalate	ND	1.5	3.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Di-n-octyl phthalate	ND	1.0	3.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Dibenz(a,h)anthracene	ND	0.89	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Dibenzofuran	ND	1.3	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
1,2-Dichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
1,3-Dichlorobenzene	ND	1.0	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
1,4-Dichlorobenzene	ND	1.0	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
3,3´-Dichlorobenzidine	ND	0.87	2.5	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Diethyl phthalate	ND	1.4	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Dimethyl phthalate	ND	1.3	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2,4-Dichlorophenol	ND	1.1	3.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2,4-Dimethylphenol	ND	1.1	2.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
4,6-Dinitro-2-methylphenol	ND	0.91	3.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2,4-Dinitrophenol	ND	0.71	4.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2,6-Dinitrotoluene	ND	1.3	4.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Fluoranthene	ND	1.1	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Fluorene	ND	1.1	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Hexachlorobenzene	ND	1.2	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Hexachlorobutadiene	ND	1.4	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Hexachloroethane	ND	1.1	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Indeno(1,2,3-cd)pyrene	ND	0.98	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Isophorone	ND	1.4	3.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
1-Methylnaphthalene	ND	1.5	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2-Methylnaphthalene	ND	1.4	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (0.5-1.5')
Project: SWMU 13
Collection Date: 10/25/2019 1:10:00 PM
Lab ID: 1910E04-026
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	1.2	3.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
3+4-Methylphenol	ND	1.2	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
N-Nitrosodi-n-propylamine	ND	1.4	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Naphthalene	ND	1.5	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
3-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
4-Nitroaniline	ND	1.3	3.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Nitrobenzene	ND	1.4	3.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2-Nitrophenol	ND	1.3	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
4-Nitrophenol	ND	1.3	2.5	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Pentachlorophenol	ND	1.0	3.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Phenanthrene	ND	1.1	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Phenol	ND	1.2	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Pyrene	ND	0.92	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Pyridine	ND	1.2	3.9	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
1,2,4-Trichlorobenzene	ND	1.5	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2,4,5-Trichlorophenol	ND	1.3	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
2,4,6-Trichlorophenol	ND	1.0	2.0	D	mg/Kg	1	11/7/2019 5:33:46 PM	48536
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	1	11/7/2019 5:33:46 PM	48536
Surr: Phenol-d5	0		18.5-101	SD	%Rec	1	11/7/2019 5:33:46 PM	48536
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	1	11/7/2019 5:33:46 PM	48536
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	1	11/7/2019 5:33:46 PM	48536
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	1	11/7/2019 5:33:46 PM	48536
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	1	11/7/2019 5:33:46 PM	48536
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0027	0.017		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Toluene	ND	0.0032	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Ethylbenzene	ND	0.0019	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Methyl tert-butyl ether (MTBE)	ND	0.0080	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,2,4-Trimethylbenzene	ND	0.0031	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,3,5-Trimethylbenzene	ND	0.0032	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,2-Dichloroethane (EDC)	ND	0.0034	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,2-Dibromoethane (EDB)	ND	0.0031	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Naphthalene	ND	0.0067	0.067		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1-Methylnaphthalene	ND	0.019	0.13		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
2-Methylnaphthalene	ND	0.015	0.13		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Acetone	ND	0.028	0.50		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Bromobenzene	ND	0.0032	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (0.5-1.5')
Project: SWMU 13
Collection Date: 10/25/2019 1:10:00 PM
Lab ID: 1910E04-026
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0031	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Bromoform	ND	0.0030	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Bromomethane	ND	0.0081	0.10		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
2-Butanone	ND	0.039	0.34		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Carbon disulfide	ND	0.011	0.34		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Carbon tetrachloride	ND	0.0032	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Chlorobenzene	ND	0.0043	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Chloroethane	ND	0.0049	0.067		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Chloroform	ND	0.0027	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Chloromethane	ND	0.0032	0.10		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
2-Chlorotoluene	ND	0.0029	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
4-Chlorotoluene	ND	0.0027	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
cis-1,2-DCE	ND	0.0046	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
cis-1,3-Dichloropropene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,2-Dibromo-3-chloropropane	ND	0.0034	0.067		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Dibromochloromethane	ND	0.0024	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Dibromomethane	ND	0.0036	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,2-Dichlorobenzene	ND	0.0027	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,3-Dichlorobenzene	ND	0.0029	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,4-Dichlorobenzene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Dichlorodifluoromethane	ND	0.0078	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,1-Dichloroethane	ND	0.0021	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,1-Dichloroethene	ND	0.013	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,2-Dichloropropane	ND	0.0024	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,3-Dichloropropane	ND	0.0036	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
2,2-Dichloropropane	ND	0.011	0.067		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,1-Dichloropropene	ND	0.0031	0.067		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Hexachlorobutadiene	ND	0.0034	0.067		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
2-Hexanone	ND	0.0056	0.34		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Isopropylbenzene	ND	0.0024	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
4-Isopropyltoluene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
4-Methyl-2-pentanone	ND	0.0063	0.34		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Methylene chloride	0.0095	0.0059	0.10	J	mg/Kg	1	10/30/2019 2:55:06 AM	B64063
n-Butylbenzene	ND	0.0031	0.10		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
n-Propylbenzene	ND	0.0027	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
sec-Butylbenzene	ND	0.0038	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Styrene	ND	0.0026	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
tert-Butylbenzene	ND	0.0032	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,1,1,2-Tetrachloroethane	ND	0.0023	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (0.5-1.5')
Project: SWMU 13
Collection Date: 10/25/2019 1:10:00 PM
Lab ID: 1910E04-026
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0034	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Tetrachloroethene (PCE)	ND	0.0027	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
trans-1,2-DCE	ND	0.0031	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
trans-1,3-Dichloropropene	ND	0.0035	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,2,3-Trichlorobenzene	ND	0.0029	0.067		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,2,4-Trichlorobenzene	ND	0.0034	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,1,1-Trichloroethane	ND	0.0030	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,1,2-Trichloroethane	ND	0.0024	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Trichloroethene (TCE)	ND	0.0039	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Trichlorofluoromethane	ND	0.011	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
1,2,3-Trichloropropane	ND	0.0054	0.067		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Vinyl chloride	ND	0.0022	0.034		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Xylenes, Total	ND	0.0085	0.067		mg/Kg	1	10/30/2019 2:55:06 AM	B64063
Surr: Dibromofluoromethane	107		70-130		%Rec	1	10/30/2019 2:55:06 AM	B64063
Surr: 1,2-Dichloroethane-d4	92.6		70-130		%Rec	1	10/30/2019 2:55:06 AM	B64063
Surr: Toluene-d8	95.9		70-130		%Rec	1	10/30/2019 2:55:06 AM	B64063
Surr: 4-Bromofluorobenzene	90.5		70-130		%Rec	1	10/30/2019 2:55:06 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 1:25:00 PM
Lab ID: 1910E04-027
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	16	1.8	9.2		mg/Kg	1	10/31/2019 11:25:27 P	48459
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	10/31/2019 11:25:27 P	48459
Surr: DNOP	92.8	0	70-130		%Rec	1	10/31/2019 11:25:27 P	48459
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.0	3.4		mg/Kg	1	10/30/2019 11:09:26 P	G64077
Surr: BFB	91.8	0	77.4-118		%Rec	1	10/30/2019 11:09:26 P	G64077
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.033	0.0018	0.033	J	mg/Kg	1	11/4/2019 7:22:16 PM	48570
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Arsenic	ND	2.9	5.1		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Barium	330	0.047	0.20		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Beryllium	1.5	0.019	0.30		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Chromium	19	0.16	0.61		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Cobalt	6.9	0.21	0.61		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Iron	22000	74	250		mg/Kg	100	11/20/2019 5:18:54 PM	48519
Lead	0.51	0.49	0.51		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Manganese	380	0.042	0.20		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Nickel	15	0.30	1.0		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Selenium	ND	2.5	5.1		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Silver	ND	0.065	0.51		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Vanadium	31	0.14	5.1		mg/Kg	2	11/19/2019 7:15:43 PM	48519
Zinc	28	0.80	5.1		mg/Kg	2	11/19/2019 7:15:43 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.23	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Acenaphthylene	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Aniline	ND	0.25	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Anthracene	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Azobenzene	ND	0.27	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Benz(a)anthracene	ND	0.19	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Benzo(a)pyrene	ND	0.17	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Benzo(b)fluoranthene	ND	0.17	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Benzo(g,h,i)perylene	ND	0.17	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Benzo(k)fluoranthene	ND	0.18	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Benzoic acid	ND	0.20	0.96		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Benzyl alcohol	ND	0.24	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 1:25:00 PM
Lab ID: 1910E04-027
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.29	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Bis(2-chloroethyl)ether	ND	0.23	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Bis(2-chloroisopropyl)ether	ND	0.22	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Bis(2-ethylhexyl)phthalate	ND	0.28	0.96		mg/Kg	1	11/7/2019 6:02:29 PM	48536
4-Bromophenyl phenyl ether	ND	0.23	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Butyl benzyl phthalate	ND	0.20	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Carbazole	ND	0.23	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
4-Chloro-3-methylphenol	ND	0.30	0.96		mg/Kg	1	11/7/2019 6:02:29 PM	48536
4-Chloroaniline	ND	0.27	0.96		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2-Chloronaphthalene	ND	0.24	0.48		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2-Chlorophenol	ND	0.24	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
4-Chlorophenyl phenyl ether	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Chrysene	ND	0.17	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Di-n-butyl phthalate	ND	0.29	0.77		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Di-n-octyl phthalate	ND	0.20	0.77		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Dibenz(a,h)anthracene	ND	0.18	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Dibenzofuran	ND	0.25	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
1,2-Dichlorobenzene	ND	0.23	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
1,3-Dichlorobenzene	ND	0.20	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
1,4-Dichlorobenzene	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
3,3´-Dichlorobenzidine	ND	0.17	0.48		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Diethyl phthalate	ND	0.28	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Dimethyl phthalate	ND	0.26	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2,4-Dichlorophenol	ND	0.22	0.77		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2,4-Dimethylphenol	ND	0.21	0.58		mg/Kg	1	11/7/2019 6:02:29 PM	48536
4,6-Dinitro-2-methylphenol	ND	0.18	0.77		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2,4-Dinitrophenol	ND	0.14	0.96		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2,4-Dinitrotoluene	ND	0.23	0.96		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2,6-Dinitrotoluene	ND	0.25	0.96		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Fluoranthene	ND	0.22	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Fluorene	ND	0.22	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Hexachlorobenzene	ND	0.24	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Hexachlorobutadiene	ND	0.27	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Hexachlorocyclopentadiene	ND	0.22	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Hexachloroethane	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Indeno(1,2,3-cd)pyrene	ND	0.19	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Isophorone	ND	0.28	0.77		mg/Kg	1	11/7/2019 6:02:29 PM	48536
1-Methylnaphthalene	ND	0.29	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2-Methylnaphthalene	ND	0.28	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 1:25:00 PM
Lab ID: 1910E04-027
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.23	0.77		mg/Kg	1	11/7/2019 6:02:29 PM	48536
3+4-Methylphenol	ND	0.24	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
N-Nitrosodi-n-propylamine	ND	0.28	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
N-Nitrosodiphenylamine	ND	0.20	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Naphthalene	ND	0.29	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2-Nitroaniline	ND	0.28	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
3-Nitroaniline	ND	0.27	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
4-Nitroaniline	ND	0.25	0.77		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Nitrobenzene	ND	0.27	0.77		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2-Nitrophenol	ND	0.26	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
4-Nitrophenol	ND	0.26	0.48		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Pentachlorophenol	ND	0.20	0.77		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Phenanthrene	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Phenol	ND	0.24	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Pyrene	ND	0.18	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Pyridine	ND	0.23	0.77		mg/Kg	1	11/7/2019 6:02:29 PM	48536
1,2,4-Trichlorobenzene	ND	0.30	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2,4,5-Trichlorophenol	ND	0.25	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
2,4,6-Trichlorophenol	ND	0.20	0.39		mg/Kg	1	11/7/2019 6:02:29 PM	48536
Surr: 2-Fluorophenol	59.9		26.7-85.9		%Rec	1	11/7/2019 6:02:29 PM	48536
Surr: Phenol-d5	67.3		18.5-101		%Rec	1	11/7/2019 6:02:29 PM	48536
Surr: 2,4,6-Tribromophenol	69.0		35.8-85.6		%Rec	1	11/7/2019 6:02:29 PM	48536
Surr: Nitrobenzene-d5	73.1		40.8-95.2		%Rec	1	11/7/2019 6:02:29 PM	48536
Surr: 2-Fluorobiphenyl	73.7		34.7-85.2		%Rec	1	11/7/2019 6:02:29 PM	48536
Surr: 4-Terphenyl-d14	65.1		37.4-91.3		%Rec	1	11/7/2019 6:02:29 PM	48536
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0028	0.017		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Toluene	ND	0.0032	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Ethylbenzene	ND	0.0020	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Methyl tert-butyl ether (MTBE)	ND	0.0080	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,2,4-Trimethylbenzene	ND	0.0031	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,3,5-Trimethylbenzene	ND	0.0033	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,2-Dichloroethane (EDC)	ND	0.0034	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,2-Dibromoethane (EDB)	ND	0.0031	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Naphthalene	ND	0.0067	0.067		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1-Methylnaphthalene	ND	0.019	0.13		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
2-Methylnaphthalene	ND	0.015	0.13		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Acetone	ND	0.028	0.50		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Bromobenzene	ND	0.0032	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 1:25:00 PM
Lab ID: 1910E04-027
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0031	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Bromoform	ND	0.0030	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Bromomethane	ND	0.0081	0.10		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
2-Butanone	ND	0.039	0.34		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Carbon disulfide	ND	0.011	0.34		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Carbon tetrachloride	ND	0.0032	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Chlorobenzene	ND	0.0043	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Chloroethane	ND	0.0050	0.067		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Chloroform	ND	0.0027	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Chloromethane	ND	0.0032	0.10		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
2-Chlorotoluene	ND	0.0029	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
4-Chlorotoluene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
cis-1,2-DCE	ND	0.0046	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
cis-1,3-Dichloropropene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,2-Dibromo-3-chloropropane	ND	0.0034	0.067		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Dibromochloromethane	ND	0.0024	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Dibromomethane	ND	0.0036	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,2-Dichlorobenzene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,3-Dichlorobenzene	ND	0.0029	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,4-Dichlorobenzene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Dichlorodifluoromethane	ND	0.0078	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,1-Dichloroethane	ND	0.0022	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,1-Dichloroethene	ND	0.013	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,2-Dichloropropane	ND	0.0024	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,3-Dichloropropane	ND	0.0036	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
2,2-Dichloropropane	ND	0.011	0.067		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,1-Dichloropropene	ND	0.0031	0.067		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Hexachlorobutadiene	ND	0.0034	0.067		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
2-Hexanone	ND	0.0056	0.34		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Isopropylbenzene	ND	0.0024	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
4-Isopropyltoluene	ND	0.0028	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
4-Methyl-2-pentanone	ND	0.0063	0.34		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Methylene chloride	ND	0.0059	0.10		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
n-Butylbenzene	ND	0.0031	0.10		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
n-Propylbenzene	ND	0.0027	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
sec-Butylbenzene	ND	0.0038	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Styrene	ND	0.0026	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
tert-Butylbenzene	ND	0.0032	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,1,1,2-Tetrachloroethane	ND	0.0023	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 1:25:00 PM
Lab ID: 1910E04-027
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0034	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Tetrachloroethene (PCE)	ND	0.0027	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
trans-1,2-DCE	ND	0.0031	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
trans-1,3-Dichloropropene	ND	0.0036	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,2,3-Trichlorobenzene	ND	0.0030	0.067		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,2,4-Trichlorobenzene	ND	0.0034	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,1,1-Trichloroethane	ND	0.0030	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,1,2-Trichloroethane	ND	0.0024	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Trichloroethene (TCE)	ND	0.0039	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Trichlorofluoromethane	ND	0.011	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
1,2,3-Trichloropropane	ND	0.0054	0.067		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Vinyl chloride	ND	0.0022	0.034		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Xylenes, Total	ND	0.0085	0.067		mg/Kg	1	10/30/2019 3:24:12 AM	B64063
Surr: Dibromofluoromethane	109		70-130		%Rec	1	10/30/2019 3:24:12 AM	B64063
Surr: 1,2-Dichloroethane-d4	94.4		70-130		%Rec	1	10/30/2019 3:24:12 AM	B64063
Surr: Toluene-d8	102		70-130		%Rec	1	10/30/2019 3:24:12 AM	B64063
Surr: 4-Bromofluorobenzene	89.5		70-130		%Rec	1	10/30/2019 3:24:12 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 1:35:00 PM
Lab ID: 1910E04-028
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.6	8.1		mg/Kg	1	10/30/2019 10:28:11 P	48459
Motor Oil Range Organics (MRO)	ND	41	41		mg/Kg	1	10/30/2019 10:28:11 P	48459
Surr: DNOP	94.0	0	70-130		%Rec	1	10/30/2019 10:28:11 P	48459
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.89	2.9		mg/Kg	1	10/30/2019 11:32:05 P	G64077
Surr: BFB	96.2	0	77.4-118		%Rec	1	10/30/2019 11:32:05 P	G64077
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0044	0.0018	0.033	J	mg/Kg	1	11/4/2019 7:28:27 PM	48570
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.76	5.1		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Arsenic	ND	2.9	5.1		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Barium	250	0.048	0.21		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Beryllium	1.5	0.019	0.31		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Cadmium	ND	0.050	0.21		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Chromium	18	0.16	0.62		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Cobalt	6.9	0.22	0.62		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Iron	23000	75	260		mg/Kg	100	11/20/2019 5:20:29 PM	48519
Lead	ND	0.50	0.51		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Manganese	360	0.043	0.21		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Nickel	14	0.31	1.0		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Selenium	ND	2.6	5.1		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Silver	ND	0.066	0.51		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Vanadium	30	0.14	5.1		mg/Kg	2	11/19/2019 7:18:52 PM	48519
Zinc	24	0.82	5.1		mg/Kg	2	11/19/2019 7:18:52 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.23	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Acenaphthylene	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Aniline	ND	0.25	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Anthracene	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Azobenzene	ND	0.27	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Benz(a)anthracene	ND	0.19	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Benzo(a)pyrene	ND	0.17	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Benzo(b)fluoranthene	ND	0.17	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Benzo(g,h,i)perylene	ND	0.17	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Benzo(k)fluoranthene	ND	0.18	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Benzoic acid	ND	0.20	0.98		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Benzyl alcohol	ND	0.24	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 1:35:00 PM
Lab ID: 1910E04-028
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.29	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Bis(2-chloroethyl)ether	ND	0.24	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Bis(2-chloroisopropyl)ether	ND	0.22	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Bis(2-ethylhexyl)phthalate	ND	0.28	0.98		mg/Kg	1	11/7/2019 6:31:11 PM	48536
4-Bromophenyl phenyl ether	ND	0.23	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Butyl benzyl phthalate	ND	0.20	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Carbazole	ND	0.23	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
4-Chloro-3-methylphenol	ND	0.30	0.98		mg/Kg	1	11/7/2019 6:31:11 PM	48536
4-Chloroaniline	ND	0.28	0.98		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2-Chloronaphthalene	ND	0.24	0.49		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2-Chlorophenol	ND	0.24	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
4-Chlorophenyl phenyl ether	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Chrysene	ND	0.17	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Di-n-butyl phthalate	ND	0.29	0.78		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Di-n-octyl phthalate	ND	0.20	0.78		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Dibenz(a,h)anthracene	ND	0.18	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Dibenzofuran	ND	0.26	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
1,2-Dichlorobenzene	ND	0.23	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
1,3-Dichlorobenzene	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
1,4-Dichlorobenzene	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
3,3´-Dichlorobenzidine	ND	0.17	0.49		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Diethyl phthalate	ND	0.28	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Dimethyl phthalate	ND	0.26	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2,4-Dichlorophenol	ND	0.23	0.78		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2,4-Dimethylphenol	ND	0.22	0.59		mg/Kg	1	11/7/2019 6:31:11 PM	48536
4,6-Dinitro-2-methylphenol	ND	0.18	0.78		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2,4-Dinitrophenol	ND	0.14	0.98		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2,4-Dinitrotoluene	ND	0.23	0.98		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2,6-Dinitrotoluene	ND	0.26	0.98		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Fluoranthene	ND	0.22	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Fluorene	ND	0.22	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Hexachlorobenzene	ND	0.24	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Hexachlorobutadiene	ND	0.27	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Hexachlorocyclopentadiene	ND	0.22	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Hexachloroethane	ND	0.22	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Indeno(1,2,3-cd)pyrene	ND	0.19	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Isophorone	ND	0.29	0.78		mg/Kg	1	11/7/2019 6:31:11 PM	48536
1-Methylnaphthalene	ND	0.29	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2-Methylnaphthalene	ND	0.28	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 1:35:00 PM
Lab ID: 1910E04-028
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.23	0.78		mg/Kg	1	11/7/2019 6:31:11 PM	48536
3+4-Methylphenol	ND	0.24	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
N-Nitrosodi-n-propylamine	ND	0.28	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
N-Nitrosodiphenylamine	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Naphthalene	ND	0.30	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2-Nitroaniline	ND	0.28	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
3-Nitroaniline	ND	0.27	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
4-Nitroaniline	ND	0.25	0.78		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Nitrobenzene	ND	0.27	0.78		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2-Nitrophenol	ND	0.27	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
4-Nitrophenol	ND	0.27	0.49		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Pentachlorophenol	ND	0.20	0.78		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Phenanthrene	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Phenol	ND	0.24	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Pyrene	ND	0.18	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Pyridine	ND	0.24	0.78		mg/Kg	1	11/7/2019 6:31:11 PM	48536
1,2,4-Trichlorobenzene	ND	0.30	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2,4,5-Trichlorophenol	ND	0.25	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
2,4,6-Trichlorophenol	ND	0.21	0.39		mg/Kg	1	11/7/2019 6:31:11 PM	48536
Surr: 2-Fluorophenol	74.2		26.7-85.9		%Rec	1	11/7/2019 6:31:11 PM	48536
Surr: Phenol-d5	75.1		18.5-101		%Rec	1	11/7/2019 6:31:11 PM	48536
Surr: 2,4,6-Tribromophenol	72.1		35.8-85.6		%Rec	1	11/7/2019 6:31:11 PM	48536
Surr: Nitrobenzene-d5	76.2		40.8-95.2		%Rec	1	11/7/2019 6:31:11 PM	48536
Surr: 2-Fluorobiphenyl	71.6		34.7-85.2		%Rec	1	11/7/2019 6:31:11 PM	48536
Surr: 4-Terphenyl-d14	69.0		37.4-91.3		%Rec	1	11/7/2019 6:31:11 PM	48536
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0024	0.015		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Toluene	ND	0.0028	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Ethylbenzene	ND	0.0017	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Methyl tert-butyl ether (MTBE)	ND	0.0070	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,2,4-Trimethylbenzene	ND	0.0027	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,3,5-Trimethylbenzene	ND	0.0028	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,2-Dichloroethane (EDC)	ND	0.0030	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,2-Dibromoethane (EDB)	ND	0.0027	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Naphthalene	ND	0.0059	0.059		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1-Methylnaphthalene	ND	0.017	0.12		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
2-Methylnaphthalene	ND	0.013	0.12		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Acetone	ND	0.024	0.44		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Bromobenzene	ND	0.0028	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 1:35:00 PM
Lab ID: 1910E04-028
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0027	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Bromoform	ND	0.0027	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Bromomethane	ND	0.0071	0.088		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
2-Butanone	ND	0.034	0.29		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Carbon disulfide	ND	0.0097	0.29		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Carbon tetrachloride	ND	0.0028	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Chlorobenzene	ND	0.0038	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Chloroethane	ND	0.0043	0.059		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Chloroform	ND	0.0024	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Chloromethane	ND	0.0028	0.088		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
2-Chlorotoluene	ND	0.0026	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
4-Chlorotoluene	ND	0.0024	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
cis-1,2-DCE	ND	0.0040	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
cis-1,3-Dichloropropene	ND	0.0025	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,2-Dibromo-3-chloropropane	ND	0.0030	0.059		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Dibromochloromethane	ND	0.0021	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Dibromomethane	ND	0.0032	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,2-Dichlorobenzene	ND	0.0024	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,3-Dichlorobenzene	ND	0.0026	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,4-Dichlorobenzene	ND	0.0025	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Dichlorodifluoromethane	ND	0.0068	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,1-Dichloroethane	ND	0.0019	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,1-Dichloroethene	ND	0.012	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,2-Dichloropropane	ND	0.0021	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,3-Dichloropropane	ND	0.0032	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
2,2-Dichloropropane	ND	0.0096	0.059		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,1-Dichloropropene	ND	0.0027	0.059		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Hexachlorobutadiene	ND	0.0030	0.059		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
2-Hexanone	ND	0.0049	0.29		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Isopropylbenzene	ND	0.0021	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
4-Isopropyltoluene	ND	0.0024	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
4-Methyl-2-pentanone	ND	0.0056	0.29		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Methylene chloride	ND	0.0052	0.088		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
n-Butylbenzene	ND	0.0027	0.088		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
n-Propylbenzene	ND	0.0023	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
sec-Butylbenzene	ND	0.0033	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Styrene	ND	0.0023	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
tert-Butylbenzene	ND	0.0028	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,1,1,2-Tetrachloroethane	ND	0.0020	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-12 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 1:35:00 PM
Lab ID: 1910E04-028
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0030	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Tetrachloroethene (PCE)	ND	0.0024	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
trans-1,2-DCE	ND	0.0027	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
trans-1,3-Dichloropropene	ND	0.0031	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,2,3-Trichlorobenzene	ND	0.0026	0.059		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,2,4-Trichlorobenzene	ND	0.0030	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,1,1-Trichloroethane	ND	0.0027	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,1,2-Trichloroethane	ND	0.0021	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Trichloroethene (TCE)	ND	0.0034	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Trichlorofluoromethane	ND	0.010	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
1,2,3-Trichloropropane	ND	0.0048	0.059		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Vinyl chloride	ND	0.0019	0.029		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Xylenes, Total	ND	0.0074	0.059		mg/Kg	1	10/30/2019 3:53:14 AM	B64063
Surr: Dibromofluoromethane	106		70-130		%Rec	1	10/30/2019 3:53:14 AM	B64063
Surr: 1,2-Dichloroethane-d4	92.5		70-130		%Rec	1	10/30/2019 3:53:14 AM	B64063
Surr: Toluene-d8	99.0		70-130		%Rec	1	10/30/2019 3:53:14 AM	B64063
Surr: 4-Bromofluorobenzene	89.4		70-130		%Rec	1	10/30/2019 3:53:14 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP05
Project: SWMU 13
Collection Date: 10/25/2019
Lab ID: 1910E04-029
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	790	20	98		mg/Kg	10	10/31/2019 11:49:13 P	48459
Motor Oil Range Organics (MRO)	530	490	490		mg/Kg	10	10/31/2019 11:49:13 P	48459
Surr: DNOP	0	0	70-130	S	%Rec	10	10/31/2019 11:49:13 P	48459
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	4.5	0.86	2.9		mg/Kg	1	10/30/2019 11:54:43 P	G64077
Surr: BFB	150	0	77.4-118	S	%Rec	1	10/30/2019 11:54:43 P	G64077
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.33	0.0036	0.066		mg/Kg	2	11/4/2019 7:32:38 PM	48570
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Arsenic	ND	2.9	5.0		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Barium	320	0.046	0.20		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Beryllium	1.1	0.018	0.30		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Chromium	26	0.16	0.60		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Cobalt	5.3	0.21	0.60		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Iron	14000	73	250		mg/Kg	100	11/20/2019 5:22:02 PM	48519
Lead	ND	0.49	0.50		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Manganese	270	0.042	0.20		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Nickel	11	0.30	1.0		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Selenium	ND	2.5	5.0		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Silver	ND	0.064	0.50		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Vanadium	28	0.13	5.0		mg/Kg	2	11/19/2019 7:27:15 PM	48519
Zinc	77	0.79	5.0		mg/Kg	2	11/19/2019 7:27:15 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Acenaphthylene	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Aniline	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Anthracene	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Azobenzene	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Benz(a)anthracene	ND	0.90	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Benzo(a)pyrene	ND	0.83	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Benzo(b)fluoranthene	ND	0.83	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Benzo(g,h,i)perylene	ND	0.80	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Benzo(k)fluoranthene	ND	0.85	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Benzoic acid	ND	0.97	4.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Benzyl alcohol	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536

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Qualifiers:

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D	Sample Diluted Due to Matrix
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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP05
Project: SWMU 13
Collection Date: 10/25/2019
Lab ID: 1910E04-029
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	1.4	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Bis(2-chloroethyl)ether	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Bis(2-chloroisopropyl)ether	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Bis(2-ethylhexyl)phthalate	ND	1.3	4.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
4-Bromophenyl phenyl ether	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Butyl benzyl phthalate	ND	0.96	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Carbazole	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
4-Chloro-3-methylphenol	ND	1.4	4.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
4-Chloroaniline	ND	1.3	4.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2-Chloronaphthalene	ND	1.2	2.3	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2-Chlorophenol	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
4-Chlorophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Chrysene	ND	0.82	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Di-n-butyl phthalate	ND	1.4	3.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Di-n-octyl phthalate	ND	0.95	3.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Dibenz(a,h)anthracene	ND	0.85	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Dibenzofuran	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
1,2-Dichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
1,3-Dichlorobenzene	ND	0.98	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
1,4-Dichlorobenzene	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
3,3´-Dichlorobenzidine	ND	0.83	2.3	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Diethyl phthalate	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Dimethyl phthalate	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2,4-Dichlorophenol	ND	1.1	3.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2,4-Dimethylphenol	ND	1.0	2.8	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
4,6-Dinitro-2-methylphenol	ND	0.86	3.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2,4-Dinitrophenol	ND	0.68	4.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2,4-Dinitrotoluene	ND	1.1	4.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2,6-Dinitrotoluene	ND	1.2	4.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Fluoranthene	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Fluorene	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Hexachlorobenzene	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Hexachlorobutadiene	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Hexachloroethane	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Indeno(1,2,3-cd)pyrene	ND	0.93	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Isophorone	ND	1.4	3.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
1-Methylnaphthalene	ND	1.4	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2-Methylnaphthalene	ND	1.4	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP05
Project: SWMU 13
Collection Date: 10/25/2019
Lab ID: 1910E04-029
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	1.1	3.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
3+4-Methylphenol	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
N-Nitrosodi-n-propylamine	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
N-Nitrosodiphenylamine	ND	0.98	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Naphthalene	ND	1.4	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2-Nitroaniline	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
3-Nitroaniline	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
4-Nitroaniline	ND	1.2	3.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Nitrobenzene	ND	1.3	3.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2-Nitrophenol	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
4-Nitrophenol	ND	1.3	2.3	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Pentachlorophenol	ND	0.96	3.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Phenanthrene	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Phenol	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Pyrene	ND	0.88	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Pyridine	ND	1.1	3.7	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
1,2,4-Trichlorobenzene	ND	1.5	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2,4,5-Trichlorophenol	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
2,4,6-Trichlorophenol	ND	0.98	1.9	D	mg/Kg	1	11/8/2019 1:51:57 PM	48536
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	1	11/8/2019 1:51:57 PM	48536
Surr: Phenol-d5	0		18.5-101	SD	%Rec	1	11/8/2019 1:51:57 PM	48536
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	1	11/8/2019 1:51:57 PM	48536
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	1	11/8/2019 1:51:57 PM	48536
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	1	11/8/2019 1:51:57 PM	48536
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	1	11/8/2019 1:51:57 PM	48536
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0023	0.014		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Toluene	ND	0.0027	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Ethylbenzene	ND	0.0017	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Methyl tert-butyl ether (MTBE)	ND	0.0068	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,2,4-Trimethylbenzene	ND	0.0026	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,3,5-Trimethylbenzene	ND	0.0028	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,2-Dichloroethane (EDC)	ND	0.0029	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,2-Dibromoethane (EDB)	ND	0.0026	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Naphthalene	ND	0.0057	0.057		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1-Methylnaphthalene	ND	0.016	0.11		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Acetone	ND	0.024	0.43		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Bromobenzene	ND	0.0027	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP05
Project: SWMU 13
Collection Date: 10/25/2019
Lab ID: 1910E04-029
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0026	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Bromoform	ND	0.0026	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Bromomethane	ND	0.0069	0.086		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
2-Butanone	ND	0.033	0.29		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Carbon disulfide	ND	0.0094	0.29		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Carbon tetrachloride	ND	0.0027	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Chlorobenzene	ND	0.0037	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Chloroethane	ND	0.0042	0.057		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Chloroform	ND	0.0023	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Chloromethane	ND	0.0027	0.086		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
2-Chlorotoluene	ND	0.0025	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
4-Chlorotoluene	ND	0.0023	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
cis-1,2-DCE	ND	0.0039	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
cis-1,3-Dichloropropene	ND	0.0024	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,2-Dibromo-3-chloropropane	ND	0.0029	0.057		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Dibromochloromethane	ND	0.0020	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Dibromomethane	ND	0.0031	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,2-Dichlorobenzene	ND	0.0023	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,3-Dichlorobenzene	ND	0.0025	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,4-Dichlorobenzene	ND	0.0024	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Dichlorodifluoromethane	ND	0.0066	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,1-Dichloroethane	ND	0.0018	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,1-Dichloroethene	ND	0.011	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,2-Dichloropropane	ND	0.0021	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,3-Dichloropropane	ND	0.0031	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
2,2-Dichloropropane	ND	0.0093	0.057		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,1-Dichloropropene	ND	0.0026	0.057		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Hexachlorobutadiene	ND	0.0029	0.057		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
2-Hexanone	ND	0.0047	0.29		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Isopropylbenzene	ND	0.0021	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
4-Isopropyltoluene	ND	0.0024	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
4-Methyl-2-pentanone	ND	0.0054	0.29		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Methylene chloride	ND	0.0050	0.086		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
n-Butylbenzene	ND	0.0027	0.086		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
n-Propylbenzene	ND	0.0023	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
sec-Butylbenzene	ND	0.0032	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Styrene	ND	0.0022	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
tert-Butylbenzene	ND	0.0027	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,1,1,2-Tetrachloroethane	ND	0.0019	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP05
Project: SWMU 13
Collection Date: 10/25/2019
Lab ID: 1910E04-029
Matrix: MEOH (SOIL)
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0029	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Tetrachloroethene (PCE)	ND	0.0023	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
trans-1,2-DCE	ND	0.0026	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
trans-1,3-Dichloropropene	ND	0.0030	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,2,3-Trichlorobenzene	ND	0.0025	0.057		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,2,4-Trichlorobenzene	ND	0.0029	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,1,1-Trichloroethane	ND	0.0026	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,1,2-Trichloroethane	ND	0.0020	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Trichloroethene (TCE)	ND	0.0033	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Trichlorofluoromethane	ND	0.0097	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
1,2,3-Trichloropropane	ND	0.0046	0.057		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Vinyl chloride	ND	0.0019	0.029		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Xylenes, Total	ND	0.0072	0.057		mg/Kg	1	10/30/2019 4:22:11 AM	B64063
Surr: Dibromofluoromethane	106		70-130		%Rec	1	10/30/2019 4:22:11 AM	B64063
Surr: 1,2-Dichloroethane-d4	94.0		70-130		%Rec	1	10/30/2019 4:22:11 AM	B64063
Surr: Toluene-d8	98.8		70-130		%Rec	1	10/30/2019 4:22:11 AM	B64063
Surr: 4-Bromofluorobenzene	108		70-130		%Rec	1	10/30/2019 4:22:11 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank
Project: SWMU 13
Collection Date:
Lab ID: 1910E04-030
Matrix: MEOH BLAN
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0041	0.025		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Toluene	ND	0.0048	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Ethylbenzene	ND	0.0029	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Methyl tert-butyl ether (MTBE)	ND	0.012	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,2,4-Trimethylbenzene	ND	0.0046	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,3,5-Trimethylbenzene	ND	0.0048	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,2-Dichloroethane (EDC)	ND	0.0051	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,2-Dibromoethane (EDB)	ND	0.0046	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Naphthalene	ND	0.010	0.10		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1-Methylnaphthalene	ND	0.029	0.20		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
2-Methylnaphthalene	ND	0.022	0.20		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Acetone	ND	0.041	0.75		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Bromobenzene	ND	0.0048	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Bromodichloromethane	ND	0.0046	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Bromoform	ND	0.0045	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Bromomethane	ND	0.012	0.15		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
2-Butanone	ND	0.058	0.50		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Carbon disulfide	ND	0.017	0.50		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Carbon tetrachloride	ND	0.0047	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Chlorobenzene	ND	0.0064	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Chloroethane	ND	0.0074	0.10		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Chloroform	ND	0.0040	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Chloromethane	ND	0.0048	0.15		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
2-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
4-Chlorotoluene	ND	0.0041	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
cis-1,2-DCE	ND	0.0068	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
cis-1,3-Dichloropropene	ND	0.0042	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,2-Dibromo-3-chloropropane	ND	0.0051	0.10		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Dibromochloromethane	ND	0.0035	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Dibromomethane	ND	0.0054	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,2-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,3-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,4-Dichlorobenzene	ND	0.0042	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Dichlorodifluoromethane	ND	0.012	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,1-Dichloroethane	ND	0.0032	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,3-Dichloropropane	ND	0.0054	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
2,2-Dichloropropane	ND	0.016	0.10		mg/Kg	1	10/30/2019 4:51:04 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank
Project: SWMU 13
Collection Date:
Lab ID: 1910E04-030
Matrix: MEOH BLAN
Received Date: 10/25/2019 4:55:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1-Dichloropropene	ND	0.0046	0.10		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Hexachlorobutadiene	ND	0.0051	0.10		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
2-Hexanone	ND	0.0083	0.50		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Isopropylbenzene	ND	0.0036	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
4-Isopropyltoluene	ND	0.0041	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
4-Methyl-2-pentanone	ND	0.0094	0.50		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Methylene chloride	ND	0.0088	0.15		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
n-Butylbenzene	ND	0.0047	0.15		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
n-Propylbenzene	ND	0.0040	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
sec-Butylbenzene	ND	0.0056	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Styrene	ND	0.0039	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
tert-Butylbenzene	ND	0.0047	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,1,1,2-Tetrachloroethane	ND	0.0034	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,1,2,2-Tetrachloroethane	ND	0.0051	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
trans-1,2-DCE	ND	0.0046	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
trans-1,3-Dichloropropene	ND	0.0053	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,2,3-Trichlorobenzene	ND	0.0044	0.10		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,2,4-Trichlorobenzene	ND	0.0051	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,1,1-Trichloroethane	ND	0.0045	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,1,2-Trichloroethane	ND	0.0035	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Trichloroethene (TCE)	ND	0.0058	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Trichlorofluoromethane	ND	0.017	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
1,2,3-Trichloropropane	ND	0.0081	0.10		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Vinyl chloride	ND	0.0033	0.050		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Xylenes, Total	ND	0.013	0.10		mg/Kg	1	10/30/2019 4:51:04 AM	B64063
Surr: Dibromofluoromethane	106		70-130		%Rec	1	10/30/2019 4:51:04 AM	B64063
Surr: 1,2-Dichloroethane-d4	90.7		70-130		%Rec	1	10/30/2019 4:51:04 AM	B64063
Surr: Toluene-d8	99.9		70-130		%Rec	1	10/30/2019 4:51:04 AM	B64063
Surr: 4-Bromofluorobenzene	88.5		70-130		%Rec	1	10/30/2019 4:51:04 AM	B64063

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

November 08, 2019

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1155340

Samples Received: 10/30/2019

Project Number:

Description:

Report To:

4901 Hawkins NE

Albuquerque, NM 87109

Entire Report Reviewed By:

Jason Romer
Project Manager

1910E04-001B SWMU 13-6 (17-18') L1155340-01 Solid

Collected by | Collected date/time 10/24/19 09:30 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:00	JER	Mt. Juliet, TN

1910E04-002B SWMU 13-7 (0-0.5') L1155340-02 Solid

Collected by | Collected date/time 10/24/19 10:45 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:01	JER	Mt. Juliet, TN

1910E04-003B SWMU 13-7 (1.5-2') L1155340-03 Solid

Collected by | Collected date/time 10/24/19 11:10 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:02	JER	Mt. Juliet, TN

1910E04-005B SWMU 13-7 (4-6') L1155340-04 Solid

Collected by | Collected date/time 10/24/19 13:05 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:03	JER	Mt. Juliet, TN

1910E04-006B SWMU 13-7 (10-12') L1155340-05 Solid

Collected by | Collected date/time 10/24/19 13:15 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:04	JER	Mt. Juliet, TN

1910E04-007B SWMU 13-7 (12-13") L1155340-06 Solid

Collected by | Collected date/time 10/24/19 13:25 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:05	JER	Mt. Juliet, TN

1910E04-008B SWMU 13-7 (17.5-18') L1155340-07 Solid

Collected by | Collected date/time 10/24/19 13:30 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:06	JER	Mt. Juliet, TN

1910E04-009B SWMU 13-8 (0-0.5') L1155340-08 Solid

Collected by | Collected date/time 10/24/19 14:35 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:10	JER	Mt. Juliet, TN

1910E04-010B SWMU 13-8 (1.5-2') L1155340-09 Solid

Collected by | Collected date/time 10/24/19 14:45 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:12	JER	Mt. Juliet, TN

1910E04-011B SWMU 13-8 (2-3') L1155340-10 Solid

Collected by | Collected date/time 10/24/19 14:50 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:13	JER	Mt. Juliet, TN

1910E04-012B SWMU 13-9 (0-0.5') L1155340-11 Solid

Collected by | Collected date/time 10/24/19 15:35 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1376270	10	11/07/19 14:00	11/07/19 17:55	JER	Mt. Juliet, TN

1910E04-013B SWMU 13-9 (1.5-2') L1155340-12 Solid

Collected by | Collected date/time 10/24/19 15:45 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:15	JER	Mt. Juliet, TN

1910E04-014B SWMU 13-9 (2-3') L1155340-13 Solid

Collected by | Collected date/time 10/24/19 15:55 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:16	JER	Mt. Juliet, TN

1910E04-015B DUP03 L1155340-14 Solid

Collected by | Collected date/time 10/24/19 00:00 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375250	1	11/05/19 17:06	11/06/19 17:17	JER	Mt. Juliet, TN

1910E04-016B DUP04 L1155340-15 Solid

Collected by | Collected date/time 10/24/19 00:00 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:15	JER	Mt. Juliet, TN

1910E04-018E EB102419 L1155340-16 WW

Collected by | Collected date/time 10/24/19 13:45 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2011	WG1375056	1	11/05/19 15:00	11/06/19 15:53	JER	Mt. Juliet, TN

1910E04-019B SWMU 13-10 (0-0.5') L1155340-17 Solid

Collected by | Collected date/time 10/25/19 10:00 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:16	JER	Mt. Juliet, TN

1910E04-020B SWMU 13-10 (1.5-2') L1155340-18 Solid

Collected by | Collected date/time 10/25/19 10:15 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:17	JER	Mt. Juliet, TN

1910E04-021B SWMU 13-10 (2-3') L1155340-19 Solid

Collected by | Collected date/time 10/25/19 10:30 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:18	JER	Mt. Juliet, TN

1910E04-022B SWMU 13-11 (0-0.5') L1155340-20 Solid

Collected by | Collected date/time 10/25/19 11:30 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:21	JER	Mt. Juliet, TN

1910E04-023B SWMU 13-11 (1.5-2') L1155340-21 Solid

Collected by | Collected date/time 10/25/19 11:45 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:22	JER	Mt. Juliet, TN

1910E04-024B SWMU 13-11 (2-3') L1155340-22 Solid

Collected by | Collected date/time 10/25/19 12:00 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:23	JER	Mt. Juliet, TN

1910E04-025B SWMU 13-12 (0-0.5') L1155340-23 Solid

Collected by | Collected date/time 10/25/19 12:55 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:24	JER	Mt. Juliet, TN

1910E04-026B SWMU 13-12 (0.5-1.5') L1155340-24 Solid

Collected by | Collected date/time 10/25/19 13:10 | Received date/time 10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:27	JER	Mt. Juliet, TN

1910E04-027B SWMU 13-12 (1.5-2') L1155340-25 Solid

Collected by	Collected date/time	Received date/time
	10/25/19 13:25	10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:28	JER	Mt. Juliet, TN

1910E04-028B SWMU 13-12 (2-3') L1155340-26 Solid

Collected by	Collected date/time	Received date/time
	10/25/19 13:35	10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:29	JER	Mt. Juliet, TN

1910E04-029B DUP05 L1155340-27 Solid

Collected by	Collected date/time	Received date/time
	10/25/19 00:00	10/30/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:30	JER	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jason Romer
Project Manager

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:00	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:01	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:02	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:03	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:04	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:05	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:06	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	1.19	P1	0.250	1	11/06/2019 17:10	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:12	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:13	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	8.05		2.50	10	11/07/2019 17:55	WG1376270

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:15	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:16	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 17:17	WG1375250

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 13:15	WG1375558

Wet Chemistry by Method 4500CN E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Cyanide	ND	J6	0.00500	1	11/06/2019 15:53	WG1375056

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	0.692		0.250	1	11/06/2019 13:16	WG1375558

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 13:17	WG1375558

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 13:18	WG1375558

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	1.17		0.250	1	11/06/2019 13:21	WG1375558

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 13:22	WG1375558

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 13:23	WG1375558

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND	J6	0.250	1	11/06/2019 13:24	WG1375558

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	0.435		0.250	1	11/06/2019 13:27	WG1375558

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 13:28	WG1375558

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 13:29	WG1375558

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	0.392		0.250	1	11/06/2019 13:30	WG1375558

Method Blank (MB)

(MB) R3469134-1 11/06/19 15:34

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

L1155017-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1155017-01 11/06/19 15:46 • (DUP) R3469134-3 11/06/19 15:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

L1155479-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1155479-03 11/06/19 16:05 • (DUP) R3469134-8 11/06/19 16:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3469134-2 11/06/19 15:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.0907	90.7	85.0-115	

L1155184-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155184-01 11/06/19 15:48 • (MS) R3469134-4 11/06/19 15:49 • (MSD) R3469134-5 11/06/19 15:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0764	0.0753	76.4	75.3	1	75.0-125			1.45	20

L1155340-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155340-16 11/06/19 15:53 • (MS) R3469134-6 11/06/19 15:54 • (MSD) R3469134-7 11/06/19 15:55

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0735	0.0688	73.5	68.8	1	75.0-125	J6	J6	6.61	20

Method Blank (MB)

(MB) R3469178-1 11/06/19 16:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0390	0.250

L1155312-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1155312-13 11/06/19 16:51 • (DUP) R3469178-3 11/06/19 16:52

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

L1155340-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1155340-08 11/06/19 17:10 • (DUP) R3469178-6 11/06/19 17:11

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	1.19	0.863	1	31.8	P1	20

Laboratory Control Sample (LCS)

(LCS) R3469178-2 11/06/19 16:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.37	95.0	50.0-150	

L1155312-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155312-16 11/06/19 16:57 • (MS) R3469178-4 11/06/19 16:58 • (MSD) R3469178-5 11/06/19 16:59

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	1.06	2.30	2.31	74.8	75.2	1	75.0-125	J6		0.295	20

L1155340-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155340-14 11/06/19 17:17 • (MS) R3469178-7 11/06/19 17:18 • (MSD) R3469178-8 11/06/19 17:19

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.50	1.55	90.2	93.0	1	75.0-125			3.04	20

Method Blank (MB)

(MB) R3469026-1 11/06/19 13:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0390	0.250

L1155314-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1155314-01 11/06/19 13:13 • (DUP) R3469026-3 11/06/19 13:14

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

L1156516-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1156516-01 11/06/19 13:41 • (DUP) R3469026-8 11/06/19 13:42

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3469026-2 11/06/19 13:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.38	95.3	50.0-150	

L1155340-23 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155340-23 11/06/19 13:24 • (MS) R3469026-4 11/06/19 13:25 • (MSD) R3469026-5 11/06/19 13:26

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.48	1.31	77.0	66.8	1	75.0-125		J6	12.3	20

L1155857-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155857-01 11/06/19 13:37 • (MS) R3469026-6 11/06/19 13:38 • (MSD) R3469026-7 11/06/19 13:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.45	1.54	73.2	78.4	1	75.0-125	J6		5.85	20

Method Blank (MB)

(MB) R3469670-1 11/07/19 17:18

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0390	0.250

L1155811-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1155811-02 11/07/19 17:23 • (DUP) R3469670-3 11/07/19 17:24

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.0785	1	0.000		20

L1157218-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1157218-01 11/07/19 17:50 • (DUP) R3469670-8 11/07/19 17:51

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3469670-2 11/07/19 17:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.58	103	50.0-150	

L1156475-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1156475-03 11/07/19 17:32 • (MS) R3469670-4 11/07/19 17:33 • (MSD) R3469670-5 11/07/19 17:34

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	U	1.42	1.47	85.0	88.1	1	75.0-125			3.52	20

L1156476-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1156476-01 11/07/19 17:44 • (MS) R3469670-6 11/07/19 17:45 • (MSD) R3469670-7 11/07/19 17:47

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.47	0.0905	88.0	5.43	1	75.0-125		J3 J6	177	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

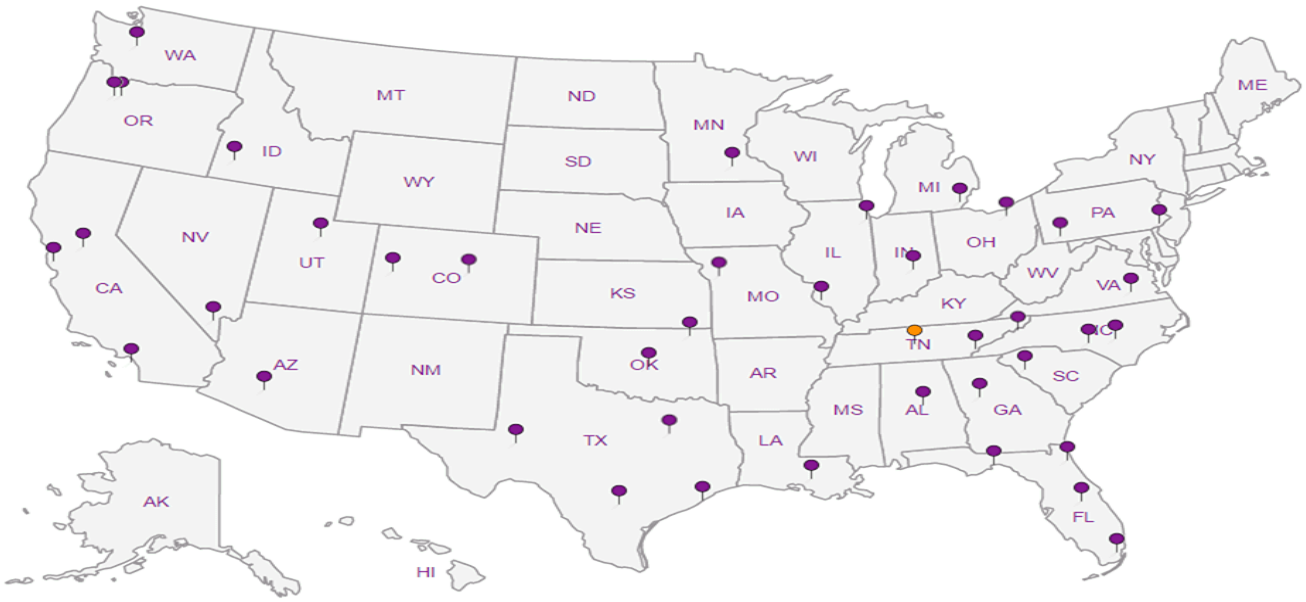
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 3

C192

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: **ESC PACE**	COMPANY: **ESC PACE**	PHONE: **(800) 767-5859**	FAX: **(615) 758-5859**
ADDRESS: **12065 Lebanon Rd**		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: **Mt. Juliet, TN 37122**			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	1910E04-001B	SWMU 13-6 (17-18')	4OZGU	Soil	10/24/2019 9:30:00 AM	1	Total CN
2	1910E04-002B	SWMU 13-7 (0-0.5')	4OZGU	MeOH (Soil)	10/24/2019 10:45:00 AM	1	Total CN
3	1910E04-003B	SWMU 13-7 (1.5-2')	4OZGU	MeOH (Soil)	10/24/2019 11:10:00 AM	1	Total CN
4	1910E04-005B	SWMU 13-7 (4-6')	4OZGU	MeOH (Soil)	10/24/2019 1:05:00 PM	1	Total CN
5	1910E04-006B	SWMU 13-7 (10-12')	4OZGU	MeOH (Soil)	10/24/2019 1:15:00 PM	1	Total CN
6	1910E04-007B	SWMU 13-7 (12-13")	4OZGU	Soil	10/24/2019 1:25:00 PM	1	Total CN
7	1910E04-008B	SWMU 13-7 (17.5-18')	4OZGU	MeOH (Soil)	10/24/2019 1:30:00 PM	1	Total CN
8	1910E04-009B	SWMU 13-8 (0-0.5')	4OZGU	MeOH (Soil)	10/24/2019 2:35:00 PM	1	Total CN
9	1910E04-010B	SWMU 13-8 (1.5-2')	4OZGU	MeOH (Soil)	10/24/2019 2:45:00 PM	1	Total CN
10	1910E04-011B	SWMU 13-8 (2-3')	4OZGU	MeOH (Soil)	10/24/2019 2:50:00 PM	1	Total CN
11	1910E04-012B	SWMU 13-9 (0-0.5')	4OZGU	MeOH (Soil)	10/24/2019 3:35:00 PM	1	Total CN
12	1910E04-013B	SWMU 13-9 (1.5-2')	4OZGU	MeOH (Soil)	10/24/2019 3:45:00 PM	1	Total CN
13	1910E04-014B	SWMU 13-9 (2-3')	4OZGU	MeOH (Soil)	10/24/2019 3:55:00 PM	1	Total CN

LV.CL LB 10/28/19

L1155340-01 02 03 04 05 06 07 08 09 10 11 12 13

COC57

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

RAD SCREEN: <0.5 mR/hr

Relinquished By: LB	Date: 10/28/2019	Time: 9:18 AM	Received By:	Date: 10/30/19	Time: 8:30
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 2.8-2.2=2.6 C Attempt to Cool ? _____
Comments: _____

27 containers Fedex 4510 4449 1577

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 2 OF: 3

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: ESC PACE	COMPANY: ESC PACE	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
14	1910E04-015B	DUP03	4OZGU	MeOH (Soil)	10/24/2019	1	Total CN	2V4 L1155340-14
15	1910E04-016B	DUP04	4OZGU	MeOH (Soil)	10/24/2019	1	Total CN	LB 10/28/19 15
16	1910E04-018E	EB102419	500AMBHDPE-NAOH	Aqueous	10/24/2019 1:45:00 PM	1	Total CN	212 16
17	1910E04-019B	SWMU 13-10 (0-0.5')	4OZGU	MeOH (Soil)	10/25/2019 10:00:00 AM	1	Total CN	17
18	1910E04-020B	SWMU 13-10 (1.5-2')	4OZGU	MeOH (Soil)	10/25/2019 10:15:00 AM	1	Total CN	18
19	1910E04-021B	SWMU 13-10 (2-3')	4OZGU	MeOH (Soil)	10/25/2019 10:30:00 AM	1	Total CN	19
20	1910E04-022B	SWMU 13-11 (0-0.5')	4OZGU	MeOH (Soil)	10/25/2019 11:30:00 AM	1	Total CN	20
21	1910E04-023B	SWMU 13-11 (1.5-2')	4OZGU	MeOH (Soil)	10/25/2019 11:45:00 AM	1	Total CN	21
22	1910E04-024B	SWMU 13-11 (2-3')	4OZGU	MeOH (Soil)	10/25/2019 12:00:00 PM	1	Total CN	22
23	1910E04-025B	SWMU 13-12 (0-0.5')	4OZGU	MeOH (Soil)	10/25/2019 12:55:00 PM	1	Total CN	23
24	1910E04-026B	SWMU 13-12 (0.5-1.5')	4OZGU	MeOH (Soil)	10/25/2019 1:10:00 PM	1	Total CN	24
25	1910E04-027B	SWMU 13-12 (1.5-2')	4OZGU	MeOH (Soil)	10/25/2019 1:25:00 PM	1	Total CN	25
26	1910E04-028B	SWMU 13-12 (2-3')	4OZGU	MeOH (Soil)	10/25/2019 1:35:00 PM	1	Total CN	26

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

RAD SCREEN: <0.5 mR/hr

COCSF

Relinquished By: LB	Date: 10/28/2019	Time: 9:18 AM	Received By: [signature]	Date: 10/30/19	Time: 8:30
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ (circled) RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 2.8-2=2.6 Attempt to Cool ?
Comments:

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: ESC PACE	COMPANY: ESC PACE	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
27	1910E04-029B	DUP05	4OZGU	MeOH (Soil)	10/25/2019	1	Total CN LV4 L1155346-27 LB 10/28/19

RAD SCREEN: <0.5 mR/hr

COCSI

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: LB	Date: 10/28/2019	Time: 9:18 AM	Received By: [signature]	Date: 10/30/19	Time: 8:36
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ (circled) RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples 2.8-.2=2.6 Attempt to Cool ? ____

Comments: ____

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: HALLENVANM	L1155340	
Cooler Received/Opened On: 10/30/19 Temperature:	2.6	
Received By: Adam Burns		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **1910E04-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SWMU 13-6 (17-18')** Batch ID: **48458** RunNo: **64089**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2193197** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.8	49.12	0	91.3	57	142			
Surr: DNOP	4.5		4.912		92.3	70	130			

Sample ID: **1910E04-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SWMU 13-6 (17-18')** Batch ID: **48458** RunNo: **64089**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2193198** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	9.4	46.90	0	90.6	57	142	5.30	20	
Surr: DNOP	4.4		4.690		94.6	70	130	0	0	

Sample ID: **1910E04-023AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SWMU 13-11 (1.5-2')** Batch ID: **48459** RunNo: **64089**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2193203** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	78	8.9	44.44	0	177	57	142			S
Surr: DNOP	4.5		4.444		101	70	130			

Sample ID: **1910E04-023AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SWMU 13-11 (1.5-2')** Batch ID: **48459** RunNo: **64089**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2193204** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	9.0	45.25	0	93.9	57	142	59.5	20	R
Surr: DNOP	4.4		4.525		97.9	70	130	0	0	

Sample ID: **LCS-48458** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **48458** RunNo: **64089**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2193220** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	92.3	63.9	124			
Surr: DNOP	4.6		5.000		91.2	70	130			

Sample ID: **LCS-48459** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **48459** RunNo: **64089**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2193221** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **LCS-48459**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **48459**	RunNo: **64089**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193221** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.7	63.9	124			
Surr: DNOP	4.4		5.000		87.0	70	130			

Sample ID: **MB-48458**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48458**	RunNo: **64089**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2193222** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		102	70	130			

Sample ID: **MB-48459**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48459**	RunNo: **64089**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193223** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.3		10.00		93.4	70	130			

Sample ID: **LCS-48574**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **48574**	RunNo: **64223**
Prep Date: **11/4/2019**	Analysis Date: **11/5/2019**	SeqNo: **2197824** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.2		5.000		83.4	70	130			

Sample ID: **MB-48574**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48574**	RunNo: **64223**
Prep Date: **11/4/2019**	Analysis Date: **11/5/2019**	SeqNo: **2197825** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.1		10.00		91.3	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **LCS-48464** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW** Batch ID: **48464** RunNo: **64071**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2192326** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.3	1.0	5.000	0	106	71.8	135			
Surr: DNOP	0.44		0.5000		88.0	70	130			

Sample ID: **MB-48464** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW** Batch ID: **48464** RunNo: **64071**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2192327** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	0.87		1.000		87.0	70	130			

Sample ID: **MB-48464** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW** Batch ID: **48464** RunNo: **64124**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194394** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.1		1.000		111	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **G64058**	RunNo: **64058**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191371** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		99.7	77.4	118			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **G64058**	RunNo: **64058**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191372** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	93.2	80	120			
Surr: BFB	1200		1000		116	77.4	118			

Sample ID: **1910E04-002AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SWMU 13-7 (0-0.5')**	Batch ID: **G64058**	RunNo: **64076**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2193021** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	12	2.9	14.72	0	84.0	69.1	142			
Surr: BFB	630		588.9		108	77.4	118			

Sample ID: **1910E04-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SWMU 13-7 (0-0.5')**	Batch ID: **G64058**	RunNo: **64076**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2193022** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	13	2.9	14.72	0	86.9	69.1	142	3.37	20	
Surr: BFB	650		588.9		110	77.4	118	0	0	

Sample ID: **MB-48446**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193023** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		99.9	77.4	118			

Sample ID: **LCS-48446**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193024** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48446**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193024** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.5	80	120			
Surr: BFB	1100		1000		108	77.4	118			

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **G64077**	RunNo: **64077**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2193126** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	990		1000		98.7	77.4	118			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **G64077**	RunNo: **64077**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2193135** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	97.6	80	120			
Surr: BFB	1100		1000		113	77.4	118			

Sample ID: **1910E04-022AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SWMU 13-11 (0-0.5')**	Batch ID: **G64077**	RunNo: **64077**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2193138** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	18	4.1	20.33	0	87.2	69.1	142			
Surr: BFB	830		813.0		102	77.4	118			

Sample ID: **1910E04-022AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SWMU 13-11 (0-0.5')**	Batch ID: **G64077**	RunNo: **64077**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2193140** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	17	4.1	20.33	0	85.9	69.1	142	1.48	20	
Surr: BFB	810		813.0		100	77.4	118	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **R64171**	RunNo: **64171**
Prep Date:	Analysis Date: **11/1/2019**	SeqNo: **2195897** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	19		20.00		97.4	65.8	143			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **R64171**	RunNo: **64171**
Prep Date:	Analysis Date: **11/1/2019**	SeqNo: **2195898** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.39	0.050	0.5000	0	77.4	73.6	119			
Surr: BFB	22		20.00		109	65.8	143			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191749** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191749** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.53		0.5000		106	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.9	70	130			
Surr: Toluene-d8	0.50		0.5000		100	70	130			
Surr: 4-Bromofluorobenzene	0.45		0.5000		89.4	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **A64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191750** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	98.3	68	135			
Toluene	0.91	0.050	1.000	0	91.1	70	130			
Chlorobenzene	0.89	0.050	1.000	0	89.5	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **A64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191750** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.96	0.050	1.000	0	96.5	51.1	139			
Trichloroethene (TCE)	0.89	0.050	1.000	0	89.5	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		93.4	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		89.8	70	130			
Surr: Toluene-d8	0.47		0.5000		94.1	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.9	70	130			

Sample ID: **1910e04-002ams**	SampType: **MS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU 13-7 (0-0.5')**	Batch ID: **A64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191752** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.59	0.015	0.5889	0	100	57.1	141			
Toluene	0.58	0.029	0.5889	0	99.2	70	130			
Chlorobenzene	0.56	0.029	0.5889	0	95.7	70	130			
1,1-Dichloroethene	0.57	0.029	0.5889	0	96.8	38.5	141			
Trichloroethene (TCE)	0.54	0.029	0.5889	0	92.5	70	130			
Surr: Dibromofluoromethane	0.27		0.2944		91.3	70	130			
Surr: 1,2-Dichloroethane-d4	0.28		0.2944		94.9	70	130			
Surr: Toluene-d8	0.28		0.2944		96.3	70	130			
Surr: 4-Bromofluorobenzene	0.26		0.2944		88.7	70	130			

Sample ID: **1910e04-002amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU 13-7 (0-0.5')**	Batch ID: **A64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191753** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.56	0.015	0.5889	0	95.7	57.1	141	4.36	20	
Toluene	0.55	0.029	0.5889	0	94.0	70	130	5.44	20	
Chlorobenzene	0.55	0.029	0.5889	0	93.4	70	130	2.50	20	
1,1-Dichloroethene	0.54	0.029	0.5889	0	92.3	38.5	141	4.82	20	
Trichloroethene (TCE)	0.53	0.029	0.5889	0	89.5	70	130	3.27	20	
Surr: Dibromofluoromethane	0.28		0.2944		94.3	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.28		0.2944		94.0	70	130	0	0	
Surr: Toluene-d8	0.29		0.2944		98.2	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.28		0.2944		96.2	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb1**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **B64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191776** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **rb1**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **B64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191776** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.55		0.5000		110	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		96.2	70	130			
Surr: Toluene-d8	0.51		0.5000		102	70	130			
Surr: 4-Bromofluorobenzene	0.44		0.5000		87.4	70	130			

Sample ID: **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **B64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191777** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	100	68	135			
Toluene	0.94	0.050	1.000	0	93.5	70	130			
Chlorobenzene	0.87	0.050	1.000	0	87.3	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **B64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2191777** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.96	0.050	1.000	0	95.9	51.1	139			
Trichloroethene (TCE)	0.92	0.050	1.000	0	91.6	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		94.1	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		93.3	70	130			
Surr: Toluene-d8	0.48		0.5000		96.6	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.5	70	130			

Sample ID: **1910e04-024ams**	SampType: **MS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU 13-11 (2-3')**	Batch ID: **B64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2191779** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.60	0.015	0.5992	0	101	57.1	141			
Toluene	0.55	0.030	0.5992	0	92.6	70	130			
Chlorobenzene	0.57	0.030	0.5992	0	95.0	70	130			
1,1-Dichloroethene	0.57	0.030	0.5992	0	95.1	38.5	141			
Trichloroethene (TCE)	0.54	0.030	0.5992	0	89.3	70	130			
Surr: Dibromofluoromethane	0.28		0.2996		93.1	70	130			
Surr: 1,2-Dichloroethane-d4	0.29		0.2996		96.1	70	130			
Surr: Toluene-d8	0.28		0.2996		92.1	70	130			
Surr: 4-Bromofluorobenzene	0.27		0.2996		89.4	70	130			

Sample ID: **1910e04-024amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU 13-11 (2-3')**	Batch ID: **B64063**	RunNo: **64063**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2191780** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.57	0.015	0.5992	0	95.9	57.1	141	4.96	20	
Toluene	0.53	0.030	0.5992	0	89.2	70	130	3.73	20	
Chlorobenzene	0.55	0.030	0.5992	0	91.0	70	130	4.32	20	
1,1-Dichloroethene	0.55	0.030	0.5992	0	91.1	38.5	141	4.20	20	
Trichloroethene (TCE)	0.53	0.030	0.5992	0	88.8	70	130	0.520	20	
Surr: Dibromofluoromethane	0.29		0.2996		95.6	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.30		0.2996		101	70	130	0	0	
Surr: Toluene-d8	0.28		0.2996		94.1	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.27		0.2996		90.7	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48446** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **48446** RunNo: **64109**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2194198** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **mb-48446**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **48446**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194198** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.54		0.5000		107	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		93.0	70	130			
Surr: Toluene-d8	0.49		0.5000		98.5	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.1	70	130			

Sample ID: **lcs-48446**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **48446**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194199** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	98.8	68	135			
Toluene	0.96	0.050	1.000	0	95.8	70	130			
Chlorobenzene	0.91	0.050	1.000	0	91.0	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **lcs-48446** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS** Batch ID: **48446** RunNo: **64109**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2194199** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.94	0.050	1.000	0	93.8	51.1	139			
Trichloroethene (TCE)	0.94	0.050	1.000	0	93.9	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		95.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.4	70	130			
Surr: Toluene-d8	0.48		0.5000		95.6	70	130			
Surr: 4-Bromofluorobenzene	0.44		0.5000		88.7	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192371** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.5	70	130			
Toluene	19	1.0	20.00	0	93.8	70	130			
Chlorobenzene	20	1.0	20.00	0	99.5	70	130			
1,1-Dichloroethene	17	1.0	20.00	0	84.9	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	84.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.1	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		90.9	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.9		10.00		99.1	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R64075** RunNo: **64075**
Prep Date: Analysis Date: **10/29/2019** SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.2		10.00		92.4	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		93.8	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.0	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48455**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48455**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194553** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.16	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48455**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48455**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194553** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.3		3.330		69.5	26.7	85.9			
Surr: Phenol-d5	2.4		3.330		71.3	18.5	101			
Surr: 2,4,6-Tribromophenol	2.2		3.330		66.0	35.8	85.6			
Surr: Nitrobenzene-d5	1.2		1.670		74.7	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		69.1	34.7	85.2			
Surr: 4-Terphenyl-d14	1.5		1.670		90.2	37.4	91.3			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **lcs-48455** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **48455** RunNo: **64136**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194554** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.3	0.20	1.670	0	75.4	46	89.5			
4-Chloro-3-methylphenol	2.6	0.50	3.330	0	78.8	44.1	101			
2-Chlorophenol	2.5	0.20	3.330	0	74.9	47	91			
1,4-Dichlorobenzene	1.2	0.20	1.670	0	72.1	41.4	85.8			
2,4-Dinitrotoluene	1.1	0.50	1.670	0	65.5	37.4	82			
N-Nitrosodi-n-propylamine	1.4	0.20	1.670	0	86.6	47.8	92.9			
4-Nitrophenol	2.4	0.25	3.330	0	71.5	45	94.3			
Pentachlorophenol	2.0	0.40	3.330	0	60.3	31.7	76.9			
Phenol	2.9	0.20	3.330	0	87.0	49.4	92.5			
Pyrene	1.2	0.20	1.670	0	69.1	52.9	82.7			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	71.1	43.6	98.1			
Surr: 2-Fluorophenol	2.3		3.330		68.5	26.7	85.9			
Surr: Phenol-d5	2.5		3.330		74.8	18.5	101			
Surr: 2,4,6-Tribromophenol	2.4		3.330		70.7	35.8	85.6			
Surr: Nitrobenzene-d5	1.3		1.670		78.1	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		73.2	34.7	85.2			
Surr: 4-Terphenyl-d14	1.3		1.670		76.0	37.4	91.3			

Sample ID: **mb-48494** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48494** RunNo: **64211**
Prep Date: **10/30/2019** Analysis Date: **11/4/2019** SeqNo: **2197233** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48494**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48494**	RunNo: **64211**
Prep Date: **10/30/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197233** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.25	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **mb-48494**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48494**	RunNo: **64211**
Prep Date: **10/30/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197233** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.3		3.330		68.2	26.7	85.9			
Surr: Phenol-d5	2.3		3.330		70.0	18.5	101			
Surr: 2,4,6-Tribromophenol	2.3		3.330		68.6	35.8	85.6			
Surr: Nitrobenzene-d5	1.3		1.670		77.8	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		69.2	34.7	85.2			
Surr: 4-Terphenyl-d14	1.4		1.670		81.1	37.4	91.3			

Sample ID: **lcs-48494**	SampType: **LCS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS**	Batch ID: **48494**	RunNo: **64211**
Prep Date: **10/30/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197234** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.4	0.20	1.670	0	82.8	46	89.5			
4-Chloro-3-methylphenol	2.8	0.50	3.330	0	84.3	44.1	101			
2-Chlorophenol	2.4	0.20	3.330	0	71.9	47	91			
1,4-Dichlorobenzene	1.2	0.20	1.670	0	71.4	41.4	85.8			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	74.8	37.4	82			
N-Nitrosodi-n-propylamine	1.4	0.20	1.670	0	82.5	47.8	92.9			
4-Nitrophenol	2.6	0.25	3.330	0	77.0	45	94.3			
Pentachlorophenol	2.2	0.40	3.330	0	64.6	31.7	76.9			
Phenol	2.6	0.20	3.330	0	79.2	49.4	92.5			
Pyrene	1.3	0.20	1.670	0	77.8	52.9	82.7			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	74.0	43.6	98.1			
Surr: 2-Fluorophenol	2.2		3.330		65.5	26.7	85.9			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **lcs-48494**	SampType: **LCS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS**	Batch ID: **48494**	RunNo: **64211**
Prep Date: **10/30/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197234** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Phenol-d5	2.4		3.330		71.9	18.5	101			
Surr: 2,4,6-Tribromophenol	2.5		3.330		76.2	35.8	85.6			
Surr: Nitrobenzene-d5	1.3		1.670		79.2	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.3		1.670		77.1	34.7	85.2			
Surr: 4-Terphenyl-d14	1.4		1.670		83.8	37.4	91.3			

Sample ID: **1910E04-003Ams**	SampType: **MS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **SWMU 13-7 (1.5-2')**	Batch ID: **48494**	RunNo: **64211**
Prep Date: **10/30/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197236** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.99	0.20	1.653	0	59.9	28	113			
4-Chloro-3-methylphenol	2.3	0.49	3.296	0	69.6	28.8	121			
2-Chlorophenol	2.0	0.20	3.296	0	59.5	15.4	115			
1,4-Dichlorobenzene	0.66	0.20	1.653	0	39.9	15	107			
2,4-Dinitrotoluene	1.1	0.49	1.653	0	68.6	29.9	100			
N-Nitrosodi-n-propylamine	1.1	0.20	1.653	0	66.5	23.5	120			
4-Nitrophenol	2.4	0.25	3.296	0	71.3	42.3	125			
Pentachlorophenol	1.8	0.40	3.296	0	55.7	23.4	114			
Phenol	2.2	0.20	3.296	0	67.2	16.3	117			
Pyrene	0.78	0.20	1.653	0	47.0	34.2	122			
1,2,4-Trichlorobenzene	0.81	0.20	1.653	0	48.8	16.3	117			
Surr: 2-Fluorophenol	1.6		3.296		47.4	26.7	85.9			
Surr: Phenol-d5	2.0		3.296		59.6	18.5	101			
Surr: 2,4,6-Tribromophenol	2.0		3.296		59.3	35.8	85.6			
Surr: Nitrobenzene-d5	0.98		1.653		59.1	40.8	95.2			
Surr: 2-Fluorobiphenyl	0.83		1.653		50.1	34.7	85.2			
Surr: 4-Terphenyl-d14	1.1		1.653		69.2	37.4	91.3			

Sample ID: **1910E04-003Amsd**	SampType: **MSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **SWMU 13-7 (1.5-2')**	Batch ID: **48494**	RunNo: **64211**
Prep Date: **10/30/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197237** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.2	0.20	1.661	0	70.0	28	113	16.0	33.1	
4-Chloro-3-methylphenol	2.5	0.50	3.311	0	74.0	28.8	121	6.67	39	
2-Chlorophenol	2.3	0.20	3.311	0	68.3	15.4	115	14.2	27.1	
1,4-Dichlorobenzene	0.78	0.20	1.661	0	46.7	15	107	16.2	26.3	
2,4-Dinitrotoluene	1.2	0.50	1.661	0	70.1	29.9	100	2.65	51.5	
N-Nitrosodi-n-propylamine	1.2	0.20	1.661	0	72.9	23.5	120	9.68	22.8	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **1910E04-003Amsd** SampType: **MSD** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **SWMU 13-7 (1.5-2')** Batch ID: **48494** RunNo: **64211**
Prep Date: **10/30/2019** Analysis Date: **11/4/2019** SeqNo: **2197237** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Nitrophenol	2.4	0.25	3.311	0	73.1	42.3	125	2.89	52.9	
Pentachlorophenol	1.9	0.40	3.311	0	57.7	23.4	114	4.12	52.1	
Phenol	2.5	0.20	3.311	0	74.9	16.3	117	11.4	28.8	
Pyrene	0.96	0.20	1.661	0	57.9	34.2	122	21.3	37.1	
1,2,4-Trichlorobenzene	0.99	0.20	1.661	0	59.5	16.3	117	20.3	28.4	
Surr: 2-Fluorophenol	1.9		3.311		58.4	26.7	85.9	0	0	
Surr: Phenol-d5	2.2		3.311		65.8	18.5	101	0	0	
Surr: 2,4,6-Tribromophenol	2.0		3.311		59.6	35.8	85.6	0	0	
Surr: Nitrobenzene-d5	1.2		1.661		73.4	40.8	95.2	0	0	
Surr: 2-Fluorobiphenyl	0.97		1.661		58.5	34.7	85.2	0	0	
Surr: 4-Terphenyl-d14	1.2		1.661		73.0	37.4	91.3	0	0	

Sample ID: **MB-48455** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48455** RunNo: **64267**
Prep Date: **10/29/2019** Analysis Date: **11/6/2019** SeqNo: **2199506** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.030	0.20								J
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	0.015	0.20								J
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	0.14	0.50								J
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48455**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48455**	RunNo: **64267**
Prep Date: **10/29/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199506** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.18	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	0.11	0.20								J
Dimethyl phthalate	0.036	0.20								J
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	0.030	0.20								J
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	0.019	0.20								J
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48455** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48455** RunNo: **64267**
Prep Date: **10/29/2019** Analysis Date: **11/6/2019** SeqNo: **2199506** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	0.0082	0.20								J
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.6		3.330		76.8	26.7	85.9			
Surr: Phenol-d5	2.6		3.330		79.5	18.5	101			
Surr: 2,4,6-Tribromophenol	1.7		3.330		52.3	35.8	85.6			
Surr: Nitrobenzene-d5	1.2		1.670		71.3	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.0		1.670		59.7	34.7	85.2			
Surr: 4-Terphenyl-d14	1.4		1.670		85.6	37.4	91.3			

Sample ID: **MB-48494** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48494** RunNo: **64267**
Prep Date: **10/30/2019** Analysis Date: **11/6/2019** SeqNo: **2199507** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	0.0015	0.20								J
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	0.017	0.20								J
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	0.15	0.50								J
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48494** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48494** RunNo: **64267**
Prep Date: **10/30/2019** Analysis Date: **11/6/2019** SeqNo: **2199507** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	0.0054	0.50								J
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	0.012	0.20								J
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.24	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	0.11	0.20								J
Dimethyl phthalate	0.035	0.20								J
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	0.027	0.20								J
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48494** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48494** RunNo: **64267**
Prep Date: **10/30/2019** Analysis Date: **11/6/2019** SeqNo: **2199507** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
3-Nitroaniline	0.029	0.20								J
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	0.015	0.20								J
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.5		3.330		75.8	26.7	85.9			
Surr: Phenol-d5	2.7		3.330		82.1	18.5	101			
Surr: 2,4,6-Tribromophenol	1.7		3.330		50.7	35.8	85.6			
Surr: Nitrobenzene-d5	1.2		1.670		73.2	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.1		1.670		64.5	34.7	85.2			
Surr: 4-Terphenyl-d14	1.2		1.670		72.7	37.4	91.3			

Sample ID: **MB-48536** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48536** RunNo: **64267**
Prep Date: **11/1/2019** Analysis Date: **11/6/2019** SeqNo: **2199508** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	0.00064	0.20								J
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	0.014	0.20								J
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48536** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48536** RunNo: **64267**
Prep Date: **11/1/2019** Analysis Date: **11/6/2019** SeqNo: **2199508** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	0.14	0.50								J
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.20	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	0.12	0.20								J
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48536**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48536**	RunNo: **64267**
Prep Date: **11/1/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199508** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	0.028	0.20								J
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	0.0044	0.20								J
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.1		3.330		63.6	26.7	85.9			
Surr: Phenol-d5	2.2		3.330		67.0	18.5	101			
Surr: 2,4,6-Tribromophenol	1.6		3.330		48.6	35.8	85.6			
Surr: Nitrobenzene-d5	1.1		1.670		63.0	40.8	95.2			
Surr: 2-Fluorobiphenyl	0.90		1.670		54.0	34.7	85.2			
Surr: 4-Terphenyl-d14	0.98		1.670		58.6	37.4	91.3			

Sample ID: **mb-48536**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48536**	RunNo: **64325**
Prep Date: **11/1/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201376** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48536**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48536**	RunNo: **64325**
Prep Date: **11/1/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201376** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.22	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48536** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **48536** RunNo: **64325**
Prep Date: **11/1/2019** Analysis Date: **11/7/2019** SeqNo: **2201376** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.2		3.330		65.2	26.7	85.9			
Surr: Phenol-d5	2.3		3.330		68.3	18.5	101			
Surr: 2,4,6-Tribromophenol	2.3		3.330		69.8	35.8	85.6			
Surr: Nitrobenzene-d5	1.2		1.670		71.0	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		72.0	34.7	85.2			
Surr: 4-Terphenyl-d14	1.1		1.670		65.8	37.4	91.3			

Sample ID: **lcs-48536** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **48536** RunNo: **64325**
Prep Date: **11/1/2019** Analysis Date: **11/7/2019** SeqNo: **2201377** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.2	0.20	1.670	0	73.9	46	89.5			
4-Chloro-3-methylphenol	2.7	0.50	3.330	0	80.7	44.1	101			
2-Chlorophenol	2.2	0.20	3.330	0	67.4	47	91			
1,4-Dichlorobenzene	1.1	0.20	1.670	0	64.7	41.4	85.8			
2,4-Dinitrotoluene	1.1	0.50	1.670	0	63.5	37.4	82			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	71.2	47.8	92.9			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **lcs-48536** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **48536** RunNo: **64325**
Prep Date: **11/1/2019** Analysis Date: **11/7/2019** SeqNo: **2201377** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Nitrophenol	2.5	0.25	3.330	0	73.8	45	94.3			
Pentachlorophenol	2.3	0.40	3.330	0	69.9	31.7	76.9			
Phenol	2.4	0.20	3.330	0	70.9	49.4	92.5			
Pyrene	1.3	0.20	1.670	0	75.3	52.9	82.7			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	73.4	43.6	98.1			
Surr: 2-Fluorophenol	2.1		3.330		62.1	26.7	85.9			
Surr: Phenol-d5	2.2		3.330		67.2	18.5	101			
Surr: 2,4,6-Tribromophenol	2.5		3.330		76.3	35.8	85.6			
Surr: Nitrobenzene-d5	1.3		1.670		75.3	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		74.2	34.7	85.2			
Surr: 4-Terphenyl-d14	1.2		1.670		72.6	37.4	91.3			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194544** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3´-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194544** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	130		200.0		66.6	15	101			
Surr: Phenol-d5	99		200.0		49.5	15	84.6			
Surr: 2,4,6-Tribromophenol	170		200.0		84.1	27.8	112			
Surr: Nitrobenzene-d5	93		100.0		92.9	33	113			
Surr: 2-Fluorobiphenyl	83		100.0		83.1	26.6	107			
Surr: 4-Terphenyl-d14	62		100.0		61.9	18.7	148			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **lcs-48439** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **LCSW** Batch ID: **48439** RunNo: **64136**

Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194545** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	85	10	100.0	0	84.9	32.2	94			
4-Chloro-3-methylphenol	180	10	200.0	0	88.4	37.7	101			
2-Chlorophenol	170	10	200.0	0	83.6	32.6	90.1			
1,4-Dichlorobenzene	79	10	100.0	0	79.2	30	87.2			
2,4-Dinitrotoluene	72	10	100.0	0	72.2	35.9	85.8			
N-Nitrosodi-n-propylamine	97	10	100.0	0	97.0	37.1	108			
4-Nitrophenol	94	10	200.0	0	47.2	22.4	86.6			
Pentachlorophenol	140	20	200.0	0	70.0	31.6	91			
Phenol	110	10	200.0	0	57.2	21.7	84.9			
Pyrene	80	10	100.0	0	80.4	46.3	103			
1,2,4-Trichlorobenzene	78	10	100.0	0	78.0	30.2	88.3			
Surr: 2-Fluorophenol	130		200.0		66.0	15	101			
Surr: Phenol-d5	100		200.0		51.5	15	84.6			
Surr: 2,4,6-Tribromophenol	160		200.0		80.3	27.8	112			
Surr: Nitrobenzene-d5	91		100.0		91.3	33	113			
Surr: 2-Fluorobiphenyl	81		100.0		81.1	26.6	107			
Surr: 4-Terphenyl-d14	59		100.0		58.7	18.7	148			

Sample ID: **lcsd-48439** SampType: **LCSD** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **LCSS02** Batch ID: **48439** RunNo: **64136**

Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194546** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	84	10	100.0	0	84.3	32.2	94	0.709	32.9	
4-Chloro-3-methylphenol	170	10	200.0	0	86.7	37.7	101	1.92	29.9	
2-Chlorophenol	160	10	200.0	0	80.9	32.6	90.1	3.33	28.5	
1,4-Dichlorobenzene	75	10	100.0	0	75.1	15	87.2	5.36	44.9	
2,4-Dinitrotoluene	77	10	100.0	0	77.1	35.9	85.8	6.51	28.5	
N-Nitrosodi-n-propylamine	92	10	100.0	0	92.3	37.1	108	4.97	29.9	
4-Nitrophenol	100	10	200.0	0	50.6	15	86.6	6.96	68	
Pentachlorophenol	140	20	200.0	0	68.3	31.6	91	2.40	39.5	
Phenol	110	10	200.0	0	53.0	15	84.9	7.69	44.2	
Pyrene	78	10	100.0	0	78.3	46.3	103	2.65	23.8	
1,2,4-Trichlorobenzene	75	10	100.0	0	75.4	15.7	88.3	3.31	38	
Surr: 2-Fluorophenol	120		200.0		61.9	15	101	0	0	
Surr: Phenol-d5	93		200.0		46.7	15	84.6	0	0	
Surr: 2,4,6-Tribromophenol	160		200.0		78.3	27.8	112	0	0	
Surr: Nitrobenzene-d5	92		100.0		92.3	33	113	0	0	
Surr: 2-Fluorobiphenyl	81		100.0		80.9	26.6	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **lcsd-48439**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02**	Batch ID: **48439**	RunNo: **64136**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194546** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	58		100.0		57.7	18.7	148	0	0	

Sample ID: **MB-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64213**
Prep Date: **10/29/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197264** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	0.85	10								J
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	4.1	10								J
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	3.1	10								J
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48439**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48439**	RunNo: **64213**
Prep Date: **10/29/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197264** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
3,3´-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48439** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW** Batch ID: **48439** RunNo: **64213**
Prep Date: **10/29/2019** Analysis Date: **11/4/2019** SeqNo: **2197264** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	140		200.0		68.6	15	101			
Surr: Phenol-d5	100		200.0		50.1	15	84.6			
Surr: 2,4,6-Tribromophenol	160		200.0		80.4	27.8	112			
Surr: Nitrobenzene-d5	84		100.0		84.5	33	113			
Surr: 2-Fluorobiphenyl	73		100.0		73.4	26.6	107			
Surr: 4-Terphenyl-d14	64		100.0		64.4	18.7	148			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48571** SampType: **MBLK** TestCode: **EPA Method 7471: Mercury**
Client ID: **PBS** Batch ID: **48571** RunNo: **64207**
Prep Date: **11/4/2019** Analysis Date: **11/4/2019** SeqNo: **2197008** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LCSLL-48571** SampType: **LCSLL** TestCode: **EPA Method 7471: Mercury**
Client ID: **BatchQC** Batch ID: **48571** RunNo: **64207**
Prep Date: **11/4/2019** Analysis Date: **11/4/2019** SeqNo: **2197009** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.033	0.006660	0	75.6	70	130			J

Sample ID: **LCS-48571** SampType: **LCS** TestCode: **EPA Method 7471: Mercury**
Client ID: **LCSS** Batch ID: **48571** RunNo: **64207**
Prep Date: **11/4/2019** Analysis Date: **11/4/2019** SeqNo: **2197010** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.17	0.033	0.1667	0	101	80	120			

Sample ID: **MB-48570** SampType: **MBLK** TestCode: **EPA Method 7471: Mercury**
Client ID: **PBS** Batch ID: **48570** RunNo: **64207**
Prep Date: **11/4/2019** Analysis Date: **11/4/2019** SeqNo: **2197011** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LCSLL-48570** SampType: **LCSLL** TestCode: **EPA Method 7471: Mercury**
Client ID: **BatchQC** Batch ID: **48570** RunNo: **64207**
Prep Date: **11/4/2019** Analysis Date: **11/4/2019** SeqNo: **2197012** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0053	0.033	0.006660	0	80.1	70	130			J

Sample ID: **LCS-48570** SampType: **LCS** TestCode: **EPA Method 7471: Mercury**
Client ID: **LCSS** Batch ID: **48570** RunNo: **64207**
Prep Date: **11/4/2019** Analysis Date: **11/4/2019** SeqNo: **2197013** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.17	0.033	0.1667	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48664**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **PBW**	Batch ID: **48664**	RunNo: **64358**							
Prep Date: **11/7/2019**	Analysis Date: **11/8/2019**	SeqNo: **2202576**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00012	0.00020								J

Sample ID: **LCS-48664**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **LCSW**	Batch ID: **48664**	RunNo: **64358**							
Prep Date: **11/7/2019**	Analysis Date: **11/8/2019**	SeqNo: **2202577**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.6	80	120			

Sample ID: **1910E04-018DMS**	SampType: **MS**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **EB102419**	Batch ID: **48664**	RunNo: **64358**							
Prep Date: **11/7/2019**	Analysis Date: **11/8/2019**	SeqNo: **2202579**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0.0001145	90.8	75	125			

Sample ID: **1910E04-018DMSD**	SampType: **MSD**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **EB102419**	Batch ID: **48664**	RunNo: **64358**							
Prep Date: **11/7/2019**	Analysis Date: **11/8/2019**	SeqNo: **2202580**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0.0001145	95.8	75	125	5.23	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48433**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48433**	RunNo: **64206**
Prep Date: **10/28/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196928** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	0.025	0.10								J
Chromium	0.12	0.30								J
Cobalt	ND	0.30								
Manganese	0.079	0.10								J
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.92	2.5								J

Sample ID: **LCS-48433**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48433**	RunNo: **64206**
Prep Date: **10/28/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196930** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	25	2.5	25.00	0	101	80	120			
Arsenic	24	2.5	25.00	0	97.8	80	120			
Barium	24	0.10	25.00	0	96.0	80	120			
Beryllium	26	0.15	25.00	0	103	80	120			
Cadmium	24	0.10	25.00	0	96.6	80	120			
Chromium	24	0.30	25.00	0	96.9	80	120			
Cobalt	24	0.30	25.00	0	95.7	80	120			
Manganese	25	0.10	25.00	0	99.4	80	120			
Nickel	24	0.50	25.00	0	96.0	80	120			
Selenium	24	2.5	25.00	0	96.0	80	120			
Silver	4.9	0.25	5.000	0	98.4	80	120			
Vanadium	25	2.5	25.00	0	99.9	80	120			
Zinc	25	2.5	25.00	0	98.7	80	120			

Sample ID: **MB-48434**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48434**	RunNo: **64206**
Prep Date: **10/28/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196946** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48434** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **48434** RunNo: **64206**
Prep Date: **10/28/2019** Analysis Date: **11/4/2019** SeqNo: **2196946** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	0.044	0.10								J
Chromium	ND	0.30								
Cobalt	ND	0.30								
Manganese	0.052	0.10								J
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.74	2.5								J

Sample ID: **LCS-48434** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **48434** RunNo: **64206**
Prep Date: **10/28/2019** Analysis Date: **11/4/2019** SeqNo: **2196951** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	25	2.5	25.00	0	100	80	120			
Arsenic	25	2.5	25.00	0	102	80	120			
Barium	24	0.10	25.00	0	94.7	80	120			
Beryllium	26	0.15	25.00	0	104	80	120			
Cadmium	24	0.10	25.00	0	96.6	80	120			
Chromium	24	0.30	25.00	0	95.9	80	120			
Cobalt	24	0.30	25.00	0	96.7	80	120			
Manganese	25	0.10	25.00	0	99.0	80	120			
Nickel	24	0.50	25.00	0	96.5	80	120			
Selenium	25	2.5	25.00	0	101	80	120			
Silver	4.7	0.25	5.000	0	93.7	80	120			
Vanadium	24	2.5	25.00	0	98.0	80	120			
Zinc	25	2.5	25.00	0	99.2	80	120			

Sample ID: **MB-48519** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **48519** RunNo: **64206**
Prep Date: **10/31/2019** Analysis Date: **11/4/2019** SeqNo: **2196952** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48519**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48519**	RunNo: **64206**
Prep Date: **10/31/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196952** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.033	0.10								J
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	1.7	2.5								J
Manganese	0.021	0.10								J
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.40	2.5								J

Sample ID: **LCS-48519**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48519**	RunNo: **64206**
Prep Date: **10/31/2019**	Analysis Date: **11/4/2019**	SeqNo: **2196954** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	24	2.5	25.00	0	97.6	80	120			
Arsenic	25	2.5	25.00	0	99.6	80	120			
Barium	24	0.10	25.00	0	95.0	80	120			
Beryllium	26	0.15	25.00	0	103	80	120			
Cadmium	24	0.10	25.00	0	95.1	80	120			
Chromium	24	0.30	25.00	0	96.4	80	120			
Cobalt	24	0.30	25.00	0	97.2	80	120			
Iron	26	2.5	25.00	0	102	80	120			
Manganese	25	0.10	25.00	0	99.3	80	120			
Nickel	24	0.50	25.00	0	96.4	80	120			
Selenium	25	2.5	25.00	0	98.6	80	120			
Silver	4.6	0.25	5.000	0	92.7	80	120			
Vanadium	25	2.5	25.00	0	99.2	80	120			
Zinc	24	2.5	25.00	0	97.8	80	120			

Sample ID: **MB-48433**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48433**	RunNo: **64206**
Prep Date: **10/28/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197455** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.24	0.25								J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **LCS-48433** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **48433** RunNo: **64206**
Prep Date: **10/28/2019** Analysis Date: **11/4/2019** SeqNo: **2197457** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	25	0.25	25.00	0	99.7	80	120			

Sample ID: **MB-48519** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **48519** RunNo: **64206**
Prep Date: **10/31/2019** Analysis Date: **11/4/2019** SeqNo: **2197458** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.25								

Sample ID: **LCS-48519** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **48519** RunNo: **64206**
Prep Date: **10/31/2019** Analysis Date: **11/4/2019** SeqNo: **2197462** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	24	0.25	25.00	0	97.9	80	120			

Sample ID: **MB-48433** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **48433** RunNo: **64334**
Prep Date: **10/28/2019** Analysis Date: **11/7/2019** SeqNo: **2201997** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.0	2.5								

Sample ID: **LCS-48433** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **48433** RunNo: **64334**
Prep Date: **10/28/2019** Analysis Date: **11/7/2019** SeqNo: **2201999** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	26	2.5	25.00	0	104	80	120			B

Sample ID: **MB-48434** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **48434** RunNo: **64334**
Prep Date: **10/28/2019** Analysis Date: **11/7/2019** SeqNo: **2202000** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.2	2.5								
Lead	ND	0.25								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48434**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48434**	RunNo: **64334**
Prep Date: **10/28/2019**	Analysis Date: **11/7/2019**	SeqNo: **2202002** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	25	2.5	25.00	0	100	80	120			B
Lead	24	0.25	25.00	0	97.6	80	120			

Sample ID: **MB-48604**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48604**	RunNo: **64594**
Prep Date: **11/5/2019**	Analysis Date: **11/18/2019**	SeqNo: **2212240** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	0.050	0.10								J
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	2.1	2.5								J
Lead	0.25	0.25								
Manganese	0.050	0.10								J
Nickel	0.25	0.50								J
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	ND	2.5								

Sample ID: **LCS-48604**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48604**	RunNo: **64594**
Prep Date: **11/5/2019**	Analysis Date: **11/18/2019**	SeqNo: **2212242** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	24	2.5	25.00	0	97.6	80	120			
Arsenic	24	2.5	25.00	0	94.0	80	120			
Barium	24	0.10	25.00	0	95.4	80	120			
Beryllium	24	0.15	25.00	0	97.4	80	120			
Cadmium	24	0.10	25.00	0	95.8	80	120			
Chromium	24	0.30	25.00	0	94.0	80	120			
Cobalt	23	0.30	25.00	0	92.0	80	120			
Iron	29	2.5	25.00	0	115	80	120			
Lead	24	0.25	25.00	0	97.4	80	120			
Manganese	24	0.10	25.00	0	94.0	80	120			
Nickel	23	0.50	25.00	0	92.8	80	120			
Silver	5.1	0.25	5.000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48604**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48604**	RunNo: **64594**
Prep Date: **11/5/2019**	Analysis Date: **11/18/2019**	SeqNo: **2212242** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	24	2.5	25.00	0	96.8	80	120			
Zinc	23	2.5	25.00	0	91.2	80	120			

Sample ID: **1910E04-011AMS**	SampType: **MS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **SWMU 13-8 (2-3')**	Batch ID: **48434**	RunNo: **64624**
Prep Date: **10/28/2019**	Analysis Date: **11/19/2019**	SeqNo: **2213460** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	20	4.8	24.00	0	85.2	75	125			
Beryllium	24	0.29	24.00	1.320	93.7	75	125			
Cadmium	21	0.19	24.00	0	86.0	75	125			
Chromium	39	0.58	24.00	14.11	103	75	125			
Cobalt	27	0.58	24.00	5.786	89.1	75	125			
Lead	23	0.48	24.00	3.045	82.1	75	125			
Nickel	35	0.96	24.00	13.20	90.6	75	125			
Vanadium	48	4.8	24.00	22.53	107	75	125			
Zinc	41	4.8	24.00	18.98	90.9	75	125			

Sample ID: **1910E04-011AMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **SWMU 13-8 (2-3')**	Batch ID: **48434**	RunNo: **64624**
Prep Date: **10/28/2019**	Analysis Date: **11/19/2019**	SeqNo: **2213461** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	22	5.0	24.89	0	90.4	75	125	9.53	20	
Beryllium	25	0.30	24.89	1.320	96.7	75	125	6.40	20	
Cadmium	22	0.20	24.89	0	89.6	75	125	7.71	20	
Chromium	41	0.60	24.89	14.11	106	75	125	4.11	20	
Cobalt	29	0.60	24.89	5.786	92.0	75	125	5.37	20	
Lead	23	0.50	24.89	3.045	82.2	75	125	3.19	20	
Nickel	37	1.0	24.89	13.20	95.0	75	125	5.25	20	
Vanadium	49	5.0	24.89	22.53	108	75	125	2.41	20	
Zinc	43	5.0	24.89	18.98	94.9	75	125	4.32	20	

Sample ID: **1910E04-025AMS**	SampType: **MS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **SWMU 13-12 (0-0.5')**	Batch ID: **48519**	RunNo: **64624**
Prep Date: **10/31/2019**	Analysis Date: **11/19/2019**	SeqNo: **2213519** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	23	5.1	25.37	0	88.8	75	125			
Beryllium	26	0.30	25.37	1.106	99.2	75	125			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **1910E04-025AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-12 (0-0.5')** Batch ID: **48519** RunNo: **64624**

Prep Date: **10/31/2019** Analysis Date: **11/19/2019** SeqNo: **2213519** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	23	0.20	25.37	0	92.4	75	125			
Chromium	43	0.61	25.37	15.28	111	75	125			
Cobalt	30	0.61	25.37	5.430	95.0	75	125			
Lead	26	0.51	25.37	3.519	89.3	75	125			
Nickel	37	1.0	25.37	11.26	101	75	125			
Vanadium	54	5.1	25.37	25.64	111	75	125			
Zinc	65	5.1	25.37	34.29	120	75	125			

Sample ID: **1910E04-025AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-12 (0-0.5')** Batch ID: **48519** RunNo: **64624**

Prep Date: **10/31/2019** Analysis Date: **11/19/2019** SeqNo: **2213520** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	21	4.9	24.62	0	85.6	75	125	6.67	20	
Beryllium	23	0.30	24.62	1.106	90.7	75	125	11.4	20	
Cadmium	21	0.20	24.62	0	84.0	75	125	12.5	20	
Chromium	40	0.59	24.62	15.28	102	75	125	7.05	20	
Cobalt	27	0.59	24.62	5.430	86.7	75	125	9.74	20	
Lead	24	0.49	24.62	3.519	81.3	75	125	10.6	20	
Nickel	34	0.98	24.62	11.26	91.9	75	125	8.37	20	
Vanadium	50	4.9	24.62	25.64	98.7	75	125	7.43	20	
Zinc	59	4.9	24.62	34.29	101	75	125	9.12	20	

Sample ID: **1910E04-025AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-12 (0-0.5')** Batch ID: **48519** RunNo: **64665**

Prep Date: **10/31/2019** Analysis Date: **11/20/2019** SeqNo: **2215368** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	5.1	25.37	0	0	75	125			S
Barium	370	0.20	25.37	342.8	110	75	125			
Selenium	16	5.1	25.37	0	62.4	75	125			S
Silver	3.2	0.51	5.075	0	62.3	75	125			S

Sample ID: **1910E04-025AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-12 (0-0.5')** Batch ID: **48519** RunNo: **64665**

Prep Date: **10/31/2019** Analysis Date: **11/20/2019** SeqNo: **2215369** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	4.9	24.62	0	0	75	125	0	20	S
Barium	320	0.20	24.62	342.8	-78.4	75	125	13.6	20	S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **1910E04-025AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-12 (0-0.5')** Batch ID: **48519** RunNo: **64665**

Prep Date: **10/31/2019** Analysis Date: **11/20/2019** SeqNo: **2215369** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	13	4.9	24.62	0	53.3	75	125	18.6	20	S
Silver	2.7	0.49	4.925	0	54.0	75	125	17.4	20	S

Sample ID: **1910E04-025APS** SampType: **PS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-12 (0-0.5')** Batch ID: **48519** RunNo: **64665**

Prep Date: Analysis Date: **11/20/2019** SeqNo: **2215370** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	38	5.0	50.28	0	75.5	80	120			S
Barium	380	0.20	50.28	342.8	75.3	80	120			S
Selenium	35	5.0	50.28	0	69.1	80	120			S
Silver	7.6	0.50	10.06	0	76.0	80	120			S

Sample ID: **1910E04-025AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-12 (0-0.5')** Batch ID: **48519** RunNo: **64665**

Prep Date: **10/31/2019** Analysis Date: **11/20/2019** SeqNo: **2215375** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	540	0.51	25.37	522.7	50.7	75	125			S

Sample ID: **1910E04-025AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-12 (0-0.5')** Batch ID: **48519** RunNo: **64665**

Prep Date: **10/31/2019** Analysis Date: **11/20/2019** SeqNo: **2215376** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	470	0.49	24.62	522.7	-210	75	125	12.8	20	S

Sample ID: **1910E04-025APS** SampType: **PS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-12 (0-0.5')** Batch ID: **48519** RunNo: **64665**

Prep Date: Analysis Date: **11/20/2019** SeqNo: **2215377** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	650	0.50	131.9	522.7	96.2	80	120			

Sample ID: **1910E04-011AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-8 (2-3')** Batch ID: **48434** RunNo: **64693**

Prep Date: **10/28/2019** Analysis Date: **11/21/2019** SeqNo: **2216926** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	4.8	24.00	0	0	75	125			S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **1910E04-011AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-8 (2-3')** Batch ID: **48434** RunNo: **64693**

Prep Date: **10/28/2019** Analysis Date: **11/21/2019** SeqNo: **2216927** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	5.0	24.89	0	0	75	125	0	20	S

Sample ID: **1910E04-011AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-8 (2-3')** Batch ID: **48434** RunNo: **64742**

Prep Date: **10/28/2019** Analysis Date: **11/22/2019** SeqNo: **2218488** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	250	0.19	24.00	266.3	-82.0	75	125			S
Manganese	330	0.19	24.00	291.6	153	75	125			S
Selenium	20	4.8	24.00	0	84.5	75	125			
Silver	2.5	0.48	4.801	0	53.0	75	125			S

Sample ID: **1910E04-011AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **SWMU 13-8 (2-3')** Batch ID: **48434** RunNo: **64742**

Prep Date: **10/28/2019** Analysis Date: **11/22/2019** SeqNo: **2218489** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	270	0.20	24.89	266.3	16.8	75	125	9.23	20	S
Manganese	300	0.20	24.89	291.6	33.8	75	125	8.99	20	S
Selenium	22	5.0	24.89	0	88.6	75	125	8.34	20	
Silver	2.8	0.50	4.978	0	55.6	75	125	8.48	20	S

Sample ID: **1910E04-011PS** SampType: **PS** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **BatchQC** Batch ID: **48434** RunNo: **64742**

Prep Date: Analysis Date: **11/22/2019** SeqNo: **2218490** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	320	0.20	50.75	266.3	112	80	120			
Manganese	350	0.20	50.75	291.6	106	80	120			
Silver	7.0	0.51	10.15	0	69.3	80	120			S

Sample ID: **MB-48977** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**

Client ID: **PBS** Batch ID: **48977** RunNo: **64789**

Prep Date: **11/22/2019** Analysis Date: **11/25/2019** SeqNo: **2220399** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	2.5								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **LCS-48977** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **48977** RunNo: **64789**
Prep Date: **11/22/2019** Analysis Date: **11/25/2019** SeqNo: **2220401** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	21	2.5	25.00	0	83.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64273**
Prep Date: **10/30/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199636** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	0.0012	0.050								J
Zinc	ND	0.020								

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64273**
Prep Date: **10/30/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199638** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.51	0.050	0.5000	0	102	80	120			
Arsenic	0.50	0.020	0.5000	0	99.8	80	120			
Barium	0.48	0.020	0.5000	0	96.6	80	120			
Beryllium	0.52	0.0030	0.5000	0	103	80	120			
Cadmium	0.51	0.0020	0.5000	0	101	80	120			
Chromium	0.50	0.0060	0.5000	0	99.3	80	120			
Cobalt	0.51	0.0060	0.5000	0	101	80	120			
Iron	0.51	0.020	0.5000	0	102	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			
Nickel	0.49	0.010	0.5000	0	98.1	80	120			
Silver	0.095	0.0050	0.1000	0	94.6	80	120			
Vanadium	0.51	0.050	0.5000	0	101	80	120			
Zinc	0.49	0.020	0.5000	0	98.7	80	120			

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64389**
Prep Date: **10/30/2019**	Analysis Date: **11/11/2019**	SeqNo: **2203942** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0043	0.0050								J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E04**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64389**
Prep Date: **10/30/2019**	Analysis Date: **11/11/2019**	SeqNo: **2203944** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.51	0.0050	0.5000	0	101	80	120			

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64501**
Prep Date: **10/30/2019**	Analysis Date: **11/13/2019**	SeqNo: **2208275** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64501**
Prep Date: **10/30/2019**	Analysis Date: **11/13/2019**	SeqNo: **2208277** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.51	0.0050	0.5000	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **MARATHON GALLUP** Work Order Number: **1910E04** RcptNo: **1**

Received By: **Leah Baca** **10/25/2019 4:55:00 PM** Leah SBaca

Completed By: **Leah Baca** **10/28/2019 8:40:50 AM** Leah SBaca

Reviewed By: LB 10/28/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)

Adjusted? NO

Checked by: DAD 10/28/19

Special Handling (if applicable)

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

Person Notified: Date

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.8	Good	Yes			
2	1.5	Good	Yes			
3	3.1	Good	Yes			
4	2.0	Good	Yes			

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: See remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910E04	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide				Air Bubbles (Y or N)
10/24/19	0930	Soil	SWMU 13-6 (17-18')	8 oz Jar 1	Neat	-001			X							X	X	X				
				~~Vial-2~~	~~MeOH~~											X						
				4oz JAR-1	NEAT													X				
	1045		SWMU 13-7 (0-0.5')	8oz JAR-2	NEAT	-002			X							X	X	X				
				4oz JAR-1	NEAT													X				
				VIAL-2	MEOH											X						
	1110		SWMU 13-7 (1.5-2')	8oz JAR-2	NEAT	-003			X							X	X	X				
				4oz JAR-1	NEAT													X				
				VIAL-2	MEOH											X						
	—	MeOH	MEOH BLANK	VIAL-1	MEOH	-004										X						

Date	Time	Relinquished by:	Received by:	Date	Time
10/25/19	1355			10/25/19	1355
10/25/19	1655			10/25/11	1655

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1-8 1.6 - CF = 1.7 C
0.1 1.5
5.2 2.1 3.1 2.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: see remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	**TPH 8015B (GRO/DRO/MRO)**	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	**8260B (VOA)**	**8270 (Semi-VOA)**	**Metals and Cyanide**				Air Bubbles (Y or N)
10/24/19	1305	Soil	SWMU 13-7(4-6')	8 oz Jar - 2	**Neat**	1910 E04 -005			X							X	X	X				
				Vial - 2	**MeOH**	↓										X						
				4oz Jar-1	NEAT	↓												X				
	1315		SWMU 13-7(10-12')	8oz Jar-2	NEAT	-006			X							X	X	X				
				4oz Jar-1	NEAT	↓												X				
				Vial-2	MeOH	↓										X						
	1325		SWMU 13-7(12-13')	8oz Jar-1	NEAT	-007			X							X	X	X				
	1330		SWMU 13-7(17.5-18')	8oz Jar-1	NEAT	-008			X							X	X	X				
10/24/19	1330	Soil	↓	Vial-2	MeOH	↓																

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/25/19	1355			10/25/19	1355
Date:	Time:	Relinquished by:	Received by:	Date	Time
10/25/19	1655			10/25/19	1655

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.8 −0.1 = 1.7 C
1.6 −0.1 = 1.5 C
3.2 = 3.1 C
2.1 = 2.0 C

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: See remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910604	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide				Air Bubbles (Y or N)
10/24/19	1435	Soil	SWMU 13-8 (0-0.5')	8 oz Jar - 2	Neat	-009			X							X	X	X				
				Vial - 2	MeOH											X						
				4oz JAR-1	NEAT													X				
	1445		SWMU 13-8 (1.5-2')	8 oz JAR-2	NEAT	-010			X							X	X	X				
				4oz JAR-1	NEAT										TP			X				
				VIAL-2	MeOH											X		·				
	1450		SWMU 13-8 (2-3')	8oz JAR-2	NEAT	-011			X							X	X	X				
				4oz JAR-1	NEAT													X				
				VIAL-2	MeOH											X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/25/19	1355			10/25/19	1355
10/25/19	1655			10/25/19	1655

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.8 1.6 3.2 2.1 -CC 0.1 = 1.2 C 1.5 3.1 2.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: see remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910604	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide				Air Bubbles (Y or N)
10/24/19	1535	Soil	SWMU 13-9(0-0.5')	8 oz Jar - 2	Neat	-012			X							X	X	X				
				Vial - 2	MeOH											X						
				4 OZ JAR-1	NEAT													X				
	1545		SWMU 13-9(1.5-2')	8 OZ JAR-2	NEAT	-013			X							X	X	X				
				4 OZ JAR-1	NEAT													X				
				VIAL-2	MEOH											X						
	1555		SWMU 13-9 (2-3')	8 OZ JAR-2	NEAT	-014			X							X	X	X				
				4 OZ JAR-1	NEAT													X				
				VIAL-2	MEOH											X						

Date	Time	Relinquished by:	Received by:	Date	Time
10/25/19	1355			10/25/19	1355
10/25/19	1655			10/25/19	1655

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.8 - 0.1 = 1.7 C
1.6 1.5
3.2 3.1
2.1 2.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: see remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide				Air Bubbles (Y or N)
10/24/19	—	Soil	DUP03	8 oz Jar - 2	Neat	1910F04 -015			X							X	X	X				
				Vial - 2	MeOH											X						
				4ozJAR-1	NEAT													X				
	—		DUP04	8ozJAR-2	NEAT	-016			X							X	X	X				
				4ozJAR-1	NEAT													X				
				VIAL-2	MeOH											X						
10/24/19	—	MeOH	MeOH BLANK	VIAL-1	MeOH	-017										X						

Date	Time	Relinquished by:	Received by:	Date	Time
10/25/19	1355			10/25/19	1355
10/25/19	1655			10/25/19	1655

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.8 1.6 3.2 2.1 CF -0.1 = 1.7 1.5 3.1 2.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: See remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910604	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	**TPH 8015B (GRO/DRO/MRO)**	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	**8260B (VOA)**	**8270 (Semi-VOA)**	**Metals - Total**	**Cyanide**			Air Bubbles (Y or N)
10/24/19	1345	**Water**	**EB102419**	**40ml voa - 5**	**HCl**	-018			X							X						
				250 ml amber - 1	**Neat**				X													
				1 liter amber -	**Neat**												X					
				250 ml plastic - 1	**HNO_3**													X				
				500 ml plastic - 1	**NaOH**														X			

Date	Time	Relinquished by:	Received by:	Date	Time
10/25/19	1355			10/25/19	1355
10/25/19	1655			10/25/19	1655

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.8 - CF 0.1 = 1.7
1.6 1.5
3.2 3.1
2.1 2.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other ____________

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush ____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: See Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1910F04	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide	Air Bubbles (Y or N)
10/25/19	1000	Soil	SWMU13-10 (0-0.5')	8 oz Jar - 2	Neat	-019			X							X	X	X	
				Vial - 2	MeOH											X			
				4oz JAR-1	NEAT													X	
	1015		SWMU 13-10 (1.5-2')	8oz JAR-2	NEAT	-020			X							X	X	X	
				VIAL-2	MeOH											X			
				4oz JAR-1	NEAT													X	
	1030		SWMU 13-10 (2-3')	8oz JAR-1	NEAT	-021			X							X	X	X	
				VIAL-2	MEOH											X			
				4oz JAR-1	NEAT													X	

Date	Time	Relinquished by	Received by	Date	Time
10/25/19	1355	[signature]	[signature]	10/25/19	1355
10/25/19	1655	[signature]	[signature]	10/25/19	1655

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.8 - CF 0.1 = 1.7C
1.6 = 1.5
3.2 3.1
2.4 2.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

☐ Other _____

☒ EDD (Type) **EXCEL**

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: See Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910E04	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide	Air Bubbles (Y or N)
10/25/19	1130	Soil	SWMU 13-11 (0-0.5')	8 oz Jar - 2	Neat	-022			X							X	X	X	
				Vial - 2	MeOH											X			
				4oz JAR-1	NEAT													X	
	1145		SWMU 13-11 (1.5-2')	8oz JAR-2	NEAT	-023			X							X	X	X	
				VIAL-2	MEOH											X			
				4oz JAR-1	NEAT													X	
	1200		SWMU 13-11 (2-3')	8oz JAR-2	NEAT	-024			X							X	X	X	
				VIAL-2	MEOH											X			
				4oz JAR-1	NEAT													X	

Date	Time	Relinquished by:	Received by:	Date	Time
10/25/19	1355			10/25/19	1355
10/25/19	1655			10/25/19	1655

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.9 - CF 0.1 = 1.7C

1.6 1.5

3.2 3.1

2.1 2.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: See remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910E64
10/25/19	1255	Soil	SWMU 13-12 (0-0.5')	8 oz Jar - 2	Neat	-015
				Vial - 2	MeOH	
				4ozJAR-1	NEAT	
	1310		SWMU 13-12(0.5-1.5')	8 ozJAR-2	NEAT	-026
				VIAL-2	MEOH	
				4oz JAR-1	NEAT	
	1325		SWMU 13-12(1.5-2')	8OZJAR-2	NEAT	-027
				VIAL-2	MEOH	
				4OZJAR-1	NEAT	

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910E64	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide	Air Bubbles (Y or N)
10/25/19	1255	Soil	SWMU 13-12 (0-0.5')	8 oz Jar - 2	Neat	-015			X							X	X	X	
				Vial - 2	MeOH											X			
				4ozJAR-1	NEAT													X	
	1310		SWMU 13-12(0.5-1.5')	8 ozJAR-2	NEAT	-026			X							X	X	X	
				VIAL-2	MEOH											X			
				4oz JAR-1	NEAT													X	
	1325		SWMU 13-12(1.5-2')	8OZJAR-2	NEAT	-027			X							X	X	X	
				VIAL-2	MEOH											X			
				4OZJAR-1	NEAT													X	

Date	Time	Relinquished by:	Received by:	Date	Time
10/25/19	1355			10/25/19	1355
10/25/19	1655			10/25/19	1655

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.8 - CF 0.1 = 1.7

1.6 = 1.5

3.2 = 3.1

2.1 = 2.0

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: See remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910E04	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide	Air Bubbles (Y or N)
10/25/19	1335	Soil	SWMU 13-12 (2-3')	8 oz Jar - 2	Neat	-028			X							X	X	X	
	↓			Vial - 2	MeOH	↓										X			
	↓			4 oz Jar-1	Neat	↓												X	
	—		DUP05	8 oz Jar-2	Neat	-029			X							X	X	X	
	↓			Vial-2	MeOH	↓										X			
↓	↓	↓	↓	4 oz Jar-1	Neat	↓												X	
10/25/19	—	MeOH	MeOH Blank	Vial-1	MeOH	-030										X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/25/19	1355			10/25/19	1355
Date:	Time:	Relinquished by:	Received by:	Date	Time
10/25/19	1655			10/25/19	1655

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.8 - CF 0.1 = 1.70
1.6 1.5
3.2 3.1
2.1 2.0

- SW-846 Method 8260 for volatile organic compounds;
- SW-846 Method 8270 for semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline range (C5-C10), diesel range (>C10-C28), and motor oil range (>C28-C36) organics.
- Inorganics (Skinner List Metals + Iron + Manganese)

Inorganic Analytical Methods

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

SWMU 13 - Soil and Equipment Blank Analytical Requirements

- SW-846 Method 8260 for volatile organic compounds;
- SW-846 Method 8270 for semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline range (C5-C10), diesel range (>C10-C28), and motor oil range (>C28-C36) organics.
- Inorganics (Skinner List Metals + Iron + Manganese)

Inorganic Analytical Methods

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 05, 2019

Brian Moore

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: SWMU 13 OrderNo.: 1910E49

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 7 sample(s) on 10/29/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 2:55:00 PM
Lab ID: 1910E49-001
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	5500	180	900		mg/Kg	100	10/31/2019 1:25:46 PM	48461
Motor Oil Range Organics (MRO)	5400	4500	4500		mg/Kg	100	10/31/2019 1:25:46 PM	48461
Surr: DNOP	0	0	70-130	S	%Rec	100	10/31/2019 1:25:46 PM	48461
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.0	3.3		mg/Kg	1	10/31/2019 12:17:19 A	G64077
Surr: BFB	103	0	77.4-118		%Rec	1	10/31/2019 12:17:19 A	G64077
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.25	0.0091	0.17		mg/Kg	5	11/7/2019 5:56:07 PM	48648
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.74	5.0		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Arsenic	ND	2.9	5.0		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Barium	290	0.047	0.20		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Beryllium	1.3	0.019	0.30		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Cadmium	ND	0.049	0.20		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Chromium	28	0.16	0.61		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Cobalt	6.8	0.21	0.61		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Iron	20000	73	250		mg/Kg	100	11/20/2019 5:32:59 PM	48519
Lead	ND	0.49	0.50		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Manganese	330	0.042	0.20		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Nickel	12	0.30	1.0		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Selenium	ND	2.5	5.0		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Silver	ND	0.065	0.50		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Vanadium	33	0.13	5.0		mg/Kg	2	11/19/2019 7:33:31 PM	48519
Zinc	60	0.80	5.0		mg/Kg	2	11/19/2019 7:33:31 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Acenaphthylene	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Aniline	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Anthracene	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Azobenzene	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Benz(a)anthracene	ND	0.92	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Benzo(a)pyrene	ND	0.85	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Benzo(b)fluoranthene	ND	0.84	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Benzo(g,h,i)perylene	ND	0.82	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Benzo(k)fluoranthene	ND	0.87	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Benzoic acid	ND	0.98	4.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Benzyl alcohol	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 2:55:00 PM
Lab ID: 1910E49-001
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	1.4	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Bis(2-chloroethyl)ether	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Bis(2-chloroisopropyl)ether	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Bis(2-ethylhexyl)phthalate	ND	1.4	4.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
4-Bromophenyl phenyl ether	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Butyl benzyl phthalate	ND	0.97	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Carbazole	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
4-Chloro-3-methylphenol	ND	1.5	4.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
4-Chloroaniline	ND	1.3	4.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2-Chloronaphthalene	ND	1.2	2.4	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2-Chlorophenol	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
4-Chlorophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Chrysene	4.1	0.84	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Di-n-butyl phthalate	ND	1.4	3.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Di-n-octyl phthalate	ND	0.97	3.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Dibenz(a,h)anthracene	ND	0.87	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Dibenzofuran	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
1,2-Dichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
1,3-Dichlorobenzene	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
1,4-Dichlorobenzene	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
3,3´-Dichlorobenzidine	ND	0.85	2.4	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Diethyl phthalate	ND	1.4	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Dimethyl phthalate	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2,4-Dichlorophenol	ND	1.1	3.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2,4-Dimethylphenol	ND	1.0	2.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
4,6-Dinitro-2-methylphenol	ND	0.88	3.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2,4-Dinitrophenol	ND	0.69	4.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2,4-Dinitrotoluene	ND	1.1	4.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2,6-Dinitrotoluene	ND	1.3	4.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Fluoranthene	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Fluorene	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Hexachlorobenzene	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Hexachlorobutadiene	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Hexachloroethane	ND	1.1	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Indeno(1,2,3-cd)pyrene	ND	0.95	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Isophorone	ND	1.4	3.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
1-Methylnaphthalene	ND	1.4	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2-Methylnaphthalene	ND	1.4	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 2:55:00 PM
Lab ID: 1910E49-001
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	1.1	3.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
3+4-Methylphenol	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
N-Nitrosodi-n-propylamine	ND	1.4	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
N-Nitrosodiphenylamine	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Naphthalene	ND	1.4	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2-Nitroaniline	ND	1.4	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
3-Nitroaniline	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
4-Nitroaniline	ND	1.2	3.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Nitrobenzene	ND	1.3	3.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2-Nitrophenol	ND	1.3	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
4-Nitrophenol	ND	1.3	2.4	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Pentachlorophenol	ND	0.98	3.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Phenanthrene	4.5	1.0	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Phenol	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Pyrene	ND	0.89	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Pyridine	ND	1.1	3.8	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
1,2,4-Trichlorobenzene	ND	1.5	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2,4,5-Trichlorophenol	ND	1.2	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
2,4,6-Trichlorophenol	ND	1.0	1.9	D	mg/Kg	1	11/8/2019 2:20:55 PM	48536
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	1	11/8/2019 2:20:55 PM	48536
Surr: Phenol-d5	0		18.5-101	SD	%Rec	1	11/8/2019 2:20:55 PM	48536
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	1	11/8/2019 2:20:55 PM	48536
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	1	11/8/2019 2:20:55 PM	48536
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	1	11/8/2019 2:20:55 PM	48536
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	1	11/8/2019 2:20:55 PM	48536
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0027	0.016		mg/Kg	1	10/30/2019 10:49:16 P	48446
Toluene	ND	0.0031	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Ethylbenzene	ND	0.0019	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Methyl tert-butyl ether (MTBE)	ND	0.0078	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,2,4-Trimethylbenzene	ND	0.0030	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,3,5-Trimethylbenzene	ND	0.0032	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,2-Dichloroethane (EDC)	ND	0.0034	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,2-Dibromoethane (EDB)	ND	0.0030	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Naphthalene	ND	0.0066	0.066		mg/Kg	1	10/30/2019 10:49:16 P	48446
1-Methylnaphthalene	0.030	0.019	0.13	J	mg/Kg	1	10/30/2019 10:49:16 P	48446
2-Methylnaphthalene	0.023	0.014	0.13	J	mg/Kg	1	10/30/2019 10:49:16 P	48446
Acetone	ND	0.027	0.49		mg/Kg	1	10/30/2019 10:49:16 P	48446
Bromobenzene	ND	0.0032	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 2:55:00 PM
Lab ID: 1910E49-001
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0030	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Bromoform	ND	0.0030	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Bromomethane	ND	0.0079	0.099		mg/Kg	1	10/30/2019 10:49:16 P	48446
2-Butanone	0.067	0.038	0.33	J	mg/Kg	1	10/30/2019 10:49:16 P	48446
Carbon disulfide	ND	0.011	0.33		mg/Kg	1	10/30/2019 10:49:16 P	48446
Carbon tetrachloride	ND	0.0031	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Chlorobenzene	ND	0.0042	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Chloroethane	ND	0.0049	0.066		mg/Kg	1	10/30/2019 10:49:16 P	48446
Chloroform	ND	0.0026	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Chloromethane	ND	0.0032	0.099		mg/Kg	1	10/30/2019 10:49:16 P	48446
2-Chlorotoluene	ND	0.0029	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
4-Chlorotoluene	ND	0.0027	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
cis-1,2-DCE	ND	0.0045	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
cis-1,3-Dichloropropene	ND	0.0028	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,2-Dibromo-3-chloropropane	ND	0.0034	0.066		mg/Kg	1	10/30/2019 10:49:16 P	48446
Dibromochloromethane	ND	0.0023	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Dibromomethane	ND	0.0035	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,2-Dichlorobenzene	ND	0.0027	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,3-Dichlorobenzene	ND	0.0029	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,4-Dichlorobenzene	ND	0.0028	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Dichlorodifluoromethane	ND	0.0076	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,1-Dichloroethane	ND	0.0021	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,1-Dichloroethene	ND	0.013	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,2-Dichloropropane	ND	0.0024	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,3-Dichloropropane	ND	0.0036	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
2,2-Dichloropropane	ND	0.011	0.066		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,1-Dichloropropene	ND	0.0030	0.066		mg/Kg	1	10/30/2019 10:49:16 P	48446
Hexachlorobutadiene	0.0085	0.0034	0.066	J	mg/Kg	1	10/30/2019 10:49:16 P	48446
2-Hexanone	ND	0.0055	0.33		mg/Kg	1	10/30/2019 10:49:16 P	48446
Isopropylbenzene	ND	0.0024	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
4-Isopropyltoluene	ND	0.0027	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
4-Methyl-2-pentanone	ND	0.0062	0.33		mg/Kg	1	10/30/2019 10:49:16 P	48446
Methylene chloride	0.0093	0.0058	0.099	J	mg/Kg	1	10/30/2019 10:49:16 P	48446
n-Butylbenzene	ND	0.0031	0.099		mg/Kg	1	10/30/2019 10:49:16 P	48446
n-Propylbenzene	ND	0.0026	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
sec-Butylbenzene	ND	0.0037	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Styrene	ND	0.0026	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
tert-Butylbenzene	ND	0.0031	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,1,1,2-Tetrachloroethane	ND	0.0022	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 2:55:00 PM
Lab ID: 1910E49-001
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0033	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Tetrachloroethene (PCE)	ND	0.0026	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
trans-1,2-DCE	ND	0.0030	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
trans-1,3-Dichloropropene	ND	0.0035	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,2,3-Trichlorobenzene	ND	0.0029	0.066		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,2,4-Trichlorobenzene	ND	0.0033	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,1,1-Trichloroethane	ND	0.0030	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,1,2-Trichloroethane	ND	0.0023	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Trichloroethene (TCE)	ND	0.0038	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Trichlorofluoromethane	ND	0.011	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
1,2,3-Trichloropropane	ND	0.0053	0.066		mg/Kg	1	10/30/2019 10:49:16 P	48446
Vinyl chloride	ND	0.0022	0.033		mg/Kg	1	10/30/2019 10:49:16 P	48446
Xylenes, Total	ND	0.0083	0.066		mg/Kg	1	10/30/2019 10:49:16 P	48446
Surr: Dibromofluoromethane	110		70-130		%Rec	1	10/30/2019 10:49:16 P	48446
Surr: 1,2-Dichloroethane-d4	91.3		70-130		%Rec	1	10/30/2019 10:49:16 P	48446
Surr: Toluene-d8	97.5		70-130		%Rec	1	10/30/2019 10:49:16 P	48446
Surr: 4-Bromofluorobenzene	88.3		70-130		%Rec	1	10/30/2019 10:49:16 P	48446

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 3:05:00 PM
Lab ID: 1910E49-002
Matrix: SOIL
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	500	21	110		mg/Kg	10	11/4/2019 9:07:20 AM	48543
Motor Oil Range Organics (MRO)	ND	530	530	D	mg/Kg	10	11/4/2019 9:07:20 AM	48543
Surr: DNOP	0	0	70-130	S	%Rec	10	11/4/2019 9:07:20 AM	48543
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	1.4	4.7		mg/Kg	1	10/31/2019 8:46:56 AM	48453
Surr: BFB	152	0	77.4-118	S	%Rec	1	10/31/2019 8:46:56 AM	48453
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0056	0.0018	0.033	J	mg/Kg	1	11/7/2019 5:00:57 PM	48648
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Arsenic	ND	2.9	5.1		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Barium	170	0.047	0.20		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Beryllium	1.4	0.019	0.31		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Cadmium	ND	0.050	0.20		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Chromium	22	0.16	0.61		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Cobalt	6.8	0.22	0.61		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Iron	21000	74	260		mg/Kg	100	11/20/2019 5:34:34 PM	48519
Lead	2.1	0.50	0.51		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Manganese	380	0.042	0.20		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Nickel	15	0.30	1.0		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Selenium	ND	2.6	5.1		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Silver	ND	0.066	0.51		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Vanadium	30	0.14	5.1		mg/Kg	2	11/19/2019 7:36:40 PM	48519
Zinc	31	0.81	5.1		mg/Kg	2	11/19/2019 7:36:40 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	1.2	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Acenaphthylene	ND	1.1	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Aniline	ND	1.3	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Anthracene	ND	1.0	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Azobenzene	ND	1.4	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Benz(a)anthracene	ND	0.94	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Benzo(a)pyrene	ND	0.87	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Benzo(b)fluoranthene	ND	0.87	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Benzo(g,h,i)perylene	ND	0.84	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Benzo(k)fluoranthene	ND	0.89	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Benzoic acid	ND	1.0	4.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Benzyl alcohol	ND	1.2	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 3:05:00 PM
Lab ID: 1910E49-002
Matrix: SOIL
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	1.4	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Bis(2-chloroethyl)ether	ND	1.2	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Bis(2-chloroisopropyl)ether	ND	1.1	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Bis(2-ethylhexyl)phthalate	ND	1.4	4.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
4-Bromophenyl phenyl ether	ND	1.2	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Butyl benzyl phthalate	ND	1.0	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Carbazole	ND	1.1	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
4-Chloro-3-methylphenol	ND	1.5	4.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
4-Chloroaniline	ND	1.4	4.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2-Chloronaphthalene	ND	1.2	2.5	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2-Chlorophenol	ND	1.2	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
4-Chlorophenyl phenyl ether	ND	1.1	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Chrysene	ND	0.86	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Di-n-butyl phthalate	ND	1.5	3.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Di-n-octyl phthalate	ND	1.0	3.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Dibenz(a,h)anthracene	ND	0.89	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Dibenzofuran	ND	1.3	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
1,2-Dichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
1,3-Dichlorobenzene	ND	1.0	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
1,4-Dichlorobenzene	ND	1.0	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
3,3´-Dichlorobenzidine	ND	0.87	2.5	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Diethyl phthalate	ND	1.4	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Dimethyl phthalate	ND	1.3	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2,4-Dichlorophenol	ND	1.1	3.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2,4-Dimethylphenol	ND	1.1	2.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
4,6-Dinitro-2-methylphenol	ND	0.91	3.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2,4-Dinitrophenol	ND	0.71	4.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2,6-Dinitrotoluene	ND	1.3	4.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Fluoranthene	ND	1.1	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Fluorene	ND	1.1	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Hexachlorobenzene	ND	1.2	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Hexachlorobutadiene	ND	1.4	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Hexachloroethane	ND	1.1	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Indeno(1,2,3-cd)pyrene	ND	0.98	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Isophorone	ND	1.4	3.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
1-Methylnaphthalene	ND	1.5	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2-Methylnaphthalene	ND	1.4	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 3:05:00 PM
Lab ID: 1910E49-002
Matrix: SOIL
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	1.2	3.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
3+4-Methylphenol	ND	1.2	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
N-Nitrosodi-n-propylamine	ND	1.4	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Naphthalene	ND	1.5	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
3-Nitroaniline	ND	1.4	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
4-Nitroaniline	ND	1.3	3.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Nitrobenzene	ND	1.4	3.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2-Nitrophenol	ND	1.3	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
4-Nitrophenol	ND	1.3	2.5	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Pentachlorophenol	ND	1.0	3.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Phenanthrene	2.2	1.1	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Phenol	ND	1.2	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Pyrene	ND	0.92	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Pyridine	ND	1.2	3.9	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
1,2,4-Trichlorobenzene	ND	1.5	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2,4,5-Trichlorophenol	ND	1.3	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
2,4,6-Trichlorophenol	ND	1.0	2.0	D	mg/Kg	1	11/8/2019 2:49:52 PM	48536
Surr: 2-Fluorophenol	0		26.7-85.9	SD	%Rec	1	11/8/2019 2:49:52 PM	48536
Surr: Phenol-d5	0		18.5-101	SD	%Rec	1	11/8/2019 2:49:52 PM	48536
Surr: 2,4,6-Tribromophenol	0		35.8-85.6	SD	%Rec	1	11/8/2019 2:49:52 PM	48536
Surr: Nitrobenzene-d5	0		40.8-95.2	SD	%Rec	1	11/8/2019 2:49:52 PM	48536
Surr: 2-Fluorobiphenyl	0		34.7-85.2	SD	%Rec	1	11/8/2019 2:49:52 PM	48536
Surr: 4-Terphenyl-d14	0		37.4-91.3	SD	%Rec	1	11/8/2019 2:49:52 PM	48536
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0039	0.024		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Toluene	ND	0.0045	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Ethylbenzene	ND	0.0027	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Methyl tert-butyl ether (MTBE)	ND	0.011	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,2,4-Trimethylbenzene	0.088	0.0043	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,3,5-Trimethylbenzene	0.026	0.0046	0.047	J	mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,2-Dichloroethane (EDC)	ND	0.0048	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,2-Dibromoethane (EDB)	ND	0.0043	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Naphthalene	0.066	0.0095	0.094	J	mg/Kg	1	10/31/2019 3:45:37 PM	48453
1-Methylnaphthalene	0.58	0.027	0.19		mg/Kg	1	10/31/2019 3:45:37 PM	48453
2-Methylnaphthalene	0.24	0.021	0.19		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Acetone	0.15	0.039	0.71	J	mg/Kg	1	10/31/2019 3:45:37 PM	48453
Bromobenzene	ND	0.0045	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 3:05:00 PM
Lab ID: 1910E49-002 **Matrix:** SOIL **Received Date:** 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0043	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Bromoform	ND	0.0043	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Bromomethane	ND	0.011	0.14		mg/Kg	1	10/31/2019 3:45:37 PM	48453
2-Butanone	ND	0.055	0.47		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Carbon disulfide	0.061	0.016	0.47	J	mg/Kg	1	10/31/2019 3:45:37 PM	48453
Carbon tetrachloride	ND	0.0045	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Chlorobenzene	ND	0.0060	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Chloroethane	ND	0.0070	0.094		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Chloroform	ND	0.0038	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Chloromethane	ND	0.0045	0.14		mg/Kg	1	10/31/2019 3:45:37 PM	48453
2-Chlorotoluene	ND	0.0041	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
4-Chlorotoluene	ND	0.0039	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
cis-1,2-DCE	ND	0.0065	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
cis-1,3-Dichloropropene	ND	0.0040	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,2-Dibromo-3-chloropropane	ND	0.0048	0.094		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Dibromochloromethane	ND	0.0033	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Dibromomethane	ND	0.0051	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,2-Dichlorobenzene	ND	0.0039	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,3-Dichlorobenzene	ND	0.0041	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,4-Dichlorobenzene	ND	0.0039	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Dichlorodifluoromethane	ND	0.011	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,1-Dichloroethane	ND	0.0030	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,1-Dichloroethene	ND	0.019	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,2-Dichloropropane	ND	0.0034	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,3-Dichloropropane	ND	0.0051	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
2,2-Dichloropropane	ND	0.015	0.094		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,1-Dichloropropene	ND	0.0043	0.094		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Hexachlorobutadiene	ND	0.0048	0.094		mg/Kg	1	10/31/2019 3:45:37 PM	48453
2-Hexanone	ND	0.0078	0.47		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Isopropylbenzene	ND	0.0034	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
4-Isopropyltoluene	0.0040	0.0039	0.047	J	mg/Kg	1	10/31/2019 3:45:37 PM	48453
4-Methyl-2-pentanone	ND	0.0089	0.47		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Methylene chloride	ND	0.0083	0.14		mg/Kg	1	10/31/2019 3:45:37 PM	48453
n-Butylbenzene	0.012	0.0044	0.14	J	mg/Kg	1	10/31/2019 3:45:37 PM	48453
n-Propylbenzene	0.0093	0.0038	0.047	J	mg/Kg	1	10/31/2019 3:45:37 PM	48453
sec-Butylbenzene	0.0083	0.0053	0.047	J	mg/Kg	1	10/31/2019 3:45:37 PM	48453
Styrene	ND	0.0037	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
tert-Butylbenzene	ND	0.0045	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,1,1,2-Tetrachloroethane	ND	0.0032	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 3:05:00 PM
Lab ID: 1910E49-002 **Matrix:** SOIL **Received Date:** 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0048	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Tetrachloroethene (PCE)	ND	0.0038	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
trans-1,2-DCE	ND	0.0043	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
trans-1,3-Dichloropropene	ND	0.0050	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,2,3-Trichlorobenzene	ND	0.0041	0.094		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,2,4-Trichlorobenzene	ND	0.0048	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,1,1-Trichloroethane	ND	0.0043	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,1,2-Trichloroethane	ND	0.0033	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Trichloroethene (TCE)	ND	0.0055	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Trichlorofluoromethane	ND	0.016	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
1,2,3-Trichloropropane	ND	0.0076	0.094		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Vinyl chloride	ND	0.0031	0.047		mg/Kg	1	10/31/2019 3:45:37 PM	48453
Xylenes, Total	0.016	0.012	0.094	J	mg/Kg	1	10/31/2019 3:45:37 PM	48453
Surr: Dibromofluoromethane	108		70-130		%Rec	1	10/31/2019 3:45:37 PM	48453
Surr: 1,2-Dichloroethane-d4	97.9		70-130		%Rec	1	10/31/2019 3:45:37 PM	48453
Surr: Toluene-d8	96.6		70-130		%Rec	1	10/31/2019 3:45:37 PM	48453
Surr: 4-Bromofluorobenzene	91.2		70-130		%Rec	1	10/31/2019 3:45:37 PM	48453

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 3:20:00 PM
Lab ID: 1910E49-003
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	550	20	98		mg/Kg	10	11/4/2019 9:16:28 AM	48543
Motor Oil Range Organics (MRO)	ND	490	490	D	mg/Kg	10	11/4/2019 9:16:28 AM	48543
Surr: DNOP	0	0	70-130	S	%Rec	10	11/4/2019 9:16:28 AM	48543
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.92	3.0		mg/Kg	1	10/31/2019 9:10:13 AM	48491
Surr: BFB	156	0	77.4-118	S	%Rec	1	10/31/2019 9:10:13 AM	48491
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.047	0.0018	0.033		mg/Kg	1	11/7/2019 5:02:58 PM	48648
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.73	5.0		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Arsenic	ND	2.8	5.0		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Barium	190	0.046	0.20		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Beryllium	1.4	0.018	0.30		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Cadmium	ND	0.048	0.20		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Chromium	20	0.16	0.60		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Cobalt	6.3	0.21	0.60		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Iron	20000	72	250		mg/Kg	100	11/20/2019 5:36:09 PM	48519
Lead	0.99	0.48	0.50		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Manganese	280	0.041	0.20		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Nickel	13	0.30	0.99		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Selenium	ND	2.5	5.0		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Silver	ND	0.064	0.50		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Vanadium	28	0.13	5.0		mg/Kg	2	11/19/2019 7:39:50 PM	48519
Zinc	29	0.79	5.0		mg/Kg	2	11/19/2019 7:39:50 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.12	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Acenaphthylene	ND	0.11	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Aniline	ND	0.12	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Anthracene	ND	0.10	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Azobenzene	ND	0.13	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Benz(a)anthracene	ND	0.093	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Benzo(a)pyrene	ND	0.085	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Benzo(b)fluoranthene	ND	0.085	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Benzo(g,h,i)perylene	ND	0.082	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Benzo(k)fluoranthene	ND	0.087	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Benzoic acid	ND	0.099	0.48		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 3:20:00 PM
Lab ID: 1910E49-003
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Bis(2-chloroethyl)ether	ND	0.12	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Bis(2-ethylhexyl)phthalate	ND	0.14	0.48		mg/Kg	1	11/8/2019 3:18:48 PM	48536
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Butyl benzyl phthalate	ND	0.098	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Carbazole	ND	0.11	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
4-Chloro-3-methylphenol	ND	0.15	0.48		mg/Kg	1	11/8/2019 3:18:48 PM	48536
4-Chloroaniline	ND	0.14	0.48		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
4-Chlorophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Chrysene	0.13	0.085	0.19	J	mg/Kg	1	11/8/2019 3:18:48 PM	48536
Di-n-butyl phthalate	0.17	0.14	0.38	J	mg/Kg	1	11/8/2019 3:18:48 PM	48536
Di-n-octyl phthalate	ND	0.098	0.38		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Dibenz(a,h)anthracene	ND	0.087	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Dibenzofuran	ND	0.13	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
1,2-Dichlorobenzene	ND	0.12	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
3,3´-Dichlorobenzidine	ND	0.085	0.24		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2,4-Dichlorophenol	ND	0.11	0.38		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2,4-Dimethylphenol	ND	0.11	0.29		mg/Kg	1	11/8/2019 3:18:48 PM	48536
4,6-Dinitro-2-methylphenol	ND	0.089	0.38		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2,4-Dinitrophenol	ND	0.070	0.48		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2,4-Dinitrotoluene	ND	0.11	0.48		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2,6-Dinitrotoluene	ND	0.13	0.48		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Fluoranthene	ND	0.11	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Fluorene	0.25	0.11	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Hexachlorobutadiene	ND	0.13	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Indeno(1,2,3-cd)pyrene	ND	0.096	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Isophorone	ND	0.14	0.38		mg/Kg	1	11/8/2019 3:18:48 PM	48536
1-Methylnaphthalene	0.54	0.14	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2-Methylnaphthalene	0.37	0.14	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 3:20:00 PM
Lab ID: 1910E49-003
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.11	0.38		mg/Kg	1	11/8/2019 3:18:48 PM	48536
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Naphthalene	ND	0.15	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2-Nitroaniline	ND	0.14	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Nitrobenzene	ND	0.13	0.38		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Pentachlorophenol	ND	0.099	0.38		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Phenanthrene	0.81	0.10	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Phenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Pyrene	0.14	0.090	0.19	J	mg/Kg	1	11/8/2019 3:18:48 PM	48536
Pyridine	ND	0.12	0.38		mg/Kg	1	11/8/2019 3:18:48 PM	48536
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2,4,5-Trichlorophenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
2,4,6-Trichlorophenol	ND	0.10	0.19		mg/Kg	1	11/8/2019 3:18:48 PM	48536
Surr: 2-Fluorophenol	58.1		26.7-85.9		%Rec	1	11/8/2019 3:18:48 PM	48536
Surr: Phenol-d5	64.8		18.5-101		%Rec	1	11/8/2019 3:18:48 PM	48536
Surr: 2,4,6-Tribromophenol	64.6		35.8-85.6		%Rec	1	11/8/2019 3:18:48 PM	48536
Surr: Nitrobenzene-d5	68.0		40.8-95.2		%Rec	1	11/8/2019 3:18:48 PM	48536
Surr: 2-Fluorobiphenyl	73.8		34.7-85.2		%Rec	1	11/8/2019 3:18:48 PM	48536
Surr: 4-Terphenyl-d14	59.9		37.4-91.3		%Rec	1	11/8/2019 3:18:48 PM	48536
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0025	0.015		mg/Kg	1	10/30/2019 11:17:57 P	48446
Toluene	ND	0.0029	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Ethylbenzene	ND	0.0018	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Methyl tert-butyl ether (MTBE)	ND	0.0072	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,2,4-Trimethylbenzene	0.051	0.0028	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,3,5-Trimethylbenzene	0.017	0.0029	0.030	J	mg/Kg	1	10/30/2019 11:17:57 P	48446
1,2-Dichloroethane (EDC)	ND	0.0031	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,2-Dibromoethane (EDB)	ND	0.0028	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Naphthalene	0.018	0.0061	0.060	J	mg/Kg	1	10/30/2019 11:17:57 P	48446
1-Methylnaphthalene	0.26	0.017	0.12		mg/Kg	1	10/30/2019 11:17:57 P	48446
2-Methylnaphthalene	0.16	0.013	0.12		mg/Kg	1	10/30/2019 11:17:57 P	48446
Acetone	ND	0.025	0.45		mg/Kg	1	10/30/2019 11:17:57 P	48446
Bromobenzene	ND	0.0029	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 3:20:00 PM
Lab ID: 1910E49-003
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0028	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Bromoform	ND	0.0027	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Bromomethane	ND	0.0073	0.091		mg/Kg	1	10/30/2019 11:17:57 P	48446
2-Butanone	ND	0.035	0.30		mg/Kg	1	10/30/2019 11:17:57 P	48446
Carbon disulfide	ND	0.010	0.30		mg/Kg	1	10/30/2019 11:17:57 P	48446
Carbon tetrachloride	ND	0.0029	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Chlorobenzene	ND	0.0039	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Chloroethane	ND	0.0045	0.060		mg/Kg	1	10/30/2019 11:17:57 P	48446
Chloroform	ND	0.0024	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Chloromethane	ND	0.0029	0.091		mg/Kg	1	10/30/2019 11:17:57 P	48446
2-Chlorotoluene	ND	0.0026	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
4-Chlorotoluene	ND	0.0025	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
cis-1,2-DCE	ND	0.0041	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
cis-1,3-Dichloropropene	ND	0.0026	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,2-Dibromo-3-chloropropane	ND	0.0031	0.060		mg/Kg	1	10/30/2019 11:17:57 P	48446
Dibromochloromethane	ND	0.0021	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Dibromomethane	ND	0.0033	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,2-Dichlorobenzene	ND	0.0025	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,3-Dichlorobenzene	ND	0.0026	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,4-Dichlorobenzene	ND	0.0025	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Dichlorodifluoromethane	ND	0.0070	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,1-Dichloroethane	ND	0.0019	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,1-Dichloroethene	ND	0.012	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,2-Dichloropropane	ND	0.0022	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,3-Dichloropropane	ND	0.0033	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
2,2-Dichloropropane	ND	0.0098	0.060		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,1-Dichloropropene	ND	0.0028	0.060		mg/Kg	1	10/30/2019 11:17:57 P	48446
Hexachlorobutadiene	ND	0.0031	0.060		mg/Kg	1	10/30/2019 11:17:57 P	48446
2-Hexanone	ND	0.0050	0.30		mg/Kg	1	10/30/2019 11:17:57 P	48446
Isopropylbenzene	ND	0.0022	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
4-Isopropyltoluene	0.0027	0.0025	0.030	J	mg/Kg	1	10/30/2019 11:17:57 P	48446
4-Methyl-2-pentanone	ND	0.0057	0.30		mg/Kg	1	10/30/2019 11:17:57 P	48446
Methylene chloride	ND	0.0053	0.091		mg/Kg	1	10/30/2019 11:17:57 P	48446
n-Butylbenzene	0.0084	0.0028	0.091	J	mg/Kg	1	10/30/2019 11:17:57 P	48446
n-Propylbenzene	0.0064	0.0024	0.030	J	mg/Kg	1	10/30/2019 11:17:57 P	48446
sec-Butylbenzene	0.0064	0.0034	0.030	J	mg/Kg	1	10/30/2019 11:17:57 P	48446
Styrene	ND	0.0024	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
tert-Butylbenzene	ND	0.0029	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,1,1,2-Tetrachloroethane	ND	0.0020	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-13 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 3:20:00 PM
Lab ID: 1910E49-003
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0031	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Tetrachloroethene (PCE)	ND	0.0024	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
trans-1,2-DCE	ND	0.0028	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
trans-1,3-Dichloropropene	ND	0.0032	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,2,3-Trichlorobenzene	ND	0.0027	0.060		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,2,4-Trichlorobenzene	ND	0.0031	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,1,1-Trichloroethane	ND	0.0027	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,1,2-Trichloroethane	ND	0.0021	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Trichloroethene (TCE)	ND	0.0035	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Trichlorofluoromethane	ND	0.010	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
1,2,3-Trichloropropane	ND	0.0049	0.060		mg/Kg	1	10/30/2019 11:17:57 P	48446
Vinyl chloride	ND	0.0020	0.030		mg/Kg	1	10/30/2019 11:17:57 P	48446
Xylenes, Total	0.012	0.0076	0.060	J	mg/Kg	1	10/30/2019 11:17:57 P	48446
Surr: Dibromofluoromethane	110		70-130		%Rec	1	10/30/2019 11:17:57 P	48446
Surr: 1,2-Dichloroethane-d4	91.6		70-130		%Rec	1	10/30/2019 11:17:57 P	48446
Surr: Toluene-d8	102		70-130		%Rec	1	10/30/2019 11:17:57 P	48446
Surr: 4-Bromofluorobenzene	90.8		70-130		%Rec	1	10/30/2019 11:17:57 P	48446

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 4:20:00 PM
Lab ID: 1910E49-004
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	620	4.2	21		mg/Kg	2	11/4/2019 4:07:29 PM	48543
Motor Oil Range Organics (MRO)	380	100	100		mg/Kg	2	11/4/2019 4:07:29 PM	48543
Surr: DNOP	111	0	70-130		%Rec	2	11/4/2019 4:07:29 PM	48543
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.84	2.8		mg/Kg	1	10/31/2019 1:02:30 AM	G64077
Surr: BFB	94.8	0	77.4-118		%Rec	1	10/31/2019 1:02:30 AM	G64077
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.070	0.0018	0.033		mg/Kg	1	11/7/2019 5:04:59 PM	48648
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.71	4.8		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Arsenic	ND	2.7	4.8		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Barium	260	0.045	0.19		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Beryllium	1.1	0.018	0.29		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Cadmium	ND	0.047	0.19		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Chromium	20	0.15	0.58		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Cobalt	5.9	0.20	0.58		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Iron	17000	70	240		mg/Kg	100	11/20/2019 5:37:43 PM	48519
Lead	ND	0.47	0.48		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Manganese	290	0.040	0.19		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Nickel	11	0.29	0.96		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Selenium	ND	2.4	4.8		mg/Kg	2	11/21/2019 7:51:13 PM	48519
Silver	ND	0.062	0.48		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Vanadium	27	0.13	4.8		mg/Kg	2	11/19/2019 7:49:36 PM	48519
Zinc	62	0.76	4.8		mg/Kg	2	11/19/2019 7:49:36 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.23	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Acenaphthylene	ND	0.21	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Aniline	ND	0.24	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Anthracene	ND	0.20	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Azobenzene	ND	0.27	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Benz(a)anthracene	ND	0.18	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Benzo(a)pyrene	ND	0.17	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Benzo(b)fluoranthene	ND	0.17	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Benzo(g,h,i)perylene	ND	0.16	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Benzo(k)fluoranthene	ND	0.17	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Benzoic acid	ND	0.20	0.95		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Benzyl alcohol	ND	0.24	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 4:20:00 PM
Lab ID: 1910E49-004
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.28	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Bis(2-chloroethyl)ether	ND	0.23	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Bis(2-chloroisopropyl)ether	ND	0.22	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Bis(2-ethylhexyl)phthalate	ND	0.27	0.95		mg/Kg	1	11/8/2019 3:47:47 PM	48536
4-Bromophenyl phenyl ether	ND	0.22	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Butyl benzyl phthalate	ND	0.19	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Carbazole	ND	0.22	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
4-Chloro-3-methylphenol	ND	0.29	0.95		mg/Kg	1	11/8/2019 3:47:47 PM	48536
4-Chloroaniline	ND	0.27	0.95		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2-Chloronaphthalene	ND	0.24	0.48		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2-Chlorophenol	ND	0.24	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
4-Chlorophenyl phenyl ether	ND	0.21	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Chrysene	ND	0.17	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Di-n-butyl phthalate	ND	0.28	0.76		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Di-n-octyl phthalate	ND	0.19	0.76		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Dibenz(a,h)anthracene	ND	0.17	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Dibenzofuran	ND	0.25	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
1,2-Dichlorobenzene	ND	0.23	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
1,3-Dichlorobenzene	ND	0.20	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
1,4-Dichlorobenzene	ND	0.20	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
3,3´-Dichlorobenzidine	ND	0.17	0.48		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Diethyl phthalate	ND	0.27	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Dimethyl phthalate	ND	0.25	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2,4-Dichlorophenol	ND	0.22	0.76		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2,4-Dimethylphenol	ND	0.21	0.57		mg/Kg	1	11/8/2019 3:47:47 PM	48536
4,6-Dinitro-2-methylphenol	ND	0.18	0.76		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2,4-Dinitrophenol	ND	0.14	0.95		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2,4-Dinitrotoluene	ND	0.22	0.95		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2,6-Dinitrotoluene	ND	0.25	0.95		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Fluoranthene	ND	0.21	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Fluorene	ND	0.22	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Hexachlorobenzene	ND	0.24	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Hexachlorobutadiene	ND	0.27	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Hexachlorocyclopentadiene	ND	0.22	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Hexachloroethane	ND	0.21	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Indeno(1,2,3-cd)pyrene	ND	0.19	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Isophorone	ND	0.28	0.76		mg/Kg	1	11/8/2019 3:47:47 PM	48536
1-Methylnaphthalene	ND	0.28	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2-Methylnaphthalene	ND	0.28	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 4:20:00 PM
Lab ID: 1910E49-004
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.23	0.76		mg/Kg	1	11/8/2019 3:47:47 PM	48536
3+4-Methylphenol	ND	0.23	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
N-Nitrosodi-n-propylamine	ND	0.27	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
N-Nitrosodiphenylamine	ND	0.20	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Naphthalene	ND	0.29	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2-Nitroaniline	ND	0.27	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
3-Nitroaniline	ND	0.26	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
4-Nitroaniline	ND	0.24	0.76		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Nitrobenzene	ND	0.26	0.76		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2-Nitrophenol	ND	0.26	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
4-Nitrophenol	ND	0.26	0.48		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Pentachlorophenol	ND	0.20	0.76		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Phenanthrene	ND	0.21	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Phenol	ND	0.24	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Pyrene	ND	0.18	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Pyridine	ND	0.23	0.76		mg/Kg	1	11/8/2019 3:47:47 PM	48536
1,2,4-Trichlorobenzene	ND	0.30	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2,4,5-Trichlorophenol	ND	0.25	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
2,4,6-Trichlorophenol	ND	0.20	0.38		mg/Kg	1	11/8/2019 3:47:47 PM	48536
Surr: 2-Fluorophenol	31.2		26.7-85.9		%Rec	1	11/8/2019 3:47:47 PM	48536
Surr: Phenol-d5	37.9		18.5-101		%Rec	1	11/8/2019 3:47:47 PM	48536
Surr: 2,4,6-Tribromophenol	42.0		35.8-85.6		%Rec	1	11/8/2019 3:47:47 PM	48536
Surr: Nitrobenzene-d5	34.3		40.8-95.2	S	%Rec	1	11/8/2019 3:47:47 PM	48536
Surr: 2-Fluorobiphenyl	39.8		34.7-85.2		%Rec	1	11/8/2019 3:47:47 PM	48536
Surr: 4-Terphenyl-d14	32.7		37.4-91.3	S	%Rec	1	11/8/2019 3:47:47 PM	48536
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0023	0.014		mg/Kg	1	10/30/2019 11:46:38 P	48446
Toluene	ND	0.0027	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Ethylbenzene	ND	0.0016	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Methyl tert-butyl ether (MTBE)	ND	0.0066	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,2,4-Trimethylbenzene	ND	0.0025	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,3,5-Trimethylbenzene	ND	0.0027	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,2-Dichloroethane (EDC)	ND	0.0028	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,2-Dibromoethane (EDB)	ND	0.0025	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Naphthalene	ND	0.0056	0.056		mg/Kg	1	10/30/2019 11:46:38 P	48446
1-Methylnaphthalene	0.019	0.016	0.11	J	mg/Kg	1	10/30/2019 11:46:38 P	48446
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/30/2019 11:46:38 P	48446
Acetone	ND	0.023	0.42		mg/Kg	1	10/30/2019 11:46:38 P	48446
Bromobenzene	ND	0.0027	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 4:20:00 PM
Lab ID: 1910E49-004
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0025	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Bromoform	ND	0.0025	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Bromomethane	ND	0.0067	0.084		mg/Kg	1	10/30/2019 11:46:38 P	48446
2-Butanone	ND	0.032	0.28		mg/Kg	1	10/30/2019 11:46:38 P	48446
Carbon disulfide	ND	0.0092	0.28		mg/Kg	1	10/30/2019 11:46:38 P	48446
Carbon tetrachloride	ND	0.0026	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Chlorobenzene	ND	0.0036	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Chloroethane	ND	0.0041	0.056		mg/Kg	1	10/30/2019 11:46:38 P	48446
Chloroform	ND	0.0022	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Chloromethane	ND	0.0027	0.084		mg/Kg	1	10/30/2019 11:46:38 P	48446
2-Chlorotoluene	ND	0.0024	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
4-Chlorotoluene	ND	0.0023	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
cis-1,2-DCE	ND	0.0038	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
cis-1,3-Dichloropropene	ND	0.0023	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,2-Dibromo-3-chloropropane	ND	0.0029	0.056		mg/Kg	1	10/30/2019 11:46:38 P	48446
Dibromochloromethane	ND	0.0020	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Dibromomethane	ND	0.0030	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,2-Dichlorobenzene	ND	0.0023	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,3-Dichlorobenzene	ND	0.0024	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,4-Dichlorobenzene	ND	0.0023	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Dichlorodifluoromethane	ND	0.0065	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,1-Dichloroethane	ND	0.0018	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,1-Dichloroethene	ND	0.011	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,2-Dichloropropane	ND	0.0020	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,3-Dichloropropane	ND	0.0030	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
2,2-Dichloropropane	ND	0.0091	0.056		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,1-Dichloropropene	ND	0.0025	0.056		mg/Kg	1	10/30/2019 11:46:38 P	48446
Hexachlorobutadiene	ND	0.0028	0.056		mg/Kg	1	10/30/2019 11:46:38 P	48446
2-Hexanone	ND	0.0046	0.28		mg/Kg	1	10/30/2019 11:46:38 P	48446
Isopropylbenzene	ND	0.0020	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
4-Isopropyltoluene	0.016	0.0023	0.028	J	mg/Kg	1	10/30/2019 11:46:38 P	48446
4-Methyl-2-pentanone	ND	0.0053	0.28		mg/Kg	1	10/30/2019 11:46:38 P	48446
Methylene chloride	ND	0.0049	0.084		mg/Kg	1	10/30/2019 11:46:38 P	48446
n-Butylbenzene	ND	0.0026	0.084		mg/Kg	1	10/30/2019 11:46:38 P	48446
n-Propylbenzene	ND	0.0022	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
sec-Butylbenzene	ND	0.0031	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Styrene	ND	0.0022	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
tert-Butylbenzene	ND	0.0026	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,1,1,2-Tetrachloroethane	ND	0.0019	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (0-0.5')
Project: SWMU 13
Collection Date: 10/25/2019 4:20:00 PM
Lab ID: 1910E49-004
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0028	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Tetrachloroethene (PCE)	ND	0.0022	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
trans-1,2-DCE	ND	0.0025	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
trans-1,3-Dichloropropene	ND	0.0029	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,2,3-Trichlorobenzene	ND	0.0024	0.056		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,2,4-Trichlorobenzene	ND	0.0028	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,1,1-Trichloroethane	ND	0.0025	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,1,2-Trichloroethane	ND	0.0020	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Trichloroethene (TCE)	ND	0.0032	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Trichlorofluoromethane	ND	0.0094	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
1,2,3-Trichloropropane	ND	0.0045	0.056		mg/Kg	1	10/30/2019 11:46:38 P	48446
Vinyl chloride	ND	0.0018	0.028		mg/Kg	1	10/30/2019 11:46:38 P	48446
Xylenes, Total	ND	0.0070	0.056		mg/Kg	1	10/30/2019 11:46:38 P	48446
Surr: Dibromofluoromethane	108		70-130		%Rec	1	10/30/2019 11:46:38 P	48446
Surr: 1,2-Dichloroethane-d4	91.9		70-130		%Rec	1	10/30/2019 11:46:38 P	48446
Surr: Toluene-d8	98.2		70-130		%Rec	1	10/30/2019 11:46:38 P	48446
Surr: 4-Bromofluorobenzene	84.5		70-130		%Rec	1	10/30/2019 11:46:38 P	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 4:30:00 PM
Lab ID: 1910E49-005
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	20	1.8	8.8		mg/Kg	1	11/4/2019 9:34:49 AM	48543
Motor Oil Range Organics (MRO)	ND	44	44		mg/Kg	1	11/4/2019 9:34:49 AM	48543
Surr: DNOP	109	0	70-130		%Rec	1	11/4/2019 9:34:49 AM	48543
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.80	2.7		mg/Kg	1	10/31/2019 1:25:08 AM	G64077
Surr: BFB	112	0	77.4-118		%Rec	1	10/31/2019 1:25:08 AM	G64077
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.017	0.0018	0.033	J	mg/Kg	1	11/7/2019 5:07:00 PM	48648
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.71	4.8		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Arsenic	ND	2.8	4.8		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Barium	240	0.045	0.19		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Beryllium	1.1	0.018	0.29		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Cadmium	ND	0.047	0.19		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Chromium	12	0.15	0.58		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Cobalt	5.1	0.20	0.58		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Iron	15000	70	240		mg/Kg	100	11/20/2019 5:39:16 PM	48519
Lead	2.4	0.47	0.48		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Manganese	220	0.040	0.19		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Nickel	11	0.29	0.97		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Selenium	ND	2.4	4.8		mg/Kg	2	11/21/2019 7:52:37 PM	48519
Silver	ND	0.062	0.48		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Vanadium	21	0.13	4.8		mg/Kg	2	11/19/2019 7:52:45 PM	48519
Zinc	17	0.76	4.8		mg/Kg	2	11/19/2019 7:52:45 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Acenaphthylene	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Aniline	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Anthracene	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Azobenzene	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Benz(a)anthracene	ND	0.091	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Benzo(a)pyrene	ND	0.084	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Benzo(b)fluoranthene	ND	0.083	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Benzo(g,h,i)perylene	ND	0.081	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Benzo(k)fluoranthene	ND	0.085	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Benzoic acid	ND	0.097	0.47		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 4:30:00 PM
Lab ID: 1910E49-005
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Bis(2-chloroethyl)ether	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Bis(2-ethylhexyl)phthalate	ND	0.14	0.47		mg/Kg	1	11/8/2019 4:16:47 PM	48536
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Butyl benzyl phthalate	ND	0.096	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Carbazole	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
4-Chloro-3-methylphenol	ND	0.14	0.47		mg/Kg	1	11/8/2019 4:16:47 PM	48536
4-Chloroaniline	ND	0.13	0.47		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2-Chloronaphthalene	ND	0.12	0.24		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
4-Chlorophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Chrysene	ND	0.083	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Di-n-butyl phthalate	ND	0.14	0.38		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Di-n-octyl phthalate	ND	0.096	0.38		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Dibenz(a,h)anthracene	ND	0.085	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Dibenzofuran	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
1,2-Dichlorobenzene	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
1,3-Dichlorobenzene	ND	0.099	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
3,3´-Dichlorobenzidine	ND	0.084	0.24		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Diethyl phthalate	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Dimethyl phthalate	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2,4-Dichlorophenol	ND	0.11	0.38		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2,4-Dimethylphenol	ND	0.10	0.28		mg/Kg	1	11/8/2019 4:16:47 PM	48536
4,6-Dinitro-2-methylphenol	ND	0.087	0.38		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2,4-Dinitrophenol	ND	0.068	0.47		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2,4-Dinitrotoluene	ND	0.11	0.47		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2,6-Dinitrotoluene	ND	0.12	0.47		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Fluoranthene	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Fluorene	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Hexachlorobutadiene	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Hexachloroethane	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Indeno(1,2,3-cd)pyrene	ND	0.094	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Isophorone	ND	0.14	0.38		mg/Kg	1	11/8/2019 4:16:47 PM	48536
1-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 4:30:00 PM
Lab ID: 1910E49-005
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.11	0.38		mg/Kg	1	11/8/2019 4:16:47 PM	48536
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
N-Nitrosodi-n-propylamine	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
N-Nitrosodiphenylamine	ND	0.099	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Naphthalene	ND	0.14	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2-Nitroaniline	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Nitrobenzene	ND	0.13	0.38		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
4-Nitrophenol	ND	0.13	0.24		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Pentachlorophenol	ND	0.097	0.38		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Phenanthrene	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Phenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Pyrene	ND	0.088	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Pyridine	ND	0.11	0.38		mg/Kg	1	11/8/2019 4:16:47 PM	48536
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2,4,5-Trichlorophenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
2,4,6-Trichlorophenol	ND	0.099	0.19		mg/Kg	1	11/8/2019 4:16:47 PM	48536
Surr: 2-Fluorophenol	59.2		26.7-85.9		%Rec	1	11/8/2019 4:16:47 PM	48536
Surr: Phenol-d5	62.9		18.5-101		%Rec	1	11/8/2019 4:16:47 PM	48536
Surr: 2,4,6-Tribromophenol	70.1		35.8-85.6		%Rec	1	11/8/2019 4:16:47 PM	48536
Surr: Nitrobenzene-d5	69.2		40.8-95.2		%Rec	1	11/8/2019 4:16:47 PM	48536
Surr: 2-Fluorobiphenyl	64.7		34.7-85.2		%Rec	1	11/8/2019 4:16:47 PM	48536
Surr: 4-Terphenyl-d14	62.5		37.4-91.3		%Rec	1	11/8/2019 4:16:47 PM	48536
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0022	0.013		mg/Kg	1	10/31/2019 12:15:16 A	48446
Toluene	ND	0.0025	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Ethylbenzene	ND	0.0015	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Methyl tert-butyl ether (MTBE)	ND	0.0063	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,2,4-Trimethylbenzene	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,3,5-Trimethylbenzene	ND	0.0026	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,2-Dichloroethane (EDC)	ND	0.0027	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,2-Dibromoethane (EDB)	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Naphthalene	ND	0.0053	0.053		mg/Kg	1	10/31/2019 12:15:16 A	48446
1-Methylnaphthalene	ND	0.015	0.11		mg/Kg	1	10/31/2019 12:15:16 A	48446
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/31/2019 12:15:16 A	48446
Acetone	ND	0.022	0.40		mg/Kg	1	10/31/2019 12:15:16 A	48446
Bromobenzene	ND	0.0025	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 4:30:00 PM
Lab ID: 1910E49-005
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Bromoform	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Bromomethane	ND	0.0064	0.080		mg/Kg	1	10/31/2019 12:15:16 A	48446
2-Butanone	0.039	0.031	0.27	J	mg/Kg	1	10/31/2019 12:15:16 A	48446
Carbon disulfide	ND	0.0088	0.27		mg/Kg	1	10/31/2019 12:15:16 A	48446
Carbon tetrachloride	ND	0.0025	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Chlorobenzene	ND	0.0034	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Chloroethane	ND	0.0039	0.053		mg/Kg	1	10/31/2019 12:15:16 A	48446
Chloroform	ND	0.0021	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Chloromethane	ND	0.0025	0.080		mg/Kg	1	10/31/2019 12:15:16 A	48446
2-Chlorotoluene	ND	0.0023	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
4-Chlorotoluene	ND	0.0022	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
cis-1,2-DCE	ND	0.0036	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
cis-1,3-Dichloropropene	ND	0.0022	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,2-Dibromo-3-chloropropane	ND	0.0027	0.053		mg/Kg	1	10/31/2019 12:15:16 A	48446
Dibromochloromethane	ND	0.0019	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Dibromomethane	ND	0.0029	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,2-Dichlorobenzene	ND	0.0022	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,3-Dichlorobenzene	ND	0.0023	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,4-Dichlorobenzene	ND	0.0022	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Dichlorodifluoromethane	ND	0.0062	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,1-Dichloroethane	ND	0.0017	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,1-Dichloroethene	ND	0.011	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,2-Dichloropropane	ND	0.0019	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,3-Dichloropropane	ND	0.0029	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
2,2-Dichloropropane	ND	0.0086	0.053		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,1-Dichloropropene	ND	0.0024	0.053		mg/Kg	1	10/31/2019 12:15:16 A	48446
Hexachlorobutadiene	ND	0.0027	0.053		mg/Kg	1	10/31/2019 12:15:16 A	48446
2-Hexanone	ND	0.0044	0.27		mg/Kg	1	10/31/2019 12:15:16 A	48446
Isopropylbenzene	ND	0.0019	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
4-Isopropyltoluene	ND	0.0022	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
4-Methyl-2-pentanone	ND	0.0050	0.27		mg/Kg	1	10/31/2019 12:15:16 A	48446
Methylene chloride	ND	0.0047	0.080		mg/Kg	1	10/31/2019 12:15:16 A	48446
n-Butylbenzene	ND	0.0025	0.080		mg/Kg	1	10/31/2019 12:15:16 A	48446
n-Propylbenzene	ND	0.0021	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
sec-Butylbenzene	ND	0.0030	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Styrene	ND	0.0021	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
tert-Butylbenzene	ND	0.0025	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,1,1,2-Tetrachloroethane	ND	0.0018	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (1.5-2')
Project: SWMU 13
Collection Date: 10/25/2019 4:30:00 PM
Lab ID: 1910E49-005
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0027	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Tetrachloroethene (PCE)	ND	0.0021	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
trans-1,2-DCE	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
trans-1,3-Dichloropropene	ND	0.0028	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,2,3-Trichlorobenzene	ND	0.0023	0.053		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,2,4-Trichlorobenzene	ND	0.0027	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,1,1-Trichloroethane	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,1,2-Trichloroethane	ND	0.0019	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Trichloroethene (TCE)	ND	0.0031	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Trichlorofluoromethane	ND	0.0090	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
1,2,3-Trichloropropane	ND	0.0043	0.053		mg/Kg	1	10/31/2019 12:15:16 A	48446
Vinyl chloride	ND	0.0017	0.027		mg/Kg	1	10/31/2019 12:15:16 A	48446
Xylenes, Total	ND	0.0067	0.053		mg/Kg	1	10/31/2019 12:15:16 A	48446
Surr: Dibromofluoromethane	109		70-130		%Rec	1	10/31/2019 12:15:16 A	48446
Surr: 1,2-Dichloroethane-d4	89.7		70-130		%Rec	1	10/31/2019 12:15:16 A	48446
Surr: Toluene-d8	95.0		70-130		%Rec	1	10/31/2019 12:15:16 A	48446
Surr: 4-Bromofluorobenzene	87.1		70-130		%Rec	1	10/31/2019 12:15:16 A	48446

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 4:40:00 PM
Lab ID: 1910E49-006
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**	
Diesel Range Organics (DRO)	13	2.0	10		mg/Kg	1	11/4/2019 9:43:58 AM	48543
Motor Oil Range Organics (MRO)	ND	51	51		mg/Kg	1	11/4/2019 9:43:58 AM	48543
Surr: DNOP	111	0	70-130		%Rec	1	11/4/2019 9:43:58 AM	48543
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.81	2.7		mg/Kg	1	10/31/2019 9:33:31 AM	48491
Surr: BFB	113	0	77.4-118		%Rec	1	10/31/2019 9:33:31 AM	48491
EPA METHOD 7471: MERCURY							Analyst: **pmf**	
Mercury	0.0086	0.0018	0.033	J	mg/Kg	1	11/7/2019 5:09:01 PM	48648
EPA METHOD 6010B: SOIL METALS							Analyst: **pmf**	
Antimony	ND	0.75	5.1		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Arsenic	ND	2.9	5.1		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Barium	260	0.048	0.21		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Beryllium	1.1	0.019	0.31		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Cadmium	ND	0.050	0.21		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Chromium	12	0.16	0.62		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Cobalt	5.4	0.22	0.62		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Iron	17000	75	260		mg/Kg	100	11/20/2019 5:40:50 PM	48519
Lead	2.3	0.50	0.51		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Manganese	240	0.043	0.21		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Nickel	12	0.31	1.0		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Selenium	ND	2.6	5.1		mg/Kg	2	11/21/2019 7:54:02 PM	48519
Silver	ND	0.066	0.51		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Vanadium	22	0.14	5.1		mg/Kg	2	11/19/2019 7:55:54 PM	48519
Zinc	17	0.81	5.1		mg/Kg	2	11/19/2019 7:55:54 PM	48519
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Acenaphthylene	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Aniline	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Anthracene	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Azobenzene	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Benz(a)anthracene	ND	0.090	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Benzo(a)pyrene	ND	0.083	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Benzo(b)fluoranthene	ND	0.083	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Benzo(g,h,i)perylene	ND	0.080	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Benzo(k)fluoranthene	ND	0.085	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Benzoic acid	ND	0.097	0.47		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 4:40:00 PM
Lab ID: 1910E49-006
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Bis(2-chloroethoxy)methane	ND	0.14	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Bis(2-chloroethyl)ether	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Bis(2-ethylhexyl)phthalate	ND	0.13	0.47		mg/Kg	1	11/8/2019 4:45:41 PM	48536
4-Bromophenyl phenyl ether	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Butyl benzyl phthalate	ND	0.096	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Carbazole	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
4-Chloro-3-methylphenol	ND	0.14	0.47		mg/Kg	1	11/8/2019 4:45:41 PM	48536
4-Chloroaniline	ND	0.13	0.47		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2-Chloronaphthalene	ND	0.12	0.23		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
4-Chlorophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Chrysene	ND	0.083	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Di-n-butyl phthalate	ND	0.14	0.38		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Di-n-octyl phthalate	ND	0.096	0.38		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Dibenz(a,h)anthracene	ND	0.085	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Dibenzofuran	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
1,2-Dichlorobenzene	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
1,3-Dichlorobenzene	ND	0.099	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
3,3´-Dichlorobenzidine	ND	0.083	0.23		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Diethyl phthalate	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Dimethyl phthalate	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2,4-Dichlorophenol	ND	0.11	0.38		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2,4-Dimethylphenol	ND	0.10	0.28		mg/Kg	1	11/8/2019 4:45:41 PM	48536
4,6-Dinitro-2-methylphenol	ND	0.087	0.38		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2,4-Dinitrophenol	ND	0.068	0.47		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2,4-Dinitrotoluene	ND	0.11	0.47		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2,6-Dinitrotoluene	ND	0.12	0.47		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Fluoranthene	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Fluorene	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Hexachlorobenzene	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Hexachlorobutadiene	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Hexachloroethane	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Indeno(1,2,3-cd)pyrene	ND	0.093	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Isophorone	ND	0.14	0.38		mg/Kg	1	11/8/2019 4:45:41 PM	48536
1-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2-Methylnaphthalene	ND	0.14	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 4:40:00 PM
Lab ID: 1910E49-006
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
2-Methylphenol	ND	0.11	0.38		mg/Kg	1	11/8/2019 4:45:41 PM	48536
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
N-Nitrosodi-n-propylamine	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
N-Nitrosodiphenylamine	ND	0.099	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Naphthalene	ND	0.14	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2-Nitroaniline	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
3-Nitroaniline	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Nitrobenzene	ND	0.13	0.38		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2-Nitrophenol	ND	0.13	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
4-Nitrophenol	ND	0.13	0.23		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Pentachlorophenol	ND	0.097	0.38		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Phenanthrene	ND	0.10	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Phenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Pyrene	ND	0.088	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Pyridine	ND	0.11	0.38		mg/Kg	1	11/8/2019 4:45:41 PM	48536
1,2,4-Trichlorobenzene	ND	0.15	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2,4,5-Trichlorophenol	ND	0.12	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
2,4,6-Trichlorophenol	ND	0.098	0.19		mg/Kg	1	11/8/2019 4:45:41 PM	48536
Surr: 2-Fluorophenol	56.3		26.7-85.9		%Rec	1	11/8/2019 4:45:41 PM	48536
Surr: Phenol-d5	59.2		18.5-101		%Rec	1	11/8/2019 4:45:41 PM	48536
Surr: 2,4,6-Tribromophenol	68.0		35.8-85.6		%Rec	1	11/8/2019 4:45:41 PM	48536
Surr: Nitrobenzene-d5	57.3		40.8-95.2		%Rec	1	11/8/2019 4:45:41 PM	48536
Surr: 2-Fluorobiphenyl	59.1		34.7-85.2		%Rec	1	11/8/2019 4:45:41 PM	48536
Surr: 4-Terphenyl-d14	63.4		37.4-91.3		%Rec	1	11/8/2019 4:45:41 PM	48536
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Benzene	ND	0.0022	0.013		mg/Kg	1	10/31/2019 12:43:55 A	48446
Toluene	ND	0.0026	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Ethylbenzene	ND	0.0016	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Methyl tert-butyl ether (MTBE)	ND	0.0063	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,2,4-Trimethylbenzene	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,3,5-Trimethylbenzene	ND	0.0026	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,2-Dichloroethane (EDC)	ND	0.0027	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,2-Dibromoethane (EDB)	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Naphthalene	ND	0.0054	0.054		mg/Kg	1	10/31/2019 12:43:55 A	48446
1-Methylnaphthalene	ND	0.015	0.11		mg/Kg	1	10/31/2019 12:43:55 A	48446
2-Methylnaphthalene	ND	0.012	0.11		mg/Kg	1	10/31/2019 12:43:55 A	48446
Acetone	ND	0.022	0.40		mg/Kg	1	10/31/2019 12:43:55 A	48446
Bromobenzene	ND	0.0026	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 4:40:00 PM
Lab ID: 1910E49-006
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
Bromodichloromethane	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Bromoform	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Bromomethane	ND	0.0065	0.080		mg/Kg	1	10/31/2019 12:43:55 A	48446
2-Butanone	ND	0.031	0.27		mg/Kg	1	10/31/2019 12:43:55 A	48446
Carbon disulfide	ND	0.0088	0.27		mg/Kg	1	10/31/2019 12:43:55 A	48446
Carbon tetrachloride	ND	0.0025	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Chlorobenzene	ND	0.0034	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Chloroethane	ND	0.0039	0.054		mg/Kg	1	10/31/2019 12:43:55 A	48446
Chloroform	ND	0.0022	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Chloromethane	ND	0.0026	0.080		mg/Kg	1	10/31/2019 12:43:55 A	48446
2-Chlorotoluene	ND	0.0023	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
4-Chlorotoluene	ND	0.0022	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
cis-1,2-DCE	ND	0.0037	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
cis-1,3-Dichloropropene	ND	0.0023	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,2-Dibromo-3-chloropropane	ND	0.0027	0.054		mg/Kg	1	10/31/2019 12:43:55 A	48446
Dibromochloromethane	ND	0.0019	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Dibromomethane	ND	0.0029	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,2-Dichlorobenzene	ND	0.0022	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,3-Dichlorobenzene	ND	0.0023	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,4-Dichlorobenzene	ND	0.0022	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Dichlorodifluoromethane	ND	0.0062	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,1-Dichloroethane	ND	0.0017	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,1-Dichloroethene	ND	0.011	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,2-Dichloropropane	ND	0.0019	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,3-Dichloropropane	ND	0.0029	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
2,2-Dichloropropane	ND	0.0087	0.054		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,1-Dichloropropene	ND	0.0024	0.054		mg/Kg	1	10/31/2019 12:43:55 A	48446
Hexachlorobutadiene	ND	0.0027	0.054		mg/Kg	1	10/31/2019 12:43:55 A	48446
2-Hexanone	ND	0.0044	0.27		mg/Kg	1	10/31/2019 12:43:55 A	48446
Isopropylbenzene	ND	0.0019	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
4-Isopropyltoluene	ND	0.0022	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
4-Methyl-2-pentanone	ND	0.0051	0.27		mg/Kg	1	10/31/2019 12:43:55 A	48446
Methylene chloride	ND	0.0047	0.080		mg/Kg	1	10/31/2019 12:43:55 A	48446
n-Butylbenzene	ND	0.0025	0.080		mg/Kg	1	10/31/2019 12:43:55 A	48446
n-Propylbenzene	ND	0.0021	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
sec-Butylbenzene	ND	0.0030	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Styrene	ND	0.0021	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
tert-Butylbenzene	ND	0.0025	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,1,1,2-Tetrachloroethane	ND	0.0018	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-14 (2-3')
Project: SWMU 13
Collection Date: 10/25/2019 4:40:00 PM
Lab ID: 1910E49-006
Matrix: MEOH (SOIL)
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**	
1,1,2,2-Tetrachloroethane	ND	0.0027	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Tetrachloroethene (PCE)	ND	0.0021	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
trans-1,2-DCE	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
trans-1,3-Dichloropropene	ND	0.0028	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,2,3-Trichlorobenzene	ND	0.0024	0.054		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,2,4-Trichlorobenzene	ND	0.0027	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,1,1-Trichloroethane	ND	0.0024	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,1,2-Trichloroethane	ND	0.0019	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Trichloroethene (TCE)	ND	0.0031	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Trichlorofluoromethane	ND	0.0091	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
1,2,3-Trichloropropane	ND	0.0043	0.054		mg/Kg	1	10/31/2019 12:43:55 A	48446
Vinyl chloride	ND	0.0017	0.027		mg/Kg	1	10/31/2019 12:43:55 A	48446
Xylenes, Total	ND	0.0067	0.054		mg/Kg	1	10/31/2019 12:43:55 A	48446
Surr: Dibromofluoromethane	108		70-130		%Rec	1	10/31/2019 12:43:55 A	48446
Surr: 1,2-Dichloroethane-d4	91.2		70-130		%Rec	1	10/31/2019 12:43:55 A	48446
Surr: Toluene-d8	96.7		70-130		%Rec	1	10/31/2019 12:43:55 A	48446
Surr: 4-Bromofluorobenzene	88.2		70-130		%Rec	1	10/31/2019 12:43:55 A	48446

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102519
Project: SWMU 13
Collection Date: 10/25/2019 6:15:00 PM
Lab ID: 1910E49-007
Matrix: AQUEOUS
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	0.35	1.0		mg/L	1	10/30/2019 5:16:13 PM	48464
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	10/30/2019 5:16:13 PM	48464
Surr: DNOP	104	0	70-130		%Rec	1	10/30/2019 5:16:13 PM	48464
EPA METHOD 7470: MERCURY							Analyst: **rde**	
Mercury	0.00013	0.000038	0.00020	J	mg/L	1	11/8/2019 3:02:39 PM	48664
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Antimony	ND	0.0081	0.050		mg/L	1	11/14/2019 5:26:45 PM	48486
Arsenic	ND	0.015	0.020		mg/L	1	11/25/2019 4:16:32 PM	48486
Barium	ND	0.0012	0.020		mg/L	1	11/13/2019 8:06:26 PM	48486
Beryllium	ND	0.00025	0.0030		mg/L	1	11/13/2019 8:06:26 PM	48486
Cadmium	ND	0.00055	0.0020		mg/L	1	11/13/2019 8:06:26 PM	48486
Chromium	ND	0.00086	0.0060		mg/L	1	11/13/2019 8:06:26 PM	48486
Cobalt	ND	0.0012	0.0060		mg/L	1	11/14/2019 5:26:45 PM	48486
Iron	0.016	0.0093	0.020	J	mg/L	1	11/13/2019 8:06:26 PM	48486
Lead	ND	0.0035	0.0050		mg/L	1	11/13/2019 8:06:26 PM	48486
Manganese	ND	0.00041	0.0020		mg/L	1	11/14/2019 5:26:45 PM	48486
Nickel	ND	0.0028	0.010		mg/L	1	11/13/2019 8:06:26 PM	48486
Selenium	ND	0.035	0.050		mg/L	1	11/13/2019 8:06:26 PM	48486
Silver	ND	0.00055	0.0050		mg/L	1	11/13/2019 8:06:26 PM	48486
Vanadium	ND	0.00086	0.050		mg/L	1	11/13/2019 8:06:26 PM	48486
Zinc	ND	0.011	0.020		mg/L	1	11/13/2019 8:06:26 PM	48486
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
Acenaphthene	ND	3.0	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Acenaphthylene	ND	2.4	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Aniline	ND	3.6	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Anthracene	ND	2.7	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Azobenzene	ND	3.3	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Benz(a)anthracene	ND	3.6	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Benzo(a)pyrene	ND	3.5	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Benzo(b)fluoranthene	ND	3.4	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Benzo(g,h,i)perylene	ND	2.2	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Benzo(k)fluoranthene	ND	2.9	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Benzoic acid	ND	11	20		µg/L	1	11/2/2019 8:30:17 AM	48505
Benzyl alcohol	ND	2.4	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Bis(2-chloroethoxy)methane	ND	2.6	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Bis(2-chloroethyl)ether	ND	3.2	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Bis(2-chloroisopropyl)ether	ND	3.9	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Bis(2-ethylhexyl)phthalate	ND	4.3	10		µg/L	1	11/2/2019 8:30:17 AM	48505

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Hall Environmental Analysis Laboratory, Inc.

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Lab ID: 1910E49-007
Matrix: AQUEOUS
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
4-Bromophenyl phenyl ether	ND	3.0	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Butyl benzyl phthalate	ND	3.3	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Carbazole	ND	2.9	10		µg/L	1	11/2/2019 8:30:17 AM	48505
4-Chloro-3-methylphenol	ND	3.4	10		µg/L	1	11/2/2019 8:30:17 AM	48505
4-Chloroaniline	ND	2.3	10		µg/L	1	11/2/2019 8:30:17 AM	48505
2-Chloronaphthalene	ND	3.1	10		µg/L	1	11/2/2019 8:30:17 AM	48505
2-Chlorophenol	ND	2.7	10		µg/L	1	11/2/2019 8:30:17 AM	48505
4-Chlorophenyl phenyl ether	ND	2.4	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Chrysene	ND	2.8	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Di-n-butyl phthalate	ND	2.7	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Di-n-octyl phthalate	ND	3.5	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Dibenz(a,h)anthracene	ND	3.0	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Dibenzofuran	ND	3.2	10		µg/L	1	11/2/2019 8:30:17 AM	48505
1,2-Dichlorobenzene	ND	4.8	10		µg/L	1	11/2/2019 8:30:17 AM	48505
1,3-Dichlorobenzene	ND	5.3	10		µg/L	1	11/2/2019 8:30:17 AM	48505
1,4-Dichlorobenzene	ND	4.4	10		µg/L	1	11/2/2019 8:30:17 AM	48505
3,3´-Dichlorobenzidine	ND	2.8	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Diethyl phthalate	ND	2.9	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Dimethyl phthalate	ND	3.2	10		µg/L	1	11/2/2019 8:30:17 AM	48505
2,4-Dichlorophenol	ND	2.9	20		µg/L	1	11/2/2019 8:30:17 AM	48505
2,4-Dimethylphenol	ND	3.0	10		µg/L	1	11/2/2019 8:30:17 AM	48505
4,6-Dinitro-2-methylphenol	ND	2.9	20		µg/L	1	11/2/2019 8:30:17 AM	48505
2,4-Dinitrophenol	ND	2.6	20		µg/L	1	11/2/2019 8:30:17 AM	48505
2,4-Dinitrotoluene	ND	3.8	10		µg/L	1	11/2/2019 8:30:17 AM	48505
2,6-Dinitrotoluene	ND	2.4	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Fluoranthene	ND	2.4	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Fluorene	ND	2.9	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Hexachlorobenzene	ND	3.1	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Hexachlorobutadiene	ND	4.7	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Hexachlorocyclopentadiene	ND	3.6	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Hexachloroethane	ND	4.8	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Indeno(1,2,3-cd)pyrene	ND	2.7	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Isophorone	ND	3.0	10		µg/L	1	11/2/2019 8:30:17 AM	48505
1-Methylnaphthalene	ND	3.1	10		µg/L	1	11/2/2019 8:30:17 AM	48505
2-Methylnaphthalene	ND	3.0	10		µg/L	1	11/2/2019 8:30:17 AM	48505
2-Methylphenol	ND	2.9	10		µg/L	1	11/2/2019 8:30:17 AM	48505
3+4-Methylphenol	ND	3.6	10		µg/L	1	11/2/2019 8:30:17 AM	48505
N-Nitrosodi-n-propylamine	ND	6.5	10		µg/L	1	11/2/2019 8:30:17 AM	48505
N-Nitrosodimethylamine	ND	5.0	10		µg/L	1	11/2/2019 8:30:17 AM	48505

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Hall Environmental Analysis Laboratory, Inc.

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Project: SWMU 13
Collection Date: 10/25/2019 6:15:00 PM
Lab ID: 1910E49-007
Matrix: AQUEOUS
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JDC**	
N-Nitrosodiphenylamine	ND	2.4	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Naphthalene	ND	4.1	10		µg/L	1	11/2/2019 8:30:17 AM	48505
2-Nitroaniline	ND	3.2	10		µg/L	1	11/2/2019 8:30:17 AM	48505
3-Nitroaniline	ND	3.2	10		µg/L	1	11/2/2019 8:30:17 AM	48505
4-Nitroaniline	ND	2.7	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Nitrobenzene	ND	2.8	10		µg/L	1	11/2/2019 8:30:17 AM	48505
2-Nitrophenol	ND	3.0	10		µg/L	1	11/2/2019 8:30:17 AM	48505
4-Nitrophenol	ND	7.6	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Pentachlorophenol	ND	2.7	20		µg/L	1	11/2/2019 8:30:17 AM	48505
Phenanthrene	ND	2.8	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Phenol	ND	8.0	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Pyrene	ND	2.5	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Pyridine	ND	9.6	10		µg/L	1	11/2/2019 8:30:17 AM	48505
1,2,4-Trichlorobenzene	ND	4.0	10		µg/L	1	11/2/2019 8:30:17 AM	48505
2,4,5-Trichlorophenol	ND	3.0	10		µg/L	1	11/2/2019 8:30:17 AM	48505
2,4,6-Trichlorophenol	ND	2.3	10		µg/L	1	11/2/2019 8:30:17 AM	48505
Surr: 2-Fluorophenol	29.1	0	15-101		%Rec	1	11/2/2019 8:30:17 AM	48505
Surr: Phenol-d5	23.6	0	15-84.6		%Rec	1	11/2/2019 8:30:17 AM	48505
Surr: 2,4,6-Tribromophenol	48.6	0	27.8-112		%Rec	1	11/2/2019 8:30:17 AM	48505
Surr: Nitrobenzene-d5	40.9	0	33-113		%Rec	1	11/2/2019 8:30:17 AM	48505
Surr: 2-Fluorobiphenyl	40.0	0	26.6-107		%Rec	1	11/2/2019 8:30:17 AM	48505
Surr: 4-Terphenyl-d14	50.4	0	18.7-148		%Rec	1	11/2/2019 8:30:17 AM	48505
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.17	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Toluene	ND	0.35	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Ethylbenzene	ND	0.13	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Naphthalene	ND	0.28	2.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Acetone	ND	1.2	10		µg/L	1	10/30/2019 7:43:59 AM	R64075
Bromobenzene	ND	0.24	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Bromodichloromethane	ND	0.13	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Bromoform	ND	0.29	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Bromomethane	ND	0.27	3.0		µg/L	1	10/30/2019 7:43:59 AM	R64075

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB102519
Project: SWMU 13
Collection Date: 10/25/2019 6:15:00 PM
Lab ID: 1910E49-007
Matrix: AQUEOUS
Received Date: 10/29/2019 9:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	2.1	10		µg/L	1	10/30/2019 7:43:59 AM	R64075
Carbon disulfide	ND	0.45	10		µg/L	1	10/30/2019 7:43:59 AM	R64075
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Chlorobenzene	ND	0.19	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Chloroethane	ND	0.18	2.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Chloroform	ND	0.12	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Chloromethane	ND	0.32	3.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,2-Dibromo-3-chloropropane	ND	0.33	2.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Dibromochloromethane	ND	0.24	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Dibromomethane	ND	0.21	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
2-Hexanone	ND	1.5	10		µg/L	1	10/30/2019 7:43:59 AM	R64075
Isopropylbenzene	ND	0.19	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	10/30/2019 7:43:59 AM	R64075
Methylene Chloride	ND	0.15	3.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
n-Butylbenzene	ND	0.23	3.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
n-Propylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Styrene	ND	0.19	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075

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Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
1,2,3-Trichloropropane	ND	0.30	2.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Vinyl chloride	ND	0.18	1.0		µg/L	1	10/30/2019 7:43:59 AM	R64075
Xylenes, Total	ND	0.45	1.5		µg/L	1	10/30/2019 7:43:59 AM	R64075
Surr: 1,2-Dichloroethane-d4	94.9	0	70-130		%Rec	1	10/30/2019 7:43:59 AM	R64075
Surr: 4-Bromofluorobenzene	93.5	0	70-130		%Rec	1	10/30/2019 7:43:59 AM	R64075
Surr: Dibromofluoromethane	100	0	70-130		%Rec	1	10/30/2019 7:43:59 AM	R64075
Surr: Toluene-d8	101	0	70-130		%Rec	1	10/30/2019 7:43:59 AM	R64075
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.019	0.050		mg/L	1	11/5/2019 5:19:47 AM	G64230
Surr: BFB	95.8	0	70-130		%Rec	1	11/5/2019 5:19:47 AM	G64230

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

November 07, 2019

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1155857

Samples Received: 10/31/2019

Project Number:

Description:

Report To:

4901 Hawkins NE

Albuquerque, NM 87109

Entire Report Reviewed By:

Jason Romer
Project Manager

1910E49-001B SWMU 13-13 (0-0.5') L1155857-01 Solid

Collected by | Collected date/time 10/25/19 14:55 | Received date/time 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375558	1	11/06/19 08:00	11/06/19 13:37	JER	Mt. Juliet, TN

1910E49-002B SWMU 13-13 (1.5-2') L1155857-02 Solid

Collected by | Collected date/time 10/25/19 15:05 | Received date/time 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375561	1	11/06/19 09:07	11/06/19 18:16	JER	Mt. Juliet, TN

1910E49-003B SWMU 13-13 (2-3') L1155857-03 Solid

Collected by | Collected date/time 10/25/19 15:20 | Received date/time 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375561	1	11/06/19 09:07	11/06/19 18:17	JER	Mt. Juliet, TN

1910E49-004B SWMU 13-14 (0-0.5') L1155857-04 Solid

Collected by | Collected date/time 10/25/19 16:20 | Received date/time 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375561	1	11/06/19 09:07	11/06/19 18:18	JER	Mt. Juliet, TN

1910E49-005B SWMU 13-14 (1.5-2') L1155857-05 Solid

Collected by | Collected date/time 10/25/19 16:30 | Received date/time 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375561	1	11/06/19 09:07	11/06/19 18:19	JER	Mt. Juliet, TN

1910E49-006B SWMU 13-14 (2.3') L1155857-06 Solid

Collected by | Collected date/time 10/25/19 16:40 | Received date/time 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1375561	1	11/06/19 09:07	11/06/19 18:20	JER	Mt. Juliet, TN

1910E49-007E EB102519 L1155857-07 GW

Collected by | Collected date/time 10/25/19 18:15 | Received date/time 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2011	WG1375056	1	11/05/19 15:00	11/06/19 16:07	JER	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jason Romer
Project Manager

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND	J6	0.250	1	11/06/2019 13:37	WG1375558

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	0.455		0.250	1	11/06/2019 18:16	WG1375561

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 18:17	WG1375561

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	0.277		0.250	1	11/06/2019 18:18	WG1375561

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 18:19	WG1375561

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	11/06/2019 18:20	WG1375561

Wet Chemistry by Method 4500CN E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	11/06/2019 16:07	WG1375056

Method Blank (MB)

(MB) R3469134-1 11/06/19 15:34

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

L1155017-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1155017-01 11/06/19 15:46 • (DUP) R3469134-3 11/06/19 15:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

L1155479-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1155479-03 11/06/19 16:05 • (DUP) R3469134-8 11/06/19 16:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3469134-2 11/06/19 15:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.0907	90.7	85.0-115	

L1155184-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155184-01 11/06/19 15:48 • (MS) R3469134-4 11/06/19 15:49 • (MSD) R3469134-5 11/06/19 15:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0764	0.0753	76.4	75.3	1	75.0-125			1.45	20

L1155340-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155340-16 11/06/19 15:53 • (MS) R3469134-6 11/06/19 15:54 • (MSD) R3469134-7 11/06/19 15:55

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0735	0.0688	73.5	68.8	1	75.0-125	J6	J6	6.61	20

Method Blank (MB)

(MB) R3469026-1 11/06/19 13:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0390	0.250

L1155314-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1155314-01 11/06/19 13:13 • (DUP) R3469026-3 11/06/19 13:14

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

L1156516-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1156516-01 11/06/19 13:41 • (DUP) R3469026-8 11/06/19 13:42

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3469026-2 11/06/19 13:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.38	95.3	50.0-150	

L1155340-23 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155340-23 11/06/19 13:24 • (MS) R3469026-4 11/06/19 13:25 • (MSD) R3469026-5 11/06/19 13:26

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.48	1.31	77.0	66.8	1	75.0-125		J6	12.3	20

L1155857-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155857-01 11/06/19 13:37 • (MS) R3469026-6 11/06/19 13:38 • (MSD) R3469026-7 11/06/19 13:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.45	1.54	73.2	78.4	1	75.0-125	J6		5.85	20

Method Blank (MB)

(MB) R3469205-1 11/06/19 18:11

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0390	0.250

L1156084-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1156084-01 11/06/19 18:23 • (DUP) R3469205-3 11/06/19 18:24

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	0.609	0.881	1	36.4	P1	20

L1156467-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1156467-01 11/06/19 18:35 • (DUP) R3469205-6 11/06/19 18:36

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	0.213	0.285	1	28.7	P1	20

Laboratory Control Sample (LCS)

(LCS) R3469205-2 11/06/19 18:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.46	98.6	50.0-150	

L1156084-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1156084-02 11/06/19 18:25 • (MS) R3469205-4 11/06/19 18:26 • (MSD) R3469205-5 11/06/19 18:27

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	ND	1.19	1.27	71.4	76.4	1	75.0-125	J6		6.71	20

L1156467-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1156467-02 11/06/19 18:37 • (MS) R3469205-7 11/06/19 18:38 • (MSD) R3469205-8 11/06/19 18:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.67	0.0557	1.35	1.39	77.6	80.3	1	75.0-125			3.29	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

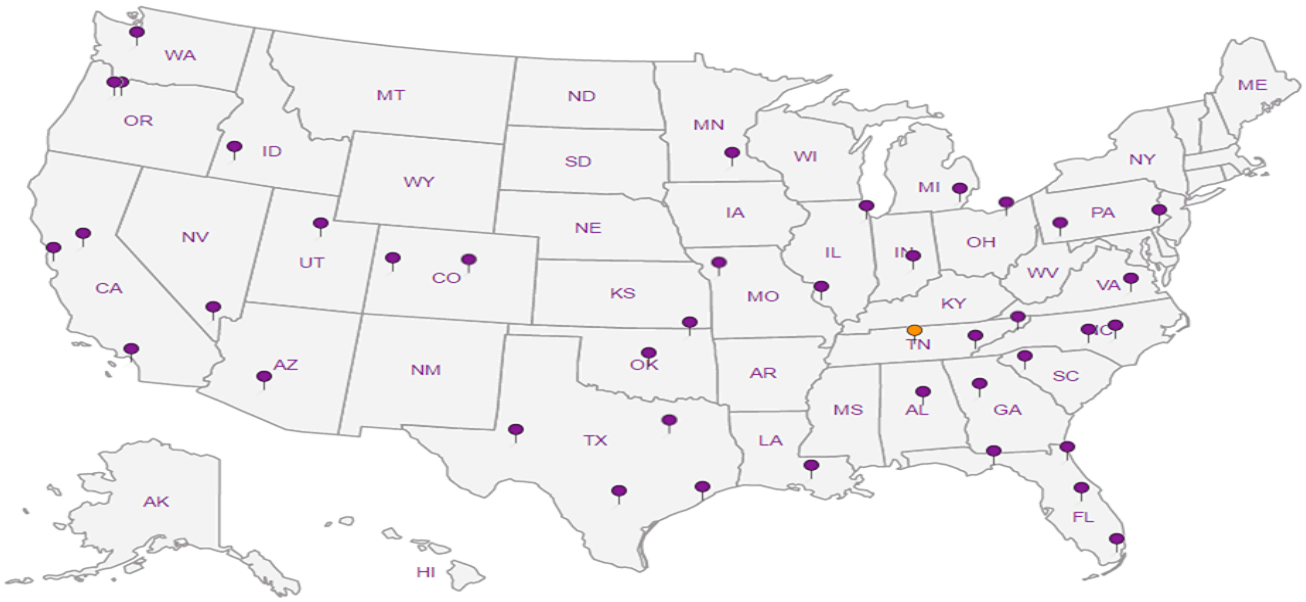
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: ESC PACE	COMPANY: ESC PACE	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

L1155857 M135

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	1910E49-001B	SWMU 13-13 (0-0.5')	4OZGU	MeOH (Soil)	10/25/2019 2:55:00 PM	1	Lv.4 Total Cyanide	-01
2	1910E49-002B	SWMU 13-13 (1.5-2')	4OZGU	MeOH (Soil)	10/25/2019 3:05:00 PM	1	Lv.4 Total Cyanide	-02
3	1910E49-003B	SWMU 13-13 (2-3')	4OZGU	MeOH (Soil)	10/25/2019 3:20:00 PM	1	Lv.4 Total Cyanide	-03
4	1910E49-004B	SWMU 13-14 (0-0.5')	4OZGU	MeOH (Soil)	10/25/2019 4:20:00 PM	1	Lv.4 Total Cyanide	-04
5	1910E49-005B	SWMU 13-14 ~~(2-3')~~ (1.5-2)	4OZGU	MeOH (Soil)	10/25/2019 4:30:00 PM	1	Lv.4 Total Cyanide	-05
6	1910E49-006B	SWMU 13-14 (2-3') 10/31	4OZGU	MeOH (Soil)	10/25/2019 4:40:00 PM	1	Lv.4 Total Cyanide	-06
7	1910E49-007E	EB102519	500AMBHDPE-NAOH	Aqueous	10/25/2019 6:15:00 PM	1	Lv.4 Total Cyanide	-07

RAD SCREEN: <0.5 mR/hr

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: [signature]	Date: 10/29/2019	Time: 10:35 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: [signature]	Date: 10-31-19	Time: 9:00

TAT: Standard ☐ (circled) RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 0.4-0=0.4 °C Attempt to Cool ? Y
Comments: COCSI

4510 1669 1594 No TB 7 total

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client:	L1155857	
Cooler Received/Opened On: 10/3/19 Temperature:	0.1	
Received By: Mike Pappas		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **LCS-48461** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **48461** RunNo: **64124**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194392** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.8	63.9	124			
Surr: DNOP	4.4		5.000		87.5	70	130			

Sample ID: **MB-48461** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **48461** RunNo: **64124**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194393** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	70	130			

Sample ID: **MB-48543** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **48543** RunNo: **64192**
Prep Date: **11/1/2019** Analysis Date: **11/4/2019** SeqNo: **2196675** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		107	70	130			

Sample ID: **LCS-48543** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **48543** RunNo: **64227**
Prep Date: **11/1/2019** Analysis Date: **11/4/2019** SeqNo: **2197911** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	87.0	63.9	124			
Surr: DNOP	4.3		5.000		85.1	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **LCS-48464** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW** Batch ID: **48464** RunNo: **64071**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2192326** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.3	1.0	5.000	0	106	71.8	135			
Surr: DNOP	0.44		0.5000		88.0	70	130			

Sample ID: **MB-48464** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW** Batch ID: **48464** RunNo: **64071**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2192327** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	0.87		1.000		87.0	70	130			

Sample ID: **MB-48464** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW** Batch ID: **48464** RunNo: **64124**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194394** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.1		1.000		111	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48446**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193023** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		99.9	77.4	118			

Sample ID: **LCS-48446**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48446**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193024** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		108	77.4	118			

Sample ID: **MB-48453**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **48453**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2193052** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		100	77.4	118			

Sample ID: **LCS-48453**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48453**	RunNo: **64076**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2193053** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	84.4	80	120			
Surr: BFB	1100		1000		109	77.4	118			

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **G64077**	RunNo: **64077**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2193126** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	990		1000		98.7	77.4	118			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **G64077**	RunNo: **64077**
Prep Date:	Analysis Date: **10/30/2019**	SeqNo: **2193135** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	97.6	80	120			
Surr: BFB	1100		1000		113	77.4	118			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48491**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **48491**	RunNo: **64127**
Prep Date: **10/30/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194628** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		100	77.4	118			

Sample ID: **LCS-48491**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48491**	RunNo: **64127**
Prep Date: **10/30/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194629** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	89.4	80	120			
Surr: BFB	1100		1000		112	77.4	118			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48446** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **48446** RunNo: **64109**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2194198** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48446** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **48446** RunNo: **64109**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2194198** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.54		0.5000		107	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		93.0	70	130			
Surr: Toluene-d8	0.49		0.5000		98.5	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.1	70	130			

Sample ID: **lcs-48446** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS** Batch ID: **48446** RunNo: **64109**
Prep Date: **10/29/2019** Analysis Date: **10/30/2019** SeqNo: **2194199** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	98.8	68	135			
Toluene	0.96	0.050	1.000	0	95.8	70	130			
Chlorobenzene	0.91	0.050	1.000	0	91.0	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **lcs-48446**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **48446**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194199** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.94	0.050	1.000	0	93.8	51.1	139			
Trichloroethene (TCE)	0.94	0.050	1.000	0	93.9	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		95.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.4	70	130			
Surr: Toluene-d8	0.48		0.5000		95.6	70	130			
Surr: 4-Bromofluorobenzene	0.44		0.5000		88.7	70	130			

Sample ID: **mb-48453**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **48453**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194214** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	0.086	0.50								J
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48453**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **48453**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194214** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.55		0.5000		110	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **mb-48453**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **48453**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194214** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		100	70	130			
Surr: Toluene-d8	0.48		0.5000		96.4	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.2	70	130			

Sample ID: **lcs-48453**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **48453**	RunNo: **64109**
Prep Date: **10/29/2019**	Analysis Date: **10/30/2019**	SeqNo: **2194215** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	99.6	68	135			
Toluene	0.91	0.050	1.000	0	91.5	70	130			
Chlorobenzene	0.89	0.050	1.000	0	89.5	70	130			
1,1-Dichloroethene	0.93	0.050	1.000	0	93.0	51.1	139			
Trichloroethene (TCE)	0.90	0.050	1.000	0	89.5	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		93.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		90.9	70	130			
Surr: Toluene-d8	0.46		0.5000		91.3	70	130			
Surr: 4-Bromofluorobenzene	0.43		0.5000		86.5	70	130			

Sample ID: **1910e49-002ams**	SampType: **MS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU 13-13 (1.5-2')**	Batch ID: **48453**	RunNo: **64139**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194706** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	0.9940	0	104	57.1	141			
Toluene	1.0	0.050	0.9940	0	106	70	130			
Chlorobenzene	0.87	0.050	0.9940	0	87.6	70	130			
1,1-Dichloroethene	0.93	0.050	0.9940	0	93.1	38.5	141			
Trichloroethene (TCE)	0.97	0.050	0.9940	0	97.6	70	130			
Surr: Dibromofluoromethane	0.47		0.4970		94.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.4970		94.0	70	130			
Surr: Toluene-d8	0.51		0.4970		104	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.4970		94.7	70	130			

Sample ID: **1910e49-002amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU 13-13 (1.5-2')**	Batch ID: **48453**	RunNo: **64139**
Prep Date: **10/29/2019**	Analysis Date: **10/31/2019**	SeqNo: **2194707** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.024	0.9560	0	94.1	57.1	141	13.6	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **1910e49-002amsd** SampType: **MSD** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **SWMU 13-13 (1.5-2')** Batch ID: **48453** RunNo: **64139**
Prep Date: **10/29/2019** Analysis Date: **10/31/2019** SeqNo: **2194707** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	0.91	0.048	0.9560	0	95.1	70	130	14.3	20	
Chlorobenzene	0.75	0.048	0.9560	0	78.9	70	130	14.3	20	
1,1-Dichloroethene	0.87	0.048	0.9560	0	90.6	38.5	141	6.57	20	
Trichloroethene (TCE)	0.82	0.048	0.9560	0	85.6	70	130	17.0	20	
Surr: Dibromofluoromethane	0.44		0.4780		93.0	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.44		0.4780		92.8	70	130	0	0	
Surr: Toluene-d8	0.49		0.4780		103	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.45		0.4780		95.1	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192371** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.5	70	130			
Toluene	19	1.0	20.00	0	93.8	70	130			
Chlorobenzene	20	1.0	20.00	0	99.5	70	130			
1,1-Dichloroethene	17	1.0	20.00	0	84.9	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	84.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.1	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		90.9	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.9		10.00		99.1	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64075**	RunNo: **64075**
Prep Date:	Analysis Date: **10/29/2019**	SeqNo: **2192402** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.2		10.00		92.4	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		93.8	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.0	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48536**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48536**	RunNo: **64267**
Prep Date: **11/1/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199508** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	0.00064	0.20								J
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	0.014	0.20								J
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	0.14	0.50								J
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.20	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	0.12	0.20								J
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48536**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48536**	RunNo: **64267**
Prep Date: **11/1/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199508** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	0.028	0.20								J
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	0.0044	0.20								J
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.1		3.330		63.6	26.7	85.9			
Surr: Phenol-d5	2.2		3.330		67.0	18.5	101			
Surr: 2,4,6-Tribromophenol	1.6		3.330		48.6	35.8	85.6			
Surr: Nitrobenzene-d5	1.1		1.670		63.0	40.8	95.2			
Surr: 2-Fluorobiphenyl	0.90		1.670		54.0	34.7	85.2			
Surr: 4-Terphenyl-d14	0.98		1.670		58.6	37.4	91.3			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48536**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48536**	RunNo: **64325**
Prep Date: **11/1/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201376** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.22	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3´-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48536**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **48536**	RunNo: **64325**
Prep Date: **11/1/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201376** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.2		3.330		65.2	26.7	85.9			
Surr: Phenol-d5	2.3		3.330		68.3	18.5	101			
Surr: 2,4,6-Tribromophenol	2.3		3.330		69.8	35.8	85.6			
Surr: Nitrobenzene-d5	1.2		1.670		71.0	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		72.0	34.7	85.2			
Surr: 4-Terphenyl-d14	1.1		1.670		65.8	37.4	91.3			

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **lcs-48536** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **48536** RunNo: **64325**
Prep Date: **11/1/2019** Analysis Date: **11/7/2019** SeqNo: **2201377** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.2	0.20	1.670	0	73.9	46	89.5			
4-Chloro-3-methylphenol	2.7	0.50	3.330	0	80.7	44.1	101			
2-Chlorophenol	2.2	0.20	3.330	0	67.4	47	91			
1,4-Dichlorobenzene	1.1	0.20	1.670	0	64.7	41.4	85.8			
2,4-Dinitrotoluene	1.1	0.50	1.670	0	63.5	37.4	82			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	71.2	47.8	92.9			
4-Nitrophenol	2.5	0.25	3.330	0	73.8	45	94.3			
Pentachlorophenol	2.3	0.40	3.330	0	69.9	31.7	76.9			
Phenol	2.4	0.20	3.330	0	70.9	49.4	92.5			
Pyrene	1.3	0.20	1.670	0	75.3	52.9	82.7			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	73.4	43.6	98.1			
Surr: 2-Fluorophenol	2.1		3.330		62.1	26.7	85.9			
Surr: Phenol-d5	2.2		3.330		67.2	18.5	101			
Surr: 2,4,6-Tribromophenol	2.5		3.330		76.3	35.8	85.6			
Surr: Nitrobenzene-d5	1.3		1.670		75.3	40.8	95.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		74.2	34.7	85.2			
Surr: 4-Terphenyl-d14	1.2		1.670		72.6	37.4	91.3			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48505**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48505**	RunNo: **64172**
Prep Date: **10/31/2019**	Analysis Date: **11/2/2019**	SeqNo: **2195943** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	22	20								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3´-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **mb-48505**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48505**	RunNo: **64172**
Prep Date: **10/31/2019**	Analysis Date: **11/2/2019**	SeqNo: **2195943** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	87		200.0		43.7	15	101			
Surr: Phenol-d5	71		200.0		35.7	15	84.6			
Surr: 2,4,6-Tribromophenol	120		200.0		62.1	27.8	112			
Surr: Nitrobenzene-d5	62		100.0		62.0	33	113			
Surr: 2-Fluorobiphenyl	55		100.0		55.3	26.6	107			
Surr: 4-Terphenyl-d14	48		100.0		48.3	18.7	148			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **lcs-48505**	SampType: **LCS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW**	Batch ID: **48505**	RunNo: **64172**
Prep Date: **10/31/2019**	Analysis Date: **11/2/2019**	SeqNo: **2195944** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	70	10	100.0	0	69.7	32.2	94			
4-Chloro-3-methylphenol	150	10	200.0	0	73.8	37.7	101			
2-Chlorophenol	130	10	200.0	0	63.3	32.6	90.1			
1,4-Dichlorobenzene	54	10	100.0	0	54.1	30	87.2			
2,4-Dinitrotoluene	66	10	100.0	0	65.9	35.9	85.8			
N-Nitrosodi-n-propylamine	73	10	100.0	0	72.5	37.1	108			
4-Nitrophenol	90	10	200.0	0	45.0	22.4	86.6			
Pentachlorophenol	120	20	200.0	0	62.5	31.6	91			
Phenol	82	10	200.0	0	41.0	21.7	84.9			
Pyrene	73	10	100.0	0	72.7	46.3	103			
1,2,4-Trichlorobenzene	61	10	100.0	0	60.6	30.2	88.3			
Surr: 2-Fluorophenol	89		200.0		44.4	15	101			
Surr: Phenol-d5	76		200.0		38.2	15	84.6			
Surr: 2,4,6-Tribromophenol	140		200.0		68.0	27.8	112			
Surr: Nitrobenzene-d5	65		100.0		65.2	33	113			
Surr: 2-Fluorobiphenyl	64		100.0		63.7	26.6	107			
Surr: 4-Terphenyl-d14	59		100.0		58.5	18.7	148			

Sample ID: **lcsd-48505**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02**	Batch ID: **48505**	RunNo: **64172**
Prep Date: **10/31/2019**	Analysis Date: **11/2/2019**	SeqNo: **2195945** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	52	10	100.0	0	51.9	32.2	94	29.2	32.9	
4-Chloro-3-methylphenol	110	10	200.0	0	57.0	37.7	101	25.7	29.9	
2-Chlorophenol	89	10	200.0	0	44.4	32.6	90.1	35.0	28.5	R
1,4-Dichlorobenzene	38	10	100.0	0	38.4	15	87.2	34.1	44.9	
2,4-Dinitrotoluene	51	10	100.0	0	51.4	35.9	85.8	24.8	28.5	
N-Nitrosodi-n-propylamine	50	10	100.0	0	50.0	37.1	108	36.7	29.9	R
4-Nitrophenol	72	10	200.0	0	36.1	15	86.6	21.9	68	
Pentachlorophenol	97	20	200.0	0	48.5	31.6	91	25.1	39.5	
Phenol	57	10	200.0	0	28.6	15	84.9	35.5	44.2	
Pyrene	61	10	100.0	0	61.2	46.3	103	17.1	23.8	
1,2,4-Trichlorobenzene	45	10	100.0	0	44.9	15.7	88.3	29.8	38	
Surr: 2-Fluorophenol	62		200.0		31.2	15	101	0	0	
Surr: Phenol-d5	53		200.0		26.4	15	84.6	0	0	
Surr: 2,4,6-Tribromophenol	110		200.0		54.5	27.8	112	0	0	
Surr: Nitrobenzene-d5	47		100.0		47.0	33	113	0	0	
Surr: 2-Fluorobiphenyl	44		100.0		44.2	26.6	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **lcsd-48505**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**							
Client ID: **LCSS02**	Batch ID: **48505**	RunNo: **64172**							
Prep Date: **10/31/2019**	Analysis Date: **11/2/2019**	SeqNo: **2195945**	Units: **µg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	59		100.0		58.8	18.7	148	0	0	

Sample ID: **MB-48505**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**							
Client ID: **PBW**	Batch ID: **48505**	RunNo: **64213**							
Prep Date: **10/31/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197265**	Units: **µg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	0.89	10								J
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	3.9	10								J
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	0.28	10								J
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	3.0	10								J
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48505**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **48505**	RunNo: **64213**
Prep Date: **10/31/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197265** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
3,3´-Dichlorobenzidine	ND	10								
Diethyl phthalate	2.1	10								J
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48505** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW** Batch ID: **48505** RunNo: **64213**
Prep Date: **10/31/2019** Analysis Date: **11/4/2019** SeqNo: **2197265** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	86		200.0		42.8	15	101			
Surr: Phenol-d5	67		200.0		33.6	15	84.6			
Surr: 2,4,6-Tribromophenol	130		200.0		64.0	27.8	112			
Surr: Nitrobenzene-d5	59		100.0		58.9	33	113			
Surr: 2-Fluorobiphenyl	55		100.0		55.4	26.6	107			
Surr: 4-Terphenyl-d14	50		100.0		50.2	18.7	148			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48648** SampType: **MBLK** TestCode: **EPA Method 7471: Mercury**
Client ID: **PBS** Batch ID: **48648** RunNo: **64322**
Prep Date: **11/7/2019** Analysis Date: **11/7/2019** SeqNo: **2201157** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LCSLL-48648** SampType: **LCSLL** TestCode: **EPA Method 7471: Mercury**
Client ID: **BatchQC** Batch ID: **48648** RunNo: **64322**
Prep Date: **11/7/2019** Analysis Date: **11/7/2019** SeqNo: **2201158** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0053	0.033	0.006660	0	79.0	70	130			J

Sample ID: **LCS-48648** SampType: **LCS** TestCode: **EPA Method 7471: Mercury**
Client ID: **LCSS** Batch ID: **48648** RunNo: **64322**
Prep Date: **11/7/2019** Analysis Date: **11/7/2019** SeqNo: **2201159** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.16	0.033	0.1667	0	97.6	80	120			

Sample ID: **1910E49-001AMS** SampType: **MS** TestCode: **EPA Method 7471: Mercury**
Client ID: **SWMU 13-13 (0-0.5')** Batch ID: **48648** RunNo: **64322**
Prep Date: **11/7/2019** Analysis Date: **11/7/2019** SeqNo: **2201204** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.51	0.16	0.1663	0	309	80	120			S

Sample ID: **1910E49-001AMSD** SampType: **MSD** TestCode: **EPA Method 7471: Mercury**
Client ID: **SWMU 13-13 (0-0.5')** Batch ID: **48648** RunNo: **64322**
Prep Date: **11/7/2019** Analysis Date: **11/7/2019** SeqNo: **2201205** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.64	0.16	0.1647	0	387	80	120	21.5	20	RS

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48664**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **PBW**	Batch ID: **48664**	RunNo: **64358**							
Prep Date: **11/7/2019**	Analysis Date: **11/8/2019**	SeqNo: **2202576**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00012	0.00020								J

Sample ID: **LCS-48664**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **LCSW**	Batch ID: **48664**	RunNo: **64358**							
Prep Date: **11/7/2019**	Analysis Date: **11/8/2019**	SeqNo: **2202577**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48519** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **48519** RunNo: **64206**
Prep Date: **10/31/2019** Analysis Date: **11/4/2019** SeqNo: **2196952** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	0.033	0.10								J
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	1.7	2.5								J
Manganese	0.021	0.10								J
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.40	2.5								J

Sample ID: **LCS-48519** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **48519** RunNo: **64206**
Prep Date: **10/31/2019** Analysis Date: **11/4/2019** SeqNo: **2196954** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	24	2.5	25.00	0	97.6	80	120			
Arsenic	25	2.5	25.00	0	99.6	80	120			
Barium	24	0.10	25.00	0	95.0	80	120			
Beryllium	26	0.15	25.00	0	103	80	120			
Cadmium	24	0.10	25.00	0	95.1	80	120			
Chromium	24	0.30	25.00	0	96.4	80	120			
Cobalt	24	0.30	25.00	0	97.2	80	120			
Iron	26	2.5	25.00	0	102	80	120			
Manganese	25	0.10	25.00	0	99.3	80	120			
Nickel	24	0.50	25.00	0	96.4	80	120			
Selenium	25	2.5	25.00	0	98.6	80	120			
Silver	4.6	0.25	5.000	0	92.7	80	120			
Vanadium	25	2.5	25.00	0	99.2	80	120			
Zinc	24	2.5	25.00	0	97.8	80	120			

Sample ID: **MB-48519** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **48519** RunNo: **64206**
Prep Date: **10/31/2019** Analysis Date: **11/4/2019** SeqNo: **2197458** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48519**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **48519**	RunNo: **64206**
Prep Date: **10/31/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197458** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.25								

Sample ID: **LCS-48519**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **48519**	RunNo: **64206**
Prep Date: **10/31/2019**	Analysis Date: **11/4/2019**	SeqNo: **2197462** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	24	0.25	25.00	0	97.9	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64273**
Prep Date: **10/30/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199636** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	0.0012	0.050								J
Zinc	ND	0.020								

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64273**
Prep Date: **10/30/2019**	Analysis Date: **11/6/2019**	SeqNo: **2199638** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.51	0.050	0.5000	0	102	80	120			
Arsenic	0.50	0.020	0.5000	0	99.8	80	120			
Barium	0.48	0.020	0.5000	0	96.6	80	120			
Beryllium	0.52	0.0030	0.5000	0	103	80	120			
Cadmium	0.51	0.0020	0.5000	0	101	80	120			
Chromium	0.50	0.0060	0.5000	0	99.3	80	120			
Cobalt	0.51	0.0060	0.5000	0	101	80	120			
Iron	0.51	0.020	0.5000	0	102	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			
Nickel	0.49	0.010	0.5000	0	98.1	80	120			
Silver	0.095	0.0050	0.1000	0	94.6	80	120			
Vanadium	0.51	0.050	0.5000	0	101	80	120			
Zinc	0.49	0.020	0.5000	0	98.7	80	120			

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64389**
Prep Date: **10/30/2019**	Analysis Date: **11/11/2019**	SeqNo: **2203942** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0043	0.0050								J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**

05-Dec-19

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64389**
Prep Date: **10/30/2019**	Analysis Date: **11/11/2019**	SeqNo: **2203944** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.51	0.0050	0.5000	0	101	80	120			

Sample ID: **MB-48486**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **48486**	RunNo: **64501**
Prep Date: **10/30/2019**	Analysis Date: **11/13/2019**	SeqNo: **2208275** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID: **LCS-48486**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **48486**	RunNo: **64501**
Prep Date: **10/30/2019**	Analysis Date: **11/13/2019**	SeqNo: **2208277** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.51	0.0050	0.5000	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910E49**
05-Dec-19

Client: Marathon
Project: SWMU 13

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G64230**	RunNo: **64230**
Prep Date:	Analysis Date: **11/4/2019**	SeqNo: **2197977** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0	91.6	70	130			
Surr: BFB	9.5		10.00		95.5	70	130			

Sample ID: **rb1**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G64230**	RunNo: **64230**
Prep Date:	Analysis Date: **11/4/2019**	SeqNo: **2197979** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	9.3		10.00		93.0	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **MARATHON GALLUP** Work Order Number: **1910E49** RcptNo: **1**

Received By: Juan Rojas **10/29/2019 9:15:00 AM**

Completed By: **Leah Baca** **10/29/2019 10:29:10 AM** Leah S Baca

Reviewed By: YG 10/29/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 1 1 2
(<2 or >12 unless noted)
Adjusted? NO
Checked by: ENM 10/29/19

Special Handling (if applicable)

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

Person Notified: Date
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.3	Good	Yes			

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: X Yes ☐ No

Sample Temperature: 0.3 - 0 = 0.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910E49	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide	Air Bubbles (Y or N)
10/25/19	1455	Soil	SWMU 13-13 (0-0.5')	8 oz Jar - 2	Neat	-001			X							X	X	X	
				Vial - 2	MeOH											X			
				4oz JAR-1	NEAT													X	
	1505		SWMU 13-13 (1.5-2')	8oz JAR-2	NEAT	-002			X							X	X	X	
				VIAL-2	MEOH											X			
				4oz JAR-1	NEAT													X	
	1520		SWMU 13-13 (2-3')	8ozJAR-2	NEAT	-003			X							X	X	X	
				VIAL-2	MeOH											X			
				4ozJAR-1	NEAT													X	

Date	Time	Relinquished by:	Received by:	Date	Time
10/28/19	0700		Courier	10/29/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☐ Yes ☐ No

Sample Temperature: 0.3 - 0 = 0.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1910649	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals and Cyanide	Air Bubbles (Y or N)
10/25/19	1620	Soil	SWMU 13-14 (0-0.5')	8 oz Jar - 2	Neat	-004			X							X	X	X	
				Vial - 2	MeOH											X			
				4oz JAR-1	NEAT													X	
	1630		SWMU 13-14 (1.5-2')	8oz JAR-2	NEAT	-005			X							X	X	X	
				VIAL-2	MeOH											X			
				4oz JAR-1	NEAT													X	
	1640		SWMU 13-14 (2-3')	8oz JAR-2	NEAT	-006			X							X	X	X	
				VIAL-2	MeOH											X			
				4oz JAR-1	NEAT													X	

Date: 10/28/19 Time: 0700 Relinquished by: _____

Date: _____ Time: _____ Relinquished by: _____

Received by: _____ Date: 10/29/19 Time: 9:15

Received by: _____ Date: _____ Time: _____

Remarks: See attached sheet for Analytical Methods and Target Analytes.

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: 0.3 - 0 = 0.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals - Total	Cyanide			Air Bubbles (Y or N)
10/25/19	1815	Water	EB102519	40ml voa - 5	HCl	1910E49-007			X							X						
				250 ml amber - 1	Neat				X													
				1 liter amber - 1	Neat												X					
				250 ml plastic - 1	HNO_3													X				
				500 ml plastic - 1	NaOH														X			

Date	Time	Relinquished by:	Received by:	Date	Time
10/28/19	0700		[signature]	10/29/19	9:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

SWMU 13 - Soil and Equipment Blank Analytical Requirements

- SW-846 Method 8260 for volatile organic compounds;
- SW-846 Method 8270 for semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline range (C5-C10), diesel range (>C10-C28), and motor oil range (>C28-C36) organics.
- Inorganics (Skinner List Metals + Iron + Manganese)

Inorganic Analytical Methods

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 13, 2020

Brian Moore

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: SWMU 13 OrderNo.: 1911232

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 8 sample(s) on 11/6/2019 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued December 23, 2019.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1911232**
Date Reported: **1/13/2020**

CLIENT: Marathon
Project: SWMU 13
Lab ID: 1911232-001
Matrix: AQUEOUS
Client Sample ID: SWMU 13-2-GW
Collection Date: 11/6/2019 8:00:00 AM
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **CLP**	
Diesel Range Organics (DRO)	0.50	0.13	0.40		mg/L	1	11/12/2019 1:27:01 PM	48696
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	11/12/2019 1:27:01 PM	48696
Surr: DNOP	127	0	81.5-152		%Rec	1	11/12/2019 1:27:01 PM	48696
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.35	0.021	0.050		mg/L	1	11/12/2019 11:17:49 P	G64438
Surr: BFB	2710	0	65.8-143	S	%Rec	1	11/12/2019 11:17:49 P	G64438
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	ND	0.14	0.50		mg/L	5	11/7/2019 7:19:18 PM	R64329
Chloride	5700	250	250	*	mg/L	500	11/8/2019 7:46:07 PM	R64346
Nitrogen, Nitrite (As N)	ND	0.11	2.0		mg/L	20	11/7/2019 7:31:38 PM	R64329
Nitrogen, Nitrate (As N)	10	0.030	0.50	*	mg/L	5	11/7/2019 7:19:18 PM	R64329
Sulfate	780	5.0	10	*	mg/L	20	11/7/2019 7:31:38 PM	R64329
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **bcv**	
Barium	0.076	0.00065	0.0020		mg/L	1	11/21/2019 10:56:40 A	A64680
Beryllium	ND	0.00028	0.0020		mg/L	1	11/21/2019 10:56:40 A	A64680
Cadmium	ND	0.00055	0.0020		mg/L	1	11/21/2019 10:56:40 A	A64680
Calcium	1300	1.2	20		mg/L	20	11/21/2019 11:07:46 A	A64680
Chromium	ND	0.0015	0.0060		mg/L	1	11/21/2019 10:56:40 A	A64680
Cobalt	0.0064	0.0031	0.0060		mg/L	1	11/21/2019 10:56:40 A	A64680
Iron	0.021	0.0087	0.020		mg/L	1	11/21/2019 10:56:40 A	A64680
Magnesium	250	0.25	5.0		mg/L	5	11/21/2019 10:58:52 A	A64680
Manganese	12	0.0058	0.040	*	mg/L	20	11/21/2019 11:07:46 A	A64680
Nickel	0.22	0.0040	0.010	*	mg/L	1	11/21/2019 10:56:40 A	A64680
Potassium	7.8	0.16	1.0		mg/L	1	11/21/2019 10:56:40 A	A64680
Silver	0.025	0.00094	0.0050		mg/L	1	11/21/2019 10:56:40 A	A64680
Sodium	2700	21	50		mg/L	50	11/21/2019 11:39:13 A	A64680
Vanadium	0.0050	0.0020	0.050	J	mg/L	1	11/21/2019 10:56:40 A	A64680
Zinc	0.013	0.0023	0.010		mg/L	1	11/21/2019 10:56:40 A	A64680
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Barium	0.73	0.00049	0.0020		mg/L	1	11/27/2019 5:05:54 PM	48748
Beryllium	0.0067	0.00022	0.0020	*	mg/L	1	11/27/2019 5:05:54 PM	48748
Cadmium	ND	0.00074	0.0020		mg/L	1	11/27/2019 5:05:54 PM	48748
Chromium	0.017	0.0012	0.0060		mg/L	1	11/27/2019 5:05:54 PM	48748
Cobalt	0.020	0.0012	0.0060		mg/L	1	11/27/2019 5:05:54 PM	48748
Iron	18	0.12	0.40	*	mg/L	20	11/27/2019 5:07:56 PM	48748
Manganese	14	0.0012	0.040	*	mg/L	20	11/27/2019 5:07:56 PM	48748
Nickel	0.22	0.0015	0.010	*	mg/L	1	11/27/2019 5:05:54 PM	48748

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2-GW
Project: SWMU 13
Collection Date: 11/6/2019 8:00:00 AM
Lab ID: 1911232-001
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Silver	0.019	0.0014	0.0050		mg/L	1	11/27/2019 5:05:54 PM	48748
Vanadium	0.050	0.00054	0.050		mg/L	1	11/27/2019 5:05:54 PM	48748
Zinc	0.028	0.0058	0.010		mg/L	1	11/27/2019 5:05:54 PM	48748
EPA 200.8: DISSOLVED METALS							Analyst: **ELS**	
Antimony	ND	0.0019	0.0050		mg/L	5	11/11/2019 10:59:40 A	B64381
Arsenic	0.0044	0.00010	0.0010		mg/L	1	11/8/2019 12:49:29 PM	B64363
Lead	ND	0.00027	0.0025		mg/L	5	11/8/2019 1:40:18 PM	B64363
Selenium	0.0022	0.00017	0.0010		mg/L	1	11/8/2019 12:49:29 PM	B64363
200.8 ICPMS METALS:TOTAL							Analyst: **ELS**	
Antimony	ND	0.00078	0.0050		mg/L	5	11/18/2019 1:51:57 PM	48748
Arsenic	0.0095	0.0016	0.0050		mg/L	5	11/18/2019 1:51:57 PM	48748
Lead	0.044	0.00013	0.0025	*	mg/L	5	11/18/2019 1:51:57 PM	48748
Selenium	0.0078	0.0024	0.0050		mg/L	5	11/18/2019 1:51:57 PM	48748
EPA METHOD 245.1: MERCURY							Analyst: **rde**	
Mercury	0.000061	0.000038	0.00020	J	mg/L	1	11/20/2019 5:25:15 PM	48912
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.83	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Toluene	ND	1.8	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Ethylbenzene	ND	0.66	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Methyl tert-butyl ether (MTBE)	21	2.3	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,2,4-Trimethylbenzene	ND	1.1	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,3,5-Trimethylbenzene	ND	0.94	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.97	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.83	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Naphthalene	ND	1.4	10	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1-Methylnaphthalene	ND	1.6	20	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
2-Methylnaphthalene	ND	1.7	20	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Acetone	ND	6.0	50	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Bromobenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Bromodichloromethane	ND	0.67	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Bromoform	ND	1.4	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Bromomethane	ND	1.4	15	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
2-Butanone	ND	10	50	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Carbon disulfide	ND	2.3	50	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Carbon Tetrachloride	ND	0.70	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Chlorobenzene	ND	0.97	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Chloroethane	ND	0.89	10	D	µg/L	5	11/11/2019 4:02:37 PM	R64405

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Qualifiers:

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ND	Not Detected at the Reporting Limit
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S	% Recovery outside of range due to dilution or matrix
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P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2-GW
Project: SWMU 13
Collection Date: 11/6/2019 8:00:00 AM
Lab ID: 1911232-001
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloroform	ND	0.61	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Chloromethane	ND	1.6	15	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
2-Chlorotoluene	ND	1.2	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
4-Chlorotoluene	ND	1.2	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
cis-1,2-DCE	ND	0.95	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
cis-1,3-Dichloropropene	ND	0.69	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Dibromochloromethane	ND	1.2	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Dibromomethane	ND	1.0	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,2-Dichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,3-Dichlorobenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,4-Dichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Dichlorodifluoromethane	ND	1.3	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,1-Dichloroethane	ND	0.70	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,1-Dichloroethene	ND	1.0	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,2-Dichloropropane	ND	1.0	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,3-Dichloropropane	ND	1.0	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
2,2-Dichloropropane	ND	1.2	10	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,1-Dichloropropene	ND	0.81	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Hexachlorobutadiene	ND	1.5	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
2-Hexanone	ND	7.7	50	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Isopropylbenzene	ND	0.96	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
4-Isopropyltoluene	ND	1.1	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
4-Methyl-2-pentanone	ND	3.6	50	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Methylene Chloride	ND	0.77	15	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
n-Butylbenzene	ND	1.1	15	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
n-Propylbenzene	ND	1.1	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
sec-Butylbenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Styrene	ND	0.96	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
tert-Butylbenzene	ND	1.0	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,1,1,2-Tetrachloroethane	ND	1.0	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,1,2,2-Tetrachloroethane	ND	2.7	10	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Tetrachloroethene (PCE)	ND	0.75	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
trans-1,2-DCE	ND	0.90	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
trans-1,3-Dichloropropene	ND	0.83	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,2,3-Trichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,2,4-Trichlorobenzene	ND	0.98	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,1,1-Trichloroethane	ND	0.86	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
1,1,2-Trichloroethane	ND	1.1	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Trichloroethene (TCE)	ND	0.83	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-2-GW
Project: SWMU 13
Collection Date: 11/6/2019 8:00:00 AM
Lab ID: 1911232-001
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.95	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Vinyl chloride	ND	0.90	5.0	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Xylenes, Total	ND	2.3	7.5	D	µg/L	5	11/11/2019 4:02:37 PM	R64405
Surr: 1,2-Dichloroethane-d4	91.0	0	70-130	D	%Rec	5	11/11/2019 4:02:37 PM	R64405
Surr: 4-Bromofluorobenzene	98.6	0	70-130	D	%Rec	5	11/11/2019 4:02:37 PM	R64405
Surr: Dibromofluoromethane	105	0	70-130	D	%Rec	5	11/11/2019 4:02:37 PM	R64405
Surr: Toluene-d8	94.1	0	70-130	D	%Rec	5	11/11/2019 4:02:37 PM	R64405
SM2320B: ALKALINITY							Analyst: **JRR**	
Bicarbonate (As CaCO3)	525.8	20.00	20.00		mg/L Ca	1	11/7/2019 7:24:37 PM	R64333
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	11/7/2019 7:24:37 PM	R64333
Total Alkalinity (as CaCO3)	525.8	20.00	20.00		mg/L Ca	1	11/7/2019 7:24:37 PM	R64333
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	12300	200	200	*D	mg/L	1	11/12/2019 12:12:00 P	48684

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3-GW
Project: SWMU 13
Collection Date: 11/6/2019 9:10:00 AM
Lab ID: 1911232-002
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **CLP**	
Diesel Range Organics (DRO)	0.61	0.13	0.40		mg/L	1	11/12/2019 1:51:16 PM	48696
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	11/12/2019 1:51:16 PM	48696
Surr: DNOP	120	0	81.5-152		%Rec	1	11/12/2019 1:51:16 PM	48696
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.45	0.021	0.050		mg/L	1	11/12/2019 12:14:48 P	G64438
Surr: BFB	2830	0	65.8-143	S	%Rec	1	11/12/2019 12:14:48 P	G64438
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	ND	0.14	0.50		mg/L	5	11/7/2019 8:08:40 PM	R64329
Chloride	5900	250	250	*	mg/L	500	11/8/2019 7:58:31 PM	R64346
Nitrogen, Nitrite (As N)	ND	0.11	2.0		mg/L	20	11/7/2019 8:21:01 PM	R64329
Nitrogen, Nitrate (As N)	0.56	0.030	0.50		mg/L	5	11/7/2019 8:08:40 PM	R64329
Sulfate	660	5.0	10	*	mg/L	20	11/7/2019 8:21:01 PM	R64329
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **bcv**	
Barium	0.074	0.00065	0.0020		mg/L	1	11/21/2019 11:10:05 A	A64680
Beryllium	ND	0.00028	0.0020		mg/L	1	11/21/2019 11:10:05 A	A64680
Cadmium	ND	0.00055	0.0020		mg/L	1	11/21/2019 11:10:05 A	A64680
Calcium	1200	3.1	50		mg/L	50	11/21/2019 11:14:24 A	A64680
Chromium	ND	0.0015	0.0060		mg/L	1	11/21/2019 11:10:05 A	A64680
Cobalt	0.027	0.0031	0.0060		mg/L	1	11/21/2019 11:10:05 A	A64680
Iron	0.067	0.0087	0.020		mg/L	1	11/21/2019 11:10:05 A	A64680
Magnesium	210	0.25	5.0		mg/L	5	11/21/2019 11:12:16 A	A64680
Manganese	26	0.014	0.10	*	mg/L	50	11/21/2019 11:14:24 A	A64680
Nickel	0.37	0.0040	0.010	*	mg/L	1	11/21/2019 11:10:05 A	A64680
Potassium	3.1	0.16	1.0		mg/L	1	11/21/2019 11:10:05 A	A64680
Silver	0.022	0.00094	0.0050		mg/L	1	11/21/2019 11:10:05 A	A64680
Sodium	2800	21	50		mg/L	50	11/21/2019 11:14:24 A	A64680
Vanadium	0.0055	0.0020	0.050	J	mg/L	1	11/21/2019 11:10:05 A	A64680
Zinc	0.0095	0.0023	0.010	J	mg/L	1	11/21/2019 11:10:05 A	A64680
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Barium	0.077	0.00049	0.0020		mg/L	1	11/27/2019 5:12:01 PM	48748
Beryllium	0.00057	0.00022	0.0020	J	mg/L	1	11/27/2019 5:12:01 PM	48748
Cadmium	ND	0.00074	0.0020		mg/L	1	11/27/2019 5:12:01 PM	48748
Chromium	ND	0.0012	0.0060		mg/L	1	11/27/2019 5:12:01 PM	48748
Cobalt	0.025	0.0012	0.0060		mg/L	1	11/27/2019 5:12:01 PM	48748
Iron	0.17	0.0061	0.020		mg/L	1	11/27/2019 5:12:01 PM	48748
Manganese	25	0.0030	0.10	*	mg/L	50	11/27/2019 5:16:08 PM	48748
Nickel	0.34	0.0015	0.010	*	mg/L	1	11/27/2019 5:12:01 PM	48748

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3-GW
Project: SWMU 13
Collection Date: 11/6/2019 9:10:00 AM
Lab ID: 1911232-002
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Silver	0.017	0.0014	0.0050		mg/L	1	11/27/2019 5:12:01 PM	48748
Vanadium	0.0071	0.00054	0.050	J	mg/L	1	11/27/2019 5:12:01 PM	48748
Zinc	ND	0.0058	0.010		mg/L	1	11/27/2019 5:12:01 PM	48748
EPA 200.8: DISSOLVED METALS							Analyst: **ELS**	
Antimony	ND	0.0019	0.0050		mg/L	5	11/11/2019 11:02:18 A	B64381
Arsenic	0.0061	0.00010	0.0010		mg/L	1	11/8/2019 12:52:06 PM	B64363
Lead	0.0011	0.00027	0.0025	J	mg/L	5	11/8/2019 1:42:56 PM	B64363
Selenium	0.0017	0.00017	0.0010		mg/L	1	11/8/2019 12:52:06 PM	B64363
200.8 ICPMS METALS:TOTAL							Analyst: **ELS**	
Antimony	ND	0.00078	0.0050		mg/L	5	11/18/2019 2:02:37 PM	48748
Arsenic	0.0069	0.0016	0.0050		mg/L	5	11/18/2019 2:02:37 PM	48748
Lead	0.0011	0.00013	0.0025	J	mg/L	5	11/18/2019 2:02:37 PM	48748
Selenium	ND	0.0024	0.0050		mg/L	5	11/18/2019 2:02:37 PM	48748
EPA METHOD 245.1: MERCURY							Analyst: **rde**	
Mercury	ND	0.000038	0.00020		mg/L	1	11/20/2019 5:31:14 PM	48912
Mercury	ND	0.00019	0.0010		mg/L	5	11/20/2019 6:27:42 PM	48912
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.83	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Toluene	ND	1.8	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Ethylbenzene	ND	0.66	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Methyl tert-butyl ether (MTBE)	21	2.3	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,2,4-Trimethylbenzene	ND	1.1	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,3,5-Trimethylbenzene	ND	0.94	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.97	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.83	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Naphthalene	ND	1.4	10	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1-Methylnaphthalene	ND	1.6	20	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
2-Methylnaphthalene	ND	1.7	20	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Acetone	ND	6.0	50	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Bromobenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Bromodichloromethane	ND	0.67	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Bromoform	ND	1.4	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Bromomethane	ND	1.4	15	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
2-Butanone	ND	10	50	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Carbon disulfide	ND	2.3	50	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Carbon Tetrachloride	ND	0.70	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Chlorobenzene	ND	0.97	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3-GW
Project: SWMU 13
Collection Date: 11/6/2019 9:10:00 AM
Lab ID: 1911232-002
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloroethane	ND	0.89	10	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Chloroform	ND	0.61	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Chloromethane	ND	1.6	15	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
2-Chlorotoluene	ND	1.2	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
4-Chlorotoluene	ND	1.2	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
cis-1,2-DCE	ND	0.95	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
cis-1,3-Dichloropropene	ND	0.69	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Dibromochloromethane	ND	1.2	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Dibromomethane	ND	1.0	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,2-Dichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,3-Dichlorobenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,4-Dichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Dichlorodifluoromethane	ND	1.3	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,1-Dichloroethane	ND	0.70	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,1-Dichloroethene	ND	1.0	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,2-Dichloropropane	ND	1.0	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,3-Dichloropropane	ND	1.0	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
2,2-Dichloropropane	ND	1.2	10	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,1-Dichloropropene	ND	0.81	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Hexachlorobutadiene	ND	1.5	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
2-Hexanone	ND	7.7	50	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Isopropylbenzene	ND	0.96	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
4-Isopropyltoluene	ND	1.1	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
4-Methyl-2-pentanone	ND	3.6	50	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Methylene Chloride	ND	0.77	15	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
n-Butylbenzene	ND	1.1	15	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
n-Propylbenzene	ND	1.1	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
sec-Butylbenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Styrene	ND	0.96	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
tert-Butylbenzene	ND	1.0	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,1,1,2-Tetrachloroethane	ND	1.0	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,1,2,2-Tetrachloroethane	ND	2.7	10	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Tetrachloroethene (PCE)	ND	0.75	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
trans-1,2-DCE	ND	0.90	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
trans-1,3-Dichloropropene	ND	0.83	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,2,3-Trichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,2,4-Trichlorobenzene	ND	0.98	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,1,1-Trichloroethane	ND	0.86	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
1,1,2-Trichloroethane	ND	1.1	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-3-GW
Project: SWMU 13
Collection Date: 11/6/2019 9:10:00 AM
Lab ID: 1911232-002
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichloroethene (TCE)	ND	0.83	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Trichlorofluoromethane	ND	0.95	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Vinyl chloride	ND	0.90	5.0	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Xylenes, Total	ND	2.3	7.5	D	µg/L	5	11/11/2019 5:28:18 PM	R64405
Surr: 1,2-Dichloroethane-d4	94.2	0	70-130	D	%Rec	5	11/11/2019 5:28:18 PM	R64405
Surr: 4-Bromofluorobenzene	99.4	0	70-130	D	%Rec	5	11/11/2019 5:28:18 PM	R64405
Surr: Dibromofluoromethane	109	0	70-130	D	%Rec	5	11/11/2019 5:28:18 PM	R64405
Surr: Toluene-d8	96.1	0	70-130	D	%Rec	5	11/11/2019 5:28:18 PM	R64405
SM2320B: ALKALINITY							Analyst: **JRR**	
Bicarbonate (As CaCO3)	602.2	20.00	20.00		mg/L Ca	1	11/7/2019 7:47:47 PM	R64333
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	11/7/2019 7:47:47 PM	R64333
Total Alkalinity (as CaCO3)	602.2	20.00	20.00		mg/L Ca	1	11/7/2019 7:47:47 PM	R64333
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	11900	200	200	*D	mg/L	1	11/12/2019 12:12:00 P	48684

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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: SWMU 13-4-GW
Project: SWMU 13
Collection Date: 11/6/2019 11:30:00 AM
Lab ID: 1911232-003
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **CLP**	
Diesel Range Organics (DRO)	ND	0.13	0.40		mg/L	1	11/12/2019 2:15:26 PM	48696
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	11/12/2019 2:15:26 PM	48696
Surr: DNOP	111	0	81.5-152		%Rec	1	11/12/2019 2:15:26 PM	48696
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.10	0.021	0.050		mg/L	1	11/12/2019 1:23:31 PM	G64438
Surr: BFB	748	0	65.8-143	S	%Rec	1	11/12/2019 1:23:31 PM	G64438
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	ND	0.14	0.50		mg/L	5	11/7/2019 8:33:21 PM	R64329
Chloride	5200	250	250	*	mg/L	500	11/8/2019 8:10:55 PM	R64346
Nitrogen, Nitrite (As N)	ND	0.11	2.0		mg/L	20	11/7/2019 8:45:42 PM	R64329
Nitrogen, Nitrate (As N)	1.6	0.030	0.50		mg/L	5	11/7/2019 8:33:21 PM	R64329
Sulfate	1200	33	250	*	mg/L	500	11/8/2019 8:10:55 PM	R64346
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **bcv**	
Barium	0.059	0.00065	0.0020		mg/L	1	11/21/2019 11:16:41 A	A64680
Beryllium	0.00034	0.00028	0.0020	J	mg/L	1	11/21/2019 11:16:41 A	A64680
Cadmium	ND	0.00055	0.0020		mg/L	1	11/21/2019 11:16:41 A	A64680
Calcium	1600	1.2	20		mg/L	20	11/21/2019 11:21:01 A	A64680
Chromium	ND	0.0015	0.0060		mg/L	1	11/21/2019 11:16:41 A	A64680
Cobalt	ND	0.0031	0.0060		mg/L	1	11/21/2019 11:16:41 A	A64680
Iron	0.011	0.0087	0.020	J	mg/L	1	11/21/2019 11:16:41 A	A64680
Magnesium	290	0.25	5.0		mg/L	5	11/21/2019 11:18:53 A	A64680
Manganese	12	0.0058	0.040	*	mg/L	20	11/21/2019 11:21:01 A	A64680
Nickel	0.075	0.0040	0.010		mg/L	1	11/21/2019 11:16:41 A	A64680
Potassium	4.0	0.16	1.0		mg/L	1	11/21/2019 11:16:41 A	A64680
Silver	0.029	0.00094	0.0050		mg/L	1	11/21/2019 11:16:41 A	A64680
Sodium	2400	21	50		mg/L	50	11/21/2019 11:41:28 A	A64680
Vanadium	0.0071	0.0020	0.050	J	mg/L	1	11/21/2019 11:16:41 A	A64680
Zinc	0.0070	0.0023	0.010	J	mg/L	1	11/21/2019 11:16:41 A	A64680
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Barium	0.19	0.00049	0.0020		mg/L	1	11/27/2019 5:18:17 PM	48748
Beryllium	0.0013	0.00022	0.0020	J	mg/L	1	11/27/2019 5:18:17 PM	48748
Cadmium	ND	0.00074	0.0020		mg/L	1	11/27/2019 5:18:17 PM	48748
Chromium	0.0044	0.0012	0.0060	J	mg/L	1	11/27/2019 5:18:17 PM	48748
Cobalt	0.0025	0.0012	0.0060	J	mg/L	1	11/27/2019 5:18:17 PM	48748
Iron	3.3	0.030	0.10	*	mg/L	5	11/27/2019 5:20:13 PM	48748
Manganese	8.6	0.0012	0.040	*	mg/L	20	11/27/2019 5:22:14 PM	48748
Nickel	0.056	0.0015	0.010		mg/L	1	11/27/2019 5:18:17 PM	48748

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CLIENT: Marathon
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Collection Date: 11/6/2019 11:30:00 AM
Lab ID: 1911232-003
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Silver	0.023	0.0014	0.0050		mg/L	1	11/27/2019 5:18:17 PM	48748
Vanadium	0.016	0.00054	0.050	J	mg/L	1	11/27/2019 5:18:17 PM	48748
Zinc	ND	0.0058	0.010		mg/L	1	11/27/2019 5:18:17 PM	48748
EPA 200.8: DISSOLVED METALS							Analyst: **ELS**	
Antimony	ND	0.0019	0.0050		mg/L	5	11/11/2019 11:04:56 A	B64381
Arsenic	0.0027	0.00050	0.0050	J	mg/L	5	11/8/2019 1:45:33 PM	B64363
Lead	ND	0.00027	0.0025		mg/L	5	11/8/2019 1:45:33 PM	B64363
Selenium	ND	0.00086	0.0050		mg/L	5	11/8/2019 1:45:33 PM	B64363
200.8 ICPMS METALS:TOTAL							Analyst: **ELS**	
Antimony	ND	0.00078	0.0050		mg/L	5	11/18/2019 2:04:44 PM	48748
Arsenic	0.0034	0.0016	0.0050	J	mg/L	5	11/18/2019 2:04:44 PM	48748
Lead	0.0041	0.00013	0.0025		mg/L	5	11/18/2019 2:04:44 PM	48748
Selenium	ND	0.0024	0.0050		mg/L	5	11/18/2019 2:04:44 PM	48748
EPA METHOD 245.1: MERCURY							Analyst: **rde**	
Mercury	ND	0.000038	0.00020		mg/L	1	11/20/2019 5:37:56 PM	48912
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.17	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Toluene	ND	0.35	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Ethylbenzene	ND	0.13	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Methyl tert-butyl ether (MTBE)	15	0.46	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Naphthalene	ND	0.28	2.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Acetone	ND	1.2	10		µg/L	1	11/11/2019 5:56:48 PM	R64405
Bromobenzene	ND	0.24	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Bromodichloromethane	ND	0.13	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Bromoform	ND	0.29	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Bromomethane	ND	0.27	3.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
2-Butanone	ND	2.1	10		µg/L	1	11/11/2019 5:56:48 PM	R64405
Carbon disulfide	ND	0.45	10		µg/L	1	11/11/2019 5:56:48 PM	R64405
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Chlorobenzene	ND	0.19	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Chloroethane	ND	0.18	2.0		µg/L	1	11/11/2019 5:56:48 PM	R64405

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PQL	Practical Quanitative Limit
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Client Sample ID: SWMU 13-4-GW
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Collection Date: 11/6/2019 11:30:00 AM
Lab ID: 1911232-003
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloroform	ND	0.12	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Chloromethane	ND	0.32	3.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Dibromochloromethane	ND	0.24	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Dibromomethane	ND	0.21	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
2-Hexanone	ND	1.5	10		µg/L	1	11/11/2019 5:56:48 PM	R64405
Isopropylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	11/11/2019 5:56:48 PM	R64405
Methylene Chloride	ND	0.15	3.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
n-Butylbenzene	ND	0.23	3.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
n-Propylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Styrene	ND	0.19	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405

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Collection Date: 11/6/2019 11:30:00 AM
Lab ID: 1911232-003
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Vinyl chloride	ND	0.18	1.0		µg/L	1	11/11/2019 5:56:48 PM	R64405
Xylenes, Total	ND	0.45	1.5		µg/L	1	11/11/2019 5:56:48 PM	R64405
Surr: 1,2-Dichloroethane-d4	92.2	0	70-130		%Rec	1	11/11/2019 5:56:48 PM	R64405
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	11/11/2019 5:56:48 PM	R64405
Surr: Dibromofluoromethane	108	0	70-130		%Rec	1	11/11/2019 5:56:48 PM	R64405
Surr: Toluene-d8	94.2	0	70-130		%Rec	1	11/11/2019 5:56:48 PM	R64405
SM2320B: ALKALINITY							Analyst: **JRR**	
Bicarbonate (As CaCO3)	597.3	20.00	20.00		mg/L Ca	1	11/7/2019 8:13:28 PM	R64333
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	11/7/2019 8:13:28 PM	R64333
Total Alkalinity (as CaCO3)	597.3	20.00	20.00		mg/L Ca	1	11/7/2019 8:13:28 PM	R64333
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	12200	200	200	*D	mg/L	1	11/12/2019 12:12:00 P	48684

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP01
Project: SWMU 13
Collection Date: 11/6/2019
Lab ID: 1911232-004
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **CLP**	
Diesel Range Organics (DRO)	0.37	0.13	0.40	J	mg/L	1	11/12/2019 2:39:50 PM	48696
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	11/12/2019 2:39:50 PM	48696
Surr: DNOP	120	0	81.5-152		%Rec	1	11/12/2019 2:39:50 PM	48696
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.45	0.021	0.050		mg/L	1	11/12/2019 11:40:32 P	G64438
Surr: BFB	2770	0	65.8-143	S	%Rec	1	11/12/2019 11:40:32 P	G64438
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	ND	0.14	0.50		mg/L	5	11/7/2019 8:58:02 PM	R64329
Chloride	5700	250	250	*	mg/L	500	11/8/2019 8:23:19 PM	R64346
Nitrogen, Nitrite (As N)	ND	0.11	2.0		mg/L	20	11/7/2019 9:10:24 PM	R64329
Nitrogen, Nitrate (As N)	0.80	0.030	0.50		mg/L	5	11/7/2019 8:58:02 PM	R64329
Sulfate	680	5.0	10	*	mg/L	20	11/7/2019 9:10:24 PM	R64329
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **bcv**	
Barium	0.071	0.00065	0.0020		mg/L	1	11/21/2019 11:23:15 A	A64680
Beryllium	0.00035	0.00028	0.0020	J	mg/L	1	11/21/2019 11:23:15 A	A64680
Cadmium	ND	0.00055	0.0020		mg/L	1	11/21/2019 11:23:15 A	A64680
Calcium	1200	3.1	50		mg/L	50	11/21/2019 11:27:48 A	A64680
Chromium	ND	0.0015	0.0060		mg/L	1	11/21/2019 11:23:15 A	A64680
Cobalt	0.025	0.0031	0.0060		mg/L	1	11/21/2019 11:23:15 A	A64680
Iron	0.10	0.0087	0.020		mg/L	1	11/21/2019 11:23:15 A	A64680
Magnesium	210	0.25	5.0		mg/L	5	11/21/2019 11:25:39 A	A64680
Manganese	26	0.014	0.10	*	mg/L	50	11/21/2019 11:27:48 A	A64680
Nickel	0.34	0.0040	0.010	*	mg/L	1	11/21/2019 11:23:15 A	A64680
Potassium	3.1	0.16	1.0		mg/L	1	11/21/2019 11:23:15 A	A64680
Silver	0.022	0.00094	0.0050		mg/L	1	11/21/2019 11:23:15 A	A64680
Sodium	2700	21	50		mg/L	50	11/21/2019 11:27:48 A	A64680
Vanadium	0.0055	0.0020	0.050	J	mg/L	1	11/21/2019 11:23:15 A	A64680
Zinc	0.0087	0.0023	0.010	J	mg/L	1	11/21/2019 11:23:15 A	A64680
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Barium	0.077	0.00049	0.0020		mg/L	1	11/27/2019 5:30:43 PM	48748
Beryllium	0.00062	0.00022	0.0020	J	mg/L	1	11/27/2019 5:30:43 PM	48748
Cadmium	ND	0.00074	0.0020		mg/L	1	11/27/2019 5:30:43 PM	48748
Chromium	ND	0.0012	0.0060		mg/L	1	11/27/2019 5:30:43 PM	48748
Cobalt	0.024	0.0012	0.0060		mg/L	1	11/27/2019 5:30:43 PM	48748
Iron	0.22	0.0061	0.020		mg/L	1	11/27/2019 5:30:43 PM	48748
Manganese	24	0.0030	0.10	*	mg/L	50	11/27/2019 5:34:59 PM	48748
Nickel	0.34	0.0015	0.010	*	mg/L	1	11/27/2019 5:30:43 PM	48748

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP01
Project: SWMU 13
Collection Date: 11/6/2019
Lab ID: 1911232-004
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Silver	0.017	0.0014	0.0050		mg/L	1	11/27/2019 5:30:43 PM	48748
Vanadium	0.0075	0.00054	0.050	J	mg/L	1	11/27/2019 5:30:43 PM	48748
Zinc	ND	0.0058	0.010		mg/L	1	11/27/2019 5:30:43 PM	48748
EPA 200.8: DISSOLVED METALS							Analyst: **ELS**	
Antimony	ND	0.0019	0.0050		mg/L	5	11/11/2019 11:07:34 A	B64381
Arsenic	0.0055	0.00050	0.0050		mg/L	5	11/8/2019 2:27:41 PM	B64363
Lead	0.0011	0.00027	0.0025	J	mg/L	5	11/8/2019 2:27:41 PM	B64363
Selenium	0.00098	0.00086	0.0050	J	mg/L	5	11/8/2019 2:27:41 PM	B64363
200.8 ICPMS METALS:TOTAL							Analyst: **ELS**	
Antimony	ND	0.00078	0.0050		mg/L	5	11/18/2019 2:06:52 PM	48748
Arsenic	0.0070	0.0016	0.0050		mg/L	5	11/18/2019 2:06:52 PM	48748
Lead	0.0011	0.00013	0.0025	J	mg/L	5	11/18/2019 2:06:52 PM	48748
Selenium	ND	0.0024	0.0050		mg/L	5	11/18/2019 2:06:52 PM	48748
EPA METHOD 245.1: MERCURY							Analyst: **rde**	
Mercury	ND	0.000038	0.00020		mg/L	1	11/20/2019 5:40:11 PM	48912
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.83	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Toluene	ND	1.8	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Ethylbenzene	ND	0.66	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Methyl tert-butyl ether (MTBE)	22	2.3	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,2,4-Trimethylbenzene	ND	1.1	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,3,5-Trimethylbenzene	ND	0.94	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.97	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.83	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Naphthalene	ND	1.4	10	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1-Methylnaphthalene	ND	1.6	20	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
2-Methylnaphthalene	ND	1.7	20	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Acetone	ND	6.0	50	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Bromobenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Bromodichloromethane	ND	0.67	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Bromoform	ND	1.4	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Bromomethane	ND	1.4	15	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
2-Butanone	ND	10	50	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Carbon disulfide	ND	2.3	50	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Carbon Tetrachloride	ND	0.70	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Chlorobenzene	ND	0.97	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Chloroethane	ND	0.89	10	D	µg/L	5	11/11/2019 6:25:20 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP01
Project: SWMU 13
Collection Date: 11/6/2019
Lab ID: 1911232-004
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloroform	ND	0.61	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Chloromethane	ND	1.6	15	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
2-Chlorotoluene	ND	1.2	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
4-Chlorotoluene	ND	1.2	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
cis-1,2-DCE	ND	0.95	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
cis-1,3-Dichloropropene	ND	0.69	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Dibromochloromethane	ND	1.2	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Dibromomethane	ND	1.0	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,2-Dichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,3-Dichlorobenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,4-Dichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Dichlorodifluoromethane	ND	1.3	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,1-Dichloroethane	ND	0.70	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,1-Dichloroethene	ND	1.0	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,2-Dichloropropane	ND	1.0	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,3-Dichloropropane	ND	1.0	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
2,2-Dichloropropane	ND	1.2	10	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,1-Dichloropropene	ND	0.81	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Hexachlorobutadiene	ND	1.5	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
2-Hexanone	ND	7.7	50	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Isopropylbenzene	ND	0.96	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
4-Isopropyltoluene	ND	1.1	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
4-Methyl-2-pentanone	ND	3.6	50	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Methylene Chloride	ND	0.77	15	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
n-Butylbenzene	ND	1.1	15	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
n-Propylbenzene	ND	1.1	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
sec-Butylbenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Styrene	ND	0.96	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
tert-Butylbenzene	ND	1.0	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,1,1,2-Tetrachloroethane	ND	1.0	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,1,2,2-Tetrachloroethane	ND	2.7	10	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Tetrachloroethene (PCE)	ND	0.75	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
trans-1,2-DCE	ND	0.90	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
trans-1,3-Dichloropropene	ND	0.83	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,2,3-Trichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,2,4-Trichlorobenzene	ND	0.98	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,1,1-Trichloroethane	ND	0.86	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
1,1,2-Trichloroethane	ND	1.1	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Trichloroethene (TCE)	ND	0.83	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP01
Project: SWMU 13
Collection Date: 11/6/2019
Lab ID: 1911232-004
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.95	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Vinyl chloride	ND	0.90	5.0	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Xylenes, Total	ND	2.3	7.5	D	µg/L	5	11/11/2019 6:25:20 PM	R64405
Surr: 1,2-Dichloroethane-d4	91.7	0	70-130	D	%Rec	5	11/11/2019 6:25:20 PM	R64405
Surr: 4-Bromofluorobenzene	103	0	70-130	D	%Rec	5	11/11/2019 6:25:20 PM	R64405
Surr: Dibromofluoromethane	106	0	70-130	D	%Rec	5	11/11/2019 6:25:20 PM	R64405
Surr: Toluene-d8	97.0	0	70-130	D	%Rec	5	11/11/2019 6:25:20 PM	R64405
SM2320B: ALKALINITY							Analyst: **JRR**	
Bicarbonate (As CaCO3)	597.6	20.00	20.00		mg/L Ca	1	11/7/2019 8:38:55 PM	R64333
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	11/7/2019 8:38:55 PM	R64333
Total Alkalinity (as CaCO3)	597.6	20.00	20.00		mg/L Ca	1	11/7/2019 8:38:55 PM	R64333
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	11900	200	200	*D	mg/L	1	11/12/2019 12:12:00 P	48684

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB01
Project: SWMU 13
Collection Date: 11/6/2019 12:55:00 PM
Lab ID: 1911232-005
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **CLP**	
Diesel Range Organics (DRO)	ND	0.13	0.40		mg/L	1	11/12/2019 3:04:00 PM	48696
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	11/12/2019 3:04:00 PM	48696
Surr: DNOP	122	0	81.5-152		%Rec	1	11/12/2019 3:04:00 PM	48696
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/12/2019 2:09:19 PM	G64438
Surr: BFB	98.4	0	65.8-143		%Rec	1	11/12/2019 2:09:19 PM	G64438
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	ND	0.029	0.10		mg/L	1	11/7/2019 9:22:45 PM	R64329
Chloride	0.27	0.25	0.50	J	mg/L	1	11/7/2019 9:22:45 PM	R64329
Nitrogen, Nitrite (As N)	ND	0.0054	0.10		mg/L	1	11/7/2019 9:22:45 PM	R64329
Nitrogen, Nitrate (As N)	ND	0.0061	0.10		mg/L	1	11/7/2019 9:22:45 PM	R64329
Sulfate	ND	0.25	0.50		mg/L	1	11/7/2019 9:22:45 PM	R64329
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **bcv**	
Barium	ND	0.00065	0.0020		mg/L	1	11/21/2019 11:36:49 A	A64680
Beryllium	ND	0.00028	0.0020		mg/L	1	11/21/2019 11:36:49 A	A64680
Cadmium	ND	0.00055	0.0020		mg/L	1	11/21/2019 11:36:49 A	A64680
Calcium	ND	0.062	1.0		mg/L	1	11/21/2019 11:36:49 A	A64680
Chromium	ND	0.0015	0.0060		mg/L	1	11/21/2019 11:36:49 A	A64680
Cobalt	ND	0.0031	0.0060		mg/L	1	11/21/2019 11:36:49 A	A64680
Iron	ND	0.0087	0.020		mg/L	1	11/21/2019 11:36:49 A	A64680
Magnesium	ND	0.050	1.0		mg/L	1	11/21/2019 11:36:49 A	A64680
Manganese	0.00049	0.00029	0.0020	J	mg/L	1	11/21/2019 11:36:49 A	A64680
Nickel	ND	0.0040	0.010		mg/L	1	11/21/2019 11:36:49 A	A64680
Potassium	ND	0.16	1.0		mg/L	1	11/21/2019 11:36:49 A	A64680
Silver	ND	0.00094	0.0050		mg/L	1	11/21/2019 11:36:49 A	A64680
Sodium	0.56	0.42	1.0	J	mg/L	1	11/21/2019 11:36:49 A	A64680
Vanadium	ND	0.0020	0.050		mg/L	1	11/21/2019 11:36:49 A	A64680
Zinc	0.010	0.0023	0.010		mg/L	1	11/21/2019 11:36:49 A	A64680
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Barium	ND	0.00049	0.0020		mg/L	1	11/27/2019 5:37:04 PM	48748
Beryllium	ND	0.00022	0.0020		mg/L	1	11/27/2019 5:37:04 PM	48748
Cadmium	ND	0.00074	0.0020		mg/L	1	11/27/2019 5:37:04 PM	48748
Chromium	ND	0.0012	0.0060		mg/L	1	11/27/2019 5:37:04 PM	48748
Cobalt	ND	0.0012	0.0060		mg/L	1	11/27/2019 5:37:04 PM	48748
Iron	ND	0.0061	0.020		mg/L	1	11/27/2019 5:37:04 PM	48748
Manganese	0.00048	0.000060	0.0020	J	mg/L	1	11/27/2019 5:37:04 PM	48748
Nickel	ND	0.0015	0.010		mg/L	1	11/27/2019 5:37:04 PM	48748

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB01
Project: SWMU 13
Collection Date: 11/6/2019 12:55:00 PM
Lab ID: 1911232-005
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Silver	ND	0.0014	0.0050		mg/L	1	11/27/2019 5:37:04 PM	48748
Vanadium	ND	0.00054	0.050		mg/L	1	11/27/2019 5:37:04 PM	48748
Zinc	ND	0.0058	0.010		mg/L	1	11/27/2019 5:37:04 PM	48748
EPA 200.8: DISSOLVED METALS							Analyst: **ELS**	
Antimony	ND	0.00039	0.0010		mg/L	1	11/8/2019 1:08:44 PM	B64363
Arsenic	ND	0.00010	0.0010		mg/L	1	11/8/2019 1:08:44 PM	B64363
Lead	ND	0.000055	0.00050		mg/L	1	11/8/2019 1:08:44 PM	B64363
Selenium	ND	0.00017	0.0010		mg/L	1	11/8/2019 1:08:44 PM	B64363
200.8 ICPMS METALS:TOTAL							Analyst: **ELS**	
Antimony	ND	0.00016	0.0010		mg/L	1	11/15/2019 12:45:06 P	48748
Arsenic	ND	0.00031	0.0010		mg/L	1	11/15/2019 12:45:06 P	48748
Lead	ND	0.000026	0.00050		mg/L	1	11/15/2019 12:45:06 P	48748
Selenium	ND	0.00048	0.0010		mg/L	1	11/15/2019 12:45:06 P	48748
EPA METHOD 245.1: MERCURY							Analyst: **rde**	
Mercury	0.000062	0.000038	0.00020	J	mg/L	1	11/20/2019 5:42:26 PM	48912
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	0.17	0.17	1.0	J	µg/L	1	11/11/2019 6:53:55 PM	R64405
Toluene	0.42	0.35	1.0	J	µg/L	1	11/11/2019 6:53:55 PM	R64405
Ethylbenzene	ND	0.13	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Naphthalene	ND	0.28	2.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Acetone	ND	1.2	10		µg/L	1	11/11/2019 6:53:55 PM	R64405
Bromobenzene	ND	0.24	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Bromodichloromethane	ND	0.13	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Bromoform	ND	0.29	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Bromomethane	ND	0.27	3.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
2-Butanone	ND	2.1	10		µg/L	1	11/11/2019 6:53:55 PM	R64405
Carbon disulfide	ND	0.45	10		µg/L	1	11/11/2019 6:53:55 PM	R64405
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Chlorobenzene	ND	0.19	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Chloroethane	ND	0.18	2.0		µg/L	1	11/11/2019 6:53:55 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB01
Project: SWMU 13
Collection Date: 11/6/2019 12:55:00 PM
Lab ID: 1911232-005
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloroform	ND	0.12	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Chloromethane	ND	0.32	3.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Dibromochloromethane	ND	0.24	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Dibromomethane	ND	0.21	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
2-Hexanone	ND	1.5	10		µg/L	1	11/11/2019 6:53:55 PM	R64405
Isopropylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	11/11/2019 6:53:55 PM	R64405
Methylene Chloride	ND	0.15	3.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
n-Butylbenzene	ND	0.23	3.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
n-Propylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Styrene	ND	0.19	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB01
Project: SWMU 13
Collection Date: 11/6/2019 12:55:00 PM
Lab ID: 1911232-005
Matrix: AQUEOUS
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Vinyl chloride	ND	0.18	1.0		µg/L	1	11/11/2019 6:53:55 PM	R64405
Xylenes, Total	ND	0.45	1.5		µg/L	1	11/11/2019 6:53:55 PM	R64405
Surr: 1,2-Dichloroethane-d4	91.0	0	70-130		%Rec	1	11/11/2019 6:53:55 PM	R64405
Surr: 4-Bromofluorobenzene	90.5	0	70-130		%Rec	1	11/11/2019 6:53:55 PM	R64405
Surr: Dibromofluoromethane	107	0	70-130		%Rec	1	11/11/2019 6:53:55 PM	R64405
Surr: Toluene-d8	98.6	0	70-130		%Rec	1	11/11/2019 6:53:55 PM	R64405
SM2320B: ALKALINITY							Analyst: **JRR**	
Bicarbonate (As CaCO3)	ND	20.00	20.00		mg/L Ca	1	11/7/2019 9:04:18 PM	R64333
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	11/7/2019 9:04:18 PM	R64333
Total Alkalinity (as CaCO3)	ND	20.00	20.00		mg/L Ca	1	11/7/2019 9:04:18 PM	R64333
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	ND	20.0	20.0		mg/L	1	11/12/2019 12:12:00 P	48684

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: Trip Blank-1
Project: SWMU 13
Collection Date:
Lab ID: 1911232-006
Matrix: TRIP BLANK
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/12/2019 2:32:16 PM	G64438
Surr: BFB	101	0	65.8-143		%Rec	1	11/12/2019 2:32:16 PM	G64438
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.17	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Toluene	ND	0.35	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Ethylbenzene	ND	0.13	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Naphthalene	ND	0.28	2.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Acetone	ND	1.2	10		µg/L	1	11/11/2019 2:36:43 PM	R64405
Bromobenzene	ND	0.24	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Bromodichloromethane	ND	0.13	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Bromoform	ND	0.29	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Bromomethane	ND	0.27	3.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
2-Butanone	ND	2.1	10		µg/L	1	11/11/2019 2:36:43 PM	R64405
Carbon disulfide	ND	0.45	10		µg/L	1	11/11/2019 2:36:43 PM	R64405
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Chlorobenzene	ND	0.19	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Chloroethane	ND	0.18	2.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Chloroform	ND	0.12	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Chloromethane	ND	0.32	3.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,2-Dibromo-3-chloropropane	ND	0.33	2.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Dibromochloromethane	ND	0.24	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Dibromomethane	ND	0.21	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: Trip Blank-1
Project: SWMU 13
Collection Date:
Lab ID: 1911232-006
Matrix: TRIP BLANK
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
2-Hexanone	ND	1.5	10		µg/L	1	11/11/2019 2:36:43 PM	R64405
Isopropylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	11/11/2019 2:36:43 PM	R64405
Methylene Chloride	ND	0.15	3.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
n-Butylbenzene	ND	0.23	3.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
n-Propylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Styrene	ND	0.19	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
1,2,3-Trichloropropane	ND	0.30	2.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Vinyl chloride	ND	0.18	1.0		µg/L	1	11/11/2019 2:36:43 PM	R64405
Xylenes, Total	ND	0.45	1.5		µg/L	1	11/11/2019 2:36:43 PM	R64405
Surr: 1,2-Dichloroethane-d4	91.1	0	70-130		%Rec	1	11/11/2019 2:36:43 PM	R64405
Surr: 4-Bromofluorobenzene	89.3	0	70-130		%Rec	1	11/11/2019 2:36:43 PM	R64405
Surr: Dibromofluoromethane	105	0	70-130		%Rec	1	11/11/2019 2:36:43 PM	R64405
Surr: Toluene-d8	98.4	0	70-130		%Rec	1	11/11/2019 2:36:43 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: Trip Blank-2
Project: SWMU 13
Collection Date:
Lab ID: 1911232-007
Matrix: TRIP BLANK
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/12/2019 2:55:13 PM	G64438
Surr: BFB	101	0	65.8-143		%Rec	1	11/12/2019 2:55:13 PM	G64438
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.17	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Toluene	ND	0.35	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Ethylbenzene	ND	0.13	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Naphthalene	ND	0.28	2.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Acetone	ND	1.2	10		µg/L	1	11/11/2019 3:05:18 PM	R64405
Bromobenzene	ND	0.24	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Bromodichloromethane	ND	0.13	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Bromoform	ND	0.29	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Bromomethane	ND	0.27	3.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
2-Butanone	ND	2.1	10		µg/L	1	11/11/2019 3:05:18 PM	R64405
Carbon disulfide	ND	0.45	10		µg/L	1	11/11/2019 3:05:18 PM	R64405
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Chlorobenzene	ND	0.19	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Chloroethane	ND	0.18	2.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Chloroform	ND	0.12	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Chloromethane	ND	0.32	3.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,2-Dibromo-3-chloropropane	ND	0.33	2.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Dibromochloromethane	ND	0.24	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Dibromomethane	ND	0.21	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: Trip Blank-2
Project: SWMU 13
Collection Date:
Lab ID: 1911232-007
Matrix: TRIP BLANK
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
2-Hexanone	ND	1.5	10		µg/L	1	11/11/2019 3:05:18 PM	R64405
Isopropylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	11/11/2019 3:05:18 PM	R64405
Methylene Chloride	ND	0.15	3.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
n-Butylbenzene	ND	0.23	3.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
n-Propylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Styrene	ND	0.19	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
1,2,3-Trichloropropane	ND	0.30	2.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Vinyl chloride	ND	0.18	1.0		µg/L	1	11/11/2019 3:05:18 PM	R64405
Xylenes, Total	ND	0.45	1.5		µg/L	1	11/11/2019 3:05:18 PM	R64405
Surr: 1,2-Dichloroethane-d4	91.2	0	70-130		%Rec	1	11/11/2019 3:05:18 PM	R64405
Surr: 4-Bromofluorobenzene	90.1	0	70-130		%Rec	1	11/11/2019 3:05:18 PM	R64405
Surr: Dibromofluoromethane	107	0	70-130		%Rec	1	11/11/2019 3:05:18 PM	R64405
Surr: Toluene-d8	98.3	0	70-130		%Rec	1	11/11/2019 3:05:18 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: Trip Blank-3
Project: SWMU 13
Collection Date:
Lab ID: 1911232-008
Matrix: TRIP BLANK
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/12/2019 3:18:07 PM	G64438
Surr: BFB	98.1	0	65.8-143		%Rec	1	11/12/2019 3:18:07 PM	G64438
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.17	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Toluene	ND	0.35	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Ethylbenzene	ND	0.13	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Naphthalene	ND	0.28	2.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Acetone	ND	1.2	10		µg/L	1	11/11/2019 3:33:55 PM	R64405
Bromobenzene	ND	0.24	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Bromodichloromethane	ND	0.13	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Bromoform	ND	0.29	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Bromomethane	ND	0.27	3.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
2-Butanone	ND	2.1	10		µg/L	1	11/11/2019 3:33:55 PM	R64405
Carbon disulfide	ND	0.45	10		µg/L	1	11/11/2019 3:33:55 PM	R64405
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Chlorobenzene	ND	0.19	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Chloroethane	ND	0.18	2.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Chloroform	ND	0.12	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Chloromethane	ND	0.32	3.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,2-Dibromo-3-chloropropane	ND	0.33	2.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Dibromochloromethane	ND	0.24	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Dibromomethane	ND	0.21	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: Trip Blank-3
Project: SWMU 13
Collection Date:
Lab ID: 1911232-008
Matrix: TRIP BLANK
Received Date: 11/6/2019 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
2-Hexanone	ND	1.5	10		µg/L	1	11/11/2019 3:33:55 PM	R64405
Isopropylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	11/11/2019 3:33:55 PM	R64405
Methylene Chloride	ND	0.15	3.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
n-Butylbenzene	ND	0.23	3.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
n-Propylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Styrene	ND	0.19	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
1,2,3-Trichloropropane	ND	0.30	2.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Vinyl chloride	ND	0.18	1.0		µg/L	1	11/11/2019 3:33:55 PM	R64405
Xylenes, Total	ND	0.45	1.5		µg/L	1	11/11/2019 3:33:55 PM	R64405
Surr: 1,2-Dichloroethane-d4	89.7	0	70-130		%Rec	1	11/11/2019 3:33:55 PM	R64405
Surr: 4-Bromofluorobenzene	91.0	0	70-130		%Rec	1	11/11/2019 3:33:55 PM	R64405
Surr: Dibromofluoromethane	108	0	70-130		%Rec	1	11/11/2019 3:33:55 PM	R64405
Surr: Toluene-d8	96.9	0	70-130		%Rec	1	11/11/2019 3:33:55 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Project Summary

Sample Summary

Anatek Sample ID	Client Sample ID	Matrix	Collection Date/Time	Received Date/Time
191108050-001	1911232-001F / SWMU 13-2-GW	Water	11/6/2019 8:00 AM	11/8/2019 11:43 AM
191108050-002	1911232-001G / SWMU 13-2-GW	Water	11/6/2019 8:00 AM	11/8/2019 11:43 AM
191108050-003	1911232-002F / SWMU 13-3-GW	Water	11/6/2019 9:10 AM	11/8/2019 11:43 AM
191108050-004	1911232-002G / SWMU 13-3-GW	Water	11/6/2019 9:10 AM	11/8/2019 11:43 AM
191108050-005	1911232-003F / SWMU 13-4-GW	Water	11/6/2019 11:30 AM	11/8/2019 11:43 AM
191108050-006	1911232-003G / SWMU 13-4-GW	Water	11/6/2019 11:30 AM	11/8/2019 11:43 AM
191108050-007	1911232-004F / DUP01	Water	11/6/2019	11/8/2019 11:43 AM
191108050-008	1911232-004G / DUP01	Water	11/6/2019	11/8/2019 11:43 AM
191108050-009	1911232-005F / EB01	Water	11/6/2019 12:55 PM	11/8/2019 11:43 AM
191108050-010	1911232-005G / EB01	Water	11/6/2019 12:55 PM	11/8/2019 11:43 AM

QA/QC Summary

QC Parameter	Yes / No (if No, see Comments below)
1. Sample Holding Time Valid?	Yes
2. Instrument Tunes Valid?	Yes
3. Method Blank(s) Valid?	Yes
4. Internal Standard Response(s) Valid?	Yes
5. Initial Calibration Curve(s) Valid?	Yes
6. Continuing Calibration(s) Valid?	Yes
7. Surrogate Recoveries Valid?	Yes
8. QC Sample Recoveries Valid?	Yes

Comments:

Anatek Labs, Inc.

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number 191108050-001 **Sampling Date** 11/6/2019 **Date/Time Received** 11/8/2019 11:43 AM
Client Sample ID 1911232-001F / SWMU 13-2-GW **Sampling Time** 8:00 AM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	0.0263	mg/L	0.01	11/15/2019 1:00:00 PM	BKP	EPA 335.4	

Sample Number 191108050-003 **Sampling Date** 11/6/2019 **Date/Time Received** 11/8/2019 11:43 AM
Client Sample ID 1911232-002F / SWMU 13-3-GW **Sampling Time** 9:10 AM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	0.0312	mg/L	0.01	11/15/2019 1:00:00 PM	BKP	EPA 335.4	

Sample Number 191108050-005 **Sampling Date** 11/6/2019 **Date/Time Received** 11/8/2019 11:43 AM
Client Sample ID 1911232-003F / SWMU 13-4-GW **Sampling Time** 11:30 AM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	0.0251	mg/L	0.01	11/15/2019 1:00:00 PM	BKP	EPA 335.4	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	191108050
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1911232
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	191108050-007	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/2019 11:43 AM
Client Sample ID	1911232-004F / DUP01			**Sampling Time**	
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	0.0308	mg/L	0.01	11/15/2019 1:00:00 PM	BKP	EPA 335.4	

Sample Number	191108050-009	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/2019 11:43 AM
Client Sample ID	1911232-005F / EB01			**Sampling Time**	12:55 PM
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	11/15/2019 1:00:00 PM	BKP	EPA 335.4	

Authorized Signature

Todd Taruscio, Lab Manager

MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Cyanide	0.516	mg/L	0.5	103.2	90-110	11/15/2019	11/15/2019

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
191114010-003	Cyanide	ND	0.527	mg/L	0.5	105.4	80-120	11/15/2019	11/15/2019

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Cyanide	0.530	mg/L	0.5	106.0	0.6	0-20	11/15/2019	11/15/2019

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide	ND	mg/L	0.01	11/15/2019	11/15/2019

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
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Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1911232
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	191108050-002	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/201911:43 AM
Client Sample ID	1911232-001G / SWMU 13-2-GW			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**	8:00 AM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Dibenz[a,h]anthracene	ND	ug/L	0.025	12/9/2019 9:42:00 PM	TGT	EPA 8270D	
1,4-Dioxane	4.71	ug/L	1	12/3/2019 7:41:00 PM	TGT	EPA 8270D	
Benzoic acid	ND	ug/L	1	12/3/2019 7:41:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191108050-002

Surrogate Standard	Method	Percent Recovery	Control Limits
1,4-Dioxane-d8	EPA 8270D	65.5	39-111
Terphenyl-d14	EPA 8270D	84.4	22-133

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	191108050
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1911232
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	191108050-004	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/2019 11:43 AM
Client Sample ID	1911232-002G / SWMU 13-3-GW			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**	9:10 AM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Dibenz[a,h]anthracene	ND	ug/L	0.025	12/9/2019 11:14:00 PM	TGT	EPA 8270D	
1,4-Dioxane	6.43	ug/L	1	12/3/2019 9:15:00 PM	TGT	EPA 8270D	
Benzoic acid	ND	ug/L	1	12/3/2019 9:15:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191108050-004

Surrogate Standard	Method	Percent Recovery	Control Limits
1,4-Dioxane-d8	EPA 8270D	58.2	39-111
Terphenyl-d14	EPA 8270D	87.6	22-133

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	191108050
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1911232
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	191108050-006	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/201911:43 AM
Client Sample ID	1911232-003G / SWMU 13-4-GW			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**	11:30 AM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Dibenz[a,h]anthracene	ND	ug/L	0.025	12/9/2019 10:05:00 PM	TGT	EPA 8270D	
1,4-Dioxane	4.01	ug/L	1	12/3/2019 8:04:00 PM	TGT	EPA 8270D	
Benzoic acid	ND	ug/L	1	12/3/2019 8:04:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191108050-006

Surrogate Standard	Method	Percent Recovery	Control Limits
1,4-Dioxane-d8	EPA 8270D	66.0	39-111
Terphenyl-d14	EPA 8270D	89.6	22-133

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Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number	191108050-008	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/201911:43 AM
Client Sample ID	1911232-004G / DUP01			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Dibenz[a,h]anthracene	ND	ug/L	0.025	12/9/2019 10:51:00 PM	TGT	EPA 8270D	
1,4-Dioxane	7.54	ug/L	1	12/3/2019 8:51:00 PM	TGT	EPA 8270D	
Benzoic acid	ND	ug/L	1	12/3/2019 8:51:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191108050-008

Surrogate Standard	Method	Percent Recovery	Control Limits
1,4-Dioxane-d8	EPA 8270D	67.4	39-111
Terphenyl-d14	EPA 8270D	82.4	22-133

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Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number	191108050-010	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/201911:43 AM
Client Sample ID	1911232-005G / EB01			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**	12:55 PM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Dibenz[a,h]anthracene	ND	ug/L	0.025	12/9/2019 10:28:00 PM	TGT	EPA 8270D	
1,4-Dioxane	ND	ug/L	1	12/3/2019 8:28:00 PM	TGT	EPA 8270D	
Benzoic acid	ND	ug/L	1	12/3/2019 8:28:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191108050-010

Surrogate Standard	Method	Percent Recovery	Control Limits
1,4-Dioxane-d8	EPA 8270D	65.4	39-111
Terphenyl-d14	EPA 8270D	90.4	22-133

Authorized Signature

Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Dibenz[a,h]anthracene	5.04	ug/L	5	100.8	52-140	11/12/2019	12/9/2019
1,4-Dioxane	7.47	ug/L	10	74.7	45-135	11/12/2019	12/3/2019

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
1,4-Dioxane	7.44	ug/L	10	74.4	0.4	0-25	11/12/2019	12/3/2019
Dibenz[a,h]anthracene	4.64	ug/L	5	92.8	8.3	0-20	11/12/2019	12/9/2019

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
1,4-Dioxane	ND	ug/L	0.5	11/12/2019	12/3/2019
Benzoic acid	ND	ug/L	0.5	11/12/2019	12/3/2019
Dibenz[a,h]anthracene	ND	ug/L	0.01	11/12/2019	12/9/2019

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
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Address: 4901 HAWKINS NE SUITE D
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Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number 191108050-002 **Sampling Date** 11/6/2019 **Date/Time Received** 11/8/201911:43 AM
Client Sample ID 1911232-001G / SWMU 13-2-GW **Extraction Date** 11/12/2019
Matrix Water **Sampling Time** 8:00 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.2	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	

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Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number 191108050-002 **Sampling Date** 11/6/2019 **Date/Time Received** 11/8/201911:43 AM
Client Sample ID 1911232-001G / SWMU 13-2-GW **Extraction Date** 11/12/2019
Matrix Water **Sampling Time** 8:00 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Acenaphthene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Acenaphthylene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Aniline	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.1	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.1	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.1	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Butylbenzylphthalate	0.55	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	191108050
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1911232
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	191108050-002	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/201911:43 AM
Client Sample ID	1911232-001G / SWMU 13-2-GW			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**	8:00 AM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.2	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Isophorone	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Phenol	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/2/2019 6:26:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191108050-002

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	98.2	43-120
2-Fluorobiphenyl	EPA 8270D	111.2	55-127
2-Fluorophenol	EPA 8270D	77.8	41-119
Nitrobenzene-d5	EPA 8270D	85.6	55-120
Phenol-d5	EPA 8270D	82.0	52-115
Terphenyl-d14	EPA 8270D	83.6	22-135

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	191108050
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1911232
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	191108050-004	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/201911:43 AM
Client Sample ID	1911232-002G / SWMU 13-3-GW			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**	9:10 AM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.2	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number 191108050-004 **Sampling Date** 11/6/2019 **Date/Time Received** 11/8/201911:43 AM
Client Sample ID 1911232-002G / SWMU 13-3-GW **Extraction Date** 11/12/2019
Matrix Water **Sampling Time** 9:10 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Acenaphthylene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Aniline	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.1	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.1	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.1	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Butylbenzylphthalate	0.51	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.2	12/2/2019 8:14:00 PM	TGT	EPA 8270D	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number 191108050-004 **Sampling Date** 11/6/2019 **Date/Time Received** 11/8/201911:43 AM
Client Sample ID 1911232-002G / SWMU 13-3-GW **Extraction Date** 11/12/2019
Matrix Water **Sampling Time** 9:10 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Isophorone	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Phenol	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/2/2019 8:14:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191108050-004

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	103.4	43-120
2-Fluorobiphenyl	EPA 8270D	108.4	55-127
2-Fluorophenol	EPA 8270D	76.0	41-119
Nitrobenzene-d5	EPA 8270D	83.2	55-120
Phenol-d5	EPA 8270D	80.4	52-115
Terphenyl-d14	EPA 8270D	78.0	22-135

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Address: 4901 HAWKINS NE SUITE D
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Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number	191108050-006	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/201911:43 AM
Client Sample ID	1911232-003G / SWMU 13-4-GW			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**	11:30 AM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.2	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number	191108050-006	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/201911:43 AM
Client Sample ID	1911232-003G / SWMU 13-4-GW			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**	11:30 AM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Acenaphthylene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Aniline	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.1	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.1	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.1	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Butylbenzylphthalate	0.90	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.2	12/2/2019 6:53:00 PM	TGT	EPA 8270D	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number 191108050-006 **Sampling Date** 11/6/2019 **Date/Time Received** 11/8/201911:43 AM
Client Sample ID 1911232-003G / SWMU 13-4-GW **Extraction Date** 11/12/2019
Matrix Water **Sampling Time** 11:30 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Isophorone	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Phenol	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/2/2019 6:53:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191108050-006

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	109.2	43-120
2-Fluorobiphenyl	EPA 8270D	110.4	55-127
2-Fluorophenol	EPA 8270D	78.6	41-119
Nitrobenzene-d5	EPA 8270D	86.0	55-120
Phenol-d5	EPA 8270D	79.4	52-115
Terphenyl-d14	EPA 8270D	90.4	22-135

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number	191108050-008	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/201911:43 AM
Client Sample ID	1911232-004G / DUP01			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.2	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number	191108050-008	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/201911:43 AM
Client Sample ID	1911232-004G / DUP01			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Acenaphthylene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Aniline	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.1	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.1	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.1	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Butylbenzylphthalate	0.70	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.2	12/2/2019 7:47:00 PM	TGT	EPA 8270D	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number 191108050-008
Client Sample ID 1911232-004G / DUP01
Matrix Water
Comments

Sampling Date 11/6/2019
Sampling Time

Date/Time Received 11/8/201911:43 AM
Extraction Date 11/12/2019

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Isophorone	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Phenol	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/2/2019 7:47:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191108050-008

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	106.8	43-120
2-Fluorobiphenyl	EPA 8270D	105.6	55-127
2-Fluorophenol	EPA 8270D	77.6	41-119
Nitrobenzene-d5	EPA 8270D	84.0	55-120
Phenol-d5	EPA 8270D	88.4	52-115
Terphenyl-d14	EPA 8270D	81.2	22-135

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Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number 191108050-010
Client Sample ID 1911232-005G / EB01
Matrix Water
Comments

Sampling Date 11/6/2019
Sampling Time 12:55 PM

Date/Time Received 11/8/201911:43 AM
Extraction Date 11/12/2019

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.2	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number	191108050-010	**Sampling Date**	11/6/2019	**Date/Time Received**	11/8/201911:43 AM
Client Sample ID	1911232-005G / EB01			**Extraction Date**	11/12/2019
Matrix	Water	**Sampling Time**	12:55 PM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Acenaphthylene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Aniline	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.1	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.1	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.1	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Butylbenzylphthalate	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.2	12/2/2019 7:20:00 PM	TGT	EPA 8270D	

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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Sample Number 191108050-010
Client Sample ID 1911232-005G / EB01
Matrix Water
Comments

Sampling Date 11/6/2019
Sampling Time 12:55 PM

Date/Time Received 11/8/201911:43 AM
Extraction Date 11/12/2019

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Isophorone	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Phenol	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/2/2019 7:20:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191108050-010

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	89.8	43-120
2-Fluorobiphenyl	EPA 8270D	104.4	55-127
2-Fluorophenol	EPA 8270D	75.8	41-119
Nitrobenzene-d5	EPA 8270D	80.4	55-120
Phenol-d5	EPA 8270D	82.0	52-115
Terphenyl-d14	EPA 8270D	78.0	22-135

Authorized Signature

Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Address: 4901 HAWKINS NE SUITE D
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Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Pyrene	5.52	ug/L	5	110.4	45-139	11/12/2019	12/2/2019
Phenol	4.19	ug/L	5	83.8	45-134	11/12/2019	12/2/2019
Pentachlorophenol	4.35	ug/L	5	87.0	22-138	11/12/2019	12/2/2019
Naphthalene	4.01	ug/L	5	80.2	53-120	11/12/2019	12/2/2019
bis(2-Ethylhexyl)phthalate	5.42	ug/L	5	108.4	51-149	11/12/2019	12/2/2019
Benzo[a]pyrene	4.74	ug/L	5	94.8	63-120	11/12/2019	12/2/2019
Acenaphthene	4.46	ug/L	5	89.2	45-129	11/12/2019	12/2/2019
4-Nitrophenol	3.71	ug/L	5	74.2	19-141	11/12/2019	12/2/2019
4-Chloro-3-methylphenol	4.41	ug/L	5	88.2	42-139	11/12/2019	12/2/2019
2-Methylnaphthalene	3.90	ug/L	5	78.0	56-128	11/12/2019	12/2/2019
2-Chlorophenol	3.98	ug/L	5	79.6	50-131	11/12/2019	12/2/2019
2,4-Dinitrotoluene	4.75	ug/L	5	95.0	42-143	11/12/2019	12/2/2019
1-Methylnaphthalene	3.91	ug/L	5	78.2	57-124	11/12/2019	12/2/2019
1,4-Dichlorobenzene	3.24	ug/L	5	64.8	28-108	11/12/2019	12/2/2019
1,2,4-Trichlorobenzene	3.44	ug/L	5	68.8	33-109	11/12/2019	12/2/2019

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Pyrene	5.42	ug/L	5	108.4	1.8	0-20	11/12/2019	12/2/2019
Phenol	4.26	ug/L	5	85.2	1.7	0-25	11/12/2019	12/2/2019
Pentachlorophenol	4.30	ug/L	5	86.0	1.2	0-39	11/12/2019	12/2/2019
Naphthalene	4.22	ug/L	5	84.4	5.1	0-20	11/12/2019	12/2/2019
bis(2-Ethylhexyl)phthalate	6.22	ug/L	5	124.4	13.7	0-43	11/12/2019	12/2/2019
Benzo[a]pyrene	4.88	ug/L	5	97.6	2.9	0-20	11/12/2019	12/2/2019
Acenaphthene	4.60	ug/L	5	92.0	3.1	0-22	11/12/2019	12/2/2019
4-Nitrophenol	3.88	ug/L	5	77.6	4.5	0-51	11/12/2019	12/2/2019
4-Chloro-3-methylphenol	4.40	ug/L	5	88.0	0.2	0-20	11/12/2019	12/2/2019
2-Methylnaphthalene	4.06	ug/L	5	81.2	4.0	0-24	11/12/2019	12/2/2019
2-Chlorophenol	4.00	ug/L	5	80.0	0.5	0-24	11/12/2019	12/2/2019
2,4-Dinitrotoluene	4.82	ug/L	5	96.4	1.5	0-20	11/12/2019	12/2/2019
1-Methylnaphthalene	4.11	ug/L	5	82.2	5.0	0-20	11/12/2019	12/2/2019
1,4-Dichlorobenzene	3.40	ug/L	5	68.0	4.8	0-31	11/12/2019	12/2/2019
1,2,4-Trichlorobenzene	3.64	ug/L	5	72.8	5.6	0-33	11/12/2019	12/2/2019

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Quality Control Data

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
1,2,4-Trichlorobenzene	ND	ug/L	0.5	11/12/2019	12/2/2019
1,2-Dichlorobenzene	ND	ug/L	0.5	11/12/2019	12/2/2019
1,3-Dichlorobenzene	ND	ug/L	0.5	11/12/2019	12/2/2019
1,4-Dichlorobenzene	ND	ug/L	0.5	11/12/2019	12/2/2019
1-Methylnaphthalene	ND	ug/L	0.5	11/12/2019	12/2/2019
2,4,5-Trichlorophenol	ND	ug/L	0.5	11/12/2019	12/2/2019
2,4,6-Trichlorophenol	ND	ug/L	0.5	11/12/2019	12/2/2019
2,4-Dichlorophenol	ND	ug/L	0.5	11/12/2019	12/2/2019
2,4-Dimethylphenol	ND	ug/L	0.5	11/12/2019	12/2/2019
2,4-Dinitrophenol	ND	ug/L	0.5	11/12/2019	12/2/2019
2,4-Dinitrotoluene	ND	ug/L	0.5	11/12/2019	12/2/2019
2,6-Dinitrotoluene	ND	ug/L	0.5	11/12/2019	12/2/2019
2-Chloronaphthalene	ND	ug/L	0.5	11/12/2019	12/2/2019
2-Chlorophenol	ND	ug/L	0.5	11/12/2019	12/2/2019
2-Methylnaphthalene	ND	ug/L	0.5	11/12/2019	12/2/2019
2-Methylphenol	ND	ug/L	0.5	11/12/2019	12/2/2019
2-Nitroaniline	ND	ug/L	0.5	11/12/2019	12/2/2019
2-Nitrophenol	ND	ug/L	0.5	11/12/2019	12/2/2019
3,3'-Dichlorobenzidine	ND	ug/L	0.5	11/12/2019	12/2/2019
3+4-Methylphenol	ND	ug/L	0.5	11/12/2019	12/2/2019
3-Nitroaniline	ND	ug/L	0.5	11/12/2019	12/2/2019
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	11/12/2019	12/2/2019
4-Bromophenyl-phenylether	ND	ug/L	0.5	11/12/2019	12/2/2019
4-Chloro-3-methylphenol	ND	ug/L	0.5	11/12/2019	12/2/2019
4-Chlorophenyl-phenylether	ND	ug/L	0.5	11/12/2019	12/2/2019
4-Nitroaniline	ND	ug/L	0.5	11/12/2019	12/2/2019
4-Nitrophenol	ND	ug/L	0.5	11/12/2019	12/2/2019
Acenaphthene	ND	ug/L	0.5	11/12/2019	12/2/2019
Acenaphthylene	ND	ug/L	0.5	11/12/2019	12/2/2019
Aniline	ND	ug/L	0.5	11/12/2019	12/2/2019
Anthracene	ND	ug/L	0.5	11/12/2019	12/2/2019
Benzo(ghi)perylene	ND	ug/L	0.5	11/12/2019	12/2/2019
Benzo[a]anthracene	ND	ug/L	0.5	11/12/2019	12/2/2019
Benzo[a]pyrene	ND	ug/L	0.5	11/12/2019	12/2/2019
Benzo[b]fluoranthene	ND	ug/L	0.5	11/12/2019	12/2/2019
Benzo[k]fluoranthene	ND	ug/L	0.5	11/12/2019	12/2/2019
Benzyl alcohol	ND	ug/L	0.5	11/12/2019	12/2/2019

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191108050
Project Name: 1911232

Analytical Results Report

Quality Control Data

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	11/12/2019	12/2/2019
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	11/12/2019	12/2/2019
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	11/12/2019	12/2/2019
Butylbenzylphthalate	ND	ug/L	0.5	11/12/2019	12/2/2019
Carbazole	ND	ug/L	0.5	11/12/2019	12/2/2019
Chrysene	ND	ug/L	0.5	11/12/2019	12/2/2019
Dibenz[a,h]anthracene	ND	ug/L	0.5	11/12/2019	12/2/2019
Dibenzofuran	ND	ug/L	0.5	11/12/2019	12/2/2019
Diethylphthalate	ND	ug/L	0.5	11/12/2019	12/2/2019
Dimethylphthalate	ND	ug/L	0.5	11/12/2019	12/2/2019
Di-n-butylphthalate	ND	ug/L	0.5	11/12/2019	12/2/2019
Di-n-octylphthalate	ND	ug/L	0.5	11/12/2019	12/2/2019
Fluoranthene	ND	ug/L	0.5	11/12/2019	12/2/2019
Fluorene	ND	ug/L	0.5	11/12/2019	12/2/2019
Hexachlorobenzene	ND	ug/L	0.5	11/12/2019	12/2/2019
Hexachlorobutadiene	ND	ug/L	0.5	11/12/2019	12/2/2019
Hexachlorocyclopentadiene	ND	ug/L	0.5	11/12/2019	12/2/2019
Hexachloroethane	ND	ug/L	0.5	11/12/2019	12/2/2019
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	11/12/2019	12/2/2019
Isophorone	ND	ug/L	0.5	11/12/2019	12/2/2019
Naphthalene	ND	ug/L	0.5	11/12/2019	12/2/2019
Nitrobenzene	ND	ug/L	0.5	11/12/2019	12/2/2019
n-Nitrosodiphenylamine	ND	ug/L	0.5	11/12/2019	12/2/2019
Pentachlorophenol	ND	ug/L	0.5	11/12/2019	12/2/2019
Phenanthrene	ND	ug/L	0.5	11/12/2019	12/2/2019
Phenol	ND	ug/L	0.5	11/12/2019	12/2/2019
Pyrene	ND	ug/L	0.5	11/12/2019	12/2/2019
Pyridine	ND	ug/L	0.5	11/12/2019	12/2/2019

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A64680**	RunNo: **64680**
Prep Date:	Analysis Date: **11/21/2019**	SeqNo: **2216014** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Silver	ND	0.0050								
Sodium	ND	1.0								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: **LLLCS-A**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **A64680**	RunNo: **64680**
Prep Date:	Analysis Date: **11/21/2019**	SeqNo: **2216015** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0022	0.0020	0.002000	0	111	50	150			
Beryllium	0.0019	0.0020	0.002000	0	95.2	50	150			J
Cadmium	0.0021	0.0020	0.002000	0	103	50	150			
Calcium	0.52	1.0	0.5000	0	105	50	150			J
Chromium	0.0067	0.0060	0.006000	0	112	50	150			
Cobalt	0.0061	0.0060	0.006000	0	102	50	150			
Iron	0.021	0.020	0.02000	0	105	50	150			
Magnesium	0.53	1.0	0.5000	0	107	50	150			J
Manganese	0.0020	0.0020	0.002000	0	102	50	150			
Nickel	0.0062	0.010	0.005000	0	124	50	150			J
Potassium	0.49	1.0	0.5000	0	97.7	50	150			J
Silver	0.0045	0.0050	0.005000	0	90.5	50	150			J
Sodium	0.47	1.0	0.5000	0	93.1	50	150			J
Vanadium	0.011	0.050	0.01000	0	113	50	150			J
Zinc	0.0096	0.010	0.01000	0	95.9	50	150			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **LCS-A** SampType: **LCS** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW** Batch ID: **A64680** RunNo: **64680**
Prep Date: Analysis Date: **11/21/2019** SeqNo: **2216016** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0020	0.5000	0	99.9	85	115			
Beryllium	0.50	0.0020	0.5000	0	101	85	115			
Cadmium	0.51	0.0020	0.5000	0	103	85	115			
Calcium	50	1.0	50.00	0	101	85	115			
Chromium	0.49	0.0060	0.5000	0	98.0	85	115			
Cobalt	0.50	0.0060	0.5000	0	99.5	85	115			
Iron	0.52	0.020	0.5000	0	104	85	115			
Magnesium	52	1.0	50.00	0	103	85	115			
Manganese	0.50	0.0020	0.5000	0	99.0	85	115			
Nickel	0.50	0.010	0.5000	0	99.7	85	115			
Potassium	51	1.0	50.00	0	101	85	115			
Silver	0.10	0.0050	0.1000	0	101	85	115			
Sodium	51	1.0	50.00	0	103	85	115			
Vanadium	0.51	0.050	0.5000	0	102	85	115			
Zinc	0.50	0.010	0.5000	0	99.0	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48748** SampType: **MBLK** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **PBW** Batch ID: **48748** RunNo: **64458**
Prep Date: **11/12/2019** Analysis Date: **11/13/2019** SeqNo: **2206830** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	0.0095	0.020								J
Manganese	0.00015	0.0020								J
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: **LCSLL-48748** SampType: **LCSLL** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **BatchQC** Batch ID: **48748** RunNo: **64458**
Prep Date: **11/12/2019** Analysis Date: **11/13/2019** SeqNo: **2206835** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0019	0.0020	0.002000	0	93.2	50	150			J
Beryllium	0.0021	0.0020	0.002000	0	105	50	150			
Cadmium	0.0019	0.0020	0.002000	0	96.3	50	150			J
Chromium	0.0059	0.0060	0.006000	0	98.2	50	150			J
Cobalt	0.0070	0.0060	0.006000	0	117	50	150			
Iron	0.025	0.020	0.02000	0	123	50	150			
Manganese	0.0020	0.0020	0.002000	0	102	50	150			
Nickel	0.0044	0.010	0.005000	0	88.1	50	150			J
Silver	0.0045	0.0050	0.005000	0	89.7	50	150			J
Vanadium	0.0096	0.050	0.01000	0	96.5	50	150			J
Zinc	0.0092	0.010	0.01000	0	92.4	50	150			J

Sample ID: **LCS-48748** SampType: **LCS** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **LCSW** Batch ID: **48748** RunNo: **64458**
Prep Date: **11/12/2019** Analysis Date: **11/13/2019** SeqNo: **2206836** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	96.2	85	115			
Beryllium	0.50	0.0020	0.5000	0	101	85	115			
Cadmium	0.47	0.0020	0.5000	0	94.5	85	115			
Chromium	0.47	0.0060	0.5000	0	93.4	85	115			
Cobalt	0.45	0.0060	0.5000	0	89.1	85	115			
Iron	0.51	0.020	0.5000	0	103	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**

13-Jan-20

Client: Marathon

Project: SWMU 13

Sample ID: **LCS-48748**	SampType: **LCS**	TestCode: **EPA Method 200.7: Total Metals**
Client ID: **LCSW**	Batch ID: **48748**	RunNo: **64458**
Prep Date: **11/12/2019**	Analysis Date: **11/13/2019**	SeqNo: **2206836** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.48	0.0020	0.5000	0	95.7	85	115			
Nickel	0.45	0.010	0.5000	0	90.4	85	115			
Silver	0.097	0.0050	0.1000	0	96.8	85	115			
Vanadium	0.51	0.050	0.5000	0	101	85	115			
Zinc	0.46	0.010	0.5000	0	93.0	85	115			

Sample ID: **MB-48748**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Total Metals**
Client ID: **PBW**	Batch ID: **48748**	RunNo: **64458**
Prep Date: **11/12/2019**	Analysis Date: **11/13/2019**	SeqNo: **2206858** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	0.000089	0.0020								J
Nickel	0.0023	0.010								J
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: **LCSLL-48748**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Total Metals**
Client ID: **BatchQC**	Batch ID: **48748**	RunNo: **64458**
Prep Date: **11/12/2019**	Analysis Date: **11/13/2019**	SeqNo: **2206859** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0020	0.0020	0.002000	0	99.4	50	150			J
Beryllium	0.0020	0.0020	0.002000	0	101	50	150			
Cadmium	0.0021	0.0020	0.002000	0	104	50	150			
Chromium	0.0058	0.0060	0.006000	0	96.3	50	150			J
Cobalt	0.0062	0.0060	0.006000	0	103	50	150			
Iron	0.020	0.020	0.02000	0	97.8	50	150			J
Manganese	0.0021	0.0020	0.002000	0	106	50	150			
Nickel	0.0056	0.010	0.005000	0	112	50	150			J
Silver	0.0047	0.0050	0.005000	0	93.2	50	150			J
Vanadium	0.0094	0.050	0.01000	0	93.9	50	150			J
Zinc	0.010	0.010	0.01000	0	101	50	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **LCS-48748** SampType: **LCS** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **LCSW** Batch ID: **48748** RunNo: **64458**
Prep Date: **11/12/2019** Analysis Date: **11/13/2019** SeqNo: **2206860** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0020	0.5000	0	97.8	85	115			
Beryllium	0.50	0.0020	0.5000	0	101	85	115			
Cadmium	0.50	0.0020	0.5000	0	100	85	115			
Chromium	0.48	0.0060	0.5000	0	96.9	85	115			
Cobalt	0.48	0.0060	0.5000	0	95.4	85	115			
Iron	0.49	0.020	0.5000	0	98.9	85	115			
Manganese	0.49	0.0020	0.5000	0	98.5	85	115			
Nickel	0.48	0.010	0.5000	0	96.3	85	115			
Silver	0.10	0.0050	0.1000	0	103	85	115			
Vanadium	0.50	0.050	0.5000	0	99.8	85	115			
Zinc	0.47	0.010	0.5000	0	94.4	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **B64363**	RunNo: **64363**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2202696** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00043	0.0010								J
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: **LLLCS**	SampType: **LCSLL**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **B64363**	RunNo: **64363**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2202697** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0010	0.0010	0.001000	0	103	50	150			
Arsenic	0.00091	0.0010	0.001000	0	90.7	50	150			J
Lead	0.00050	0.00050	0.0005000	0	101	50	150			
Selenium	0.00080	0.0010	0.001000	0	80.5	50	150			J

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **B64363**	RunNo: **64363**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2202698** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	94.4	85	115			
Arsenic	0.024	0.0010	0.02500	0	97.7	85	115			
Lead	0.012	0.00050	0.01250	0	96.7	85	115			
Selenium	0.024	0.0010	0.02500	0	96.3	85	115			

Sample ID: **1911232-005DMS**	SampType: **MS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **EB01**	Batch ID: **B64363**	RunNo: **64363**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2202756** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	96.2	70	130			
Arsenic	0.023	0.0010	0.02500	0	93.5	70	130			
Lead	0.012	0.00050	0.01250	0	93.8	70	130			
Selenium	0.022	0.0010	0.02500	0	88.5	70	130			

Sample ID: **1911232-005DMSD**	SampType: **MSD**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **EB01**	Batch ID: **B64363**	RunNo: **64363**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2202757** Units: **mg/L**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **1911232-005DMSD**	SampType: **MSD**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **EB01**	Batch ID: **B64363**	RunNo: **64363**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2202757** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.025	0.0010	0.02500	0	99.4	70	130	3.36	20	
Arsenic	0.023	0.0010	0.02500	0	93.9	70	130	0.405	20	
Lead	0.012	0.00050	0.01250	0	94.3	70	130	0.546	20	
Selenium	0.022	0.0010	0.02500	0	89.4	70	130	0.959	20	

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **B64381**	RunNo: **64381**
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2203764** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								

Sample ID: **LLLCS**	SampType: **LCSLL**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **B64381**	RunNo: **64381**
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2203765** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00071	0.0010	0.001000	0	70.7	50	150			J

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **B64381**	RunNo: **64381**
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2203766** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	97.1	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48748** SampType: **MBLK** TestCode: **200.8 ICPMS Metals:Total**
Client ID: **PBW** Batch ID: **48748** RunNo: **64504**
Prep Date: **11/12/2019** Analysis Date: **11/14/2019** SeqNo: **2208379** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: **MSLCSLL-48748** SampType: **LCSLL** TestCode: **200.8 ICPMS Metals:Total**
Client ID: **BatchQC** Batch ID: **48748** RunNo: **64504**
Prep Date: **11/12/2019** Analysis Date: **11/14/2019** SeqNo: **2208380** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00097	0.0010	0.001000	0	96.7	50	150			J
Arsenic	0.00098	0.0010	0.001000	0	98.2	50	150			J
Lead	0.00050	0.00050	0.0005000	0	100	50	150			
Selenium	0.0012	0.0010	0.001000	0	122	50	150			

Sample ID: **MSLCS-48748** SampType: **LCS** TestCode: **200.8 ICPMS Metals:Total**
Client ID: **LCSW** Batch ID: **48748** RunNo: **64504**
Prep Date: **11/12/2019** Analysis Date: **11/14/2019** SeqNo: **2208381** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.027	0.0010	0.02500	0	109	85	115			
Arsenic	0.025	0.0010	0.02500	0	98.8	85	115			
Lead	0.013	0.00050	0.01250	0	100	85	115			
Selenium	0.026	0.0010	0.02500	0	103	85	115			

Sample ID: **1911232-001EMSLL** SampType: **MSLL** TestCode: **200.8 ICPMS Metals:Total**
Client ID: **SWMU 13-2-GW** Batch ID: **48748** RunNo: **64589**
Prep Date: **11/12/2019** Analysis Date: **11/18/2019** SeqNo: **2211836** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0024	0.0050	0.02500	0	9.67	70	130			JS
Arsenic	0.033	0.0050	0.02500	0.009479	95.3	70	130			
Lead	0.053	0.0025	0.01250	0.04444	67.2	70	130			S
Selenium	0.033	0.0050	0.02500	0.007830	99.9	70	130			

Sample ID: **1911232-001EMSDL** SampType: **MSDLL** TestCode: **200.8 ICPMS Metals:Total**
Client ID: **SWMU 13-2-GW** Batch ID: **48748** RunNo: **64589**
Prep Date: **11/12/2019** Analysis Date: **11/18/2019** SeqNo: **2211837** Units: **mg/L**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **1911232-001EMSDL** SampType: **MSDLL** TestCode: **200.8 ICPMS Metals:Total**
Client ID: **SWMU 13-2-GW** Batch ID: **48748** RunNo: **64589**
Prep Date: **11/12/2019** Analysis Date: **11/18/2019** SeqNo: **2211837** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0023	0.0050	0.02500	0	9.00	70	130	7.12	20	JS
Arsenic	0.034	0.0050	0.02500	0.009479	98.5	70	130	2.33	20	
Lead	0.053	0.0025	0.01250	0.04444	72.3	70	130	1.21	20	
Selenium	0.028	0.0050	0.02500	0.007830	80.2	70	130	16.2	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48912** SampType: **MBLK** TestCode: **EPA Method 245.1: Mercury**
Client ID: **PBW** Batch ID: **48912** RunNo: **64663**
Prep Date: **11/20/2019** Analysis Date: **11/20/2019** SeqNo: **2215294** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000039	0.00020								J

Sample ID: **LCS-48912** SampType: **LCS** TestCode: **EPA Method 245.1: Mercury**
Client ID: **LCSW** Batch ID: **48912** RunNo: **64663**
Prep Date: **11/20/2019** Analysis Date: **11/20/2019** SeqNo: **2215295** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.4	80	120			

Sample ID: **1911232-002EMS** SampType: **MS** TestCode: **EPA Method 245.1: Mercury**
Client ID: **SWMU 13-3-GW** Batch ID: **48912** RunNo: **64663**
Prep Date: **11/20/2019** Analysis Date: **11/20/2019** SeqNo: **2215299** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0034	0.00020	0.005000	0	68.4	75	125			S

Sample ID: **1911232-002EMSD** SampType: **MSD** TestCode: **EPA Method 245.1: Mercury**
Client ID: **SWMU 13-3-GW** Batch ID: **48912** RunNo: **64663**
Prep Date: **11/20/2019** Analysis Date: **11/20/2019** SeqNo: **2215300** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0033	0.00020	0.005000	0	66.6	75	125	2.56	20	S

Sample ID: **1911232-002EMS** SampType: **MS** TestCode: **EPA Method 245.1: Mercury**
Client ID: **SWMU 13-3-GW** Batch ID: **48912** RunNo: **64663**
Prep Date: **11/20/2019** Analysis Date: **11/20/2019** SeqNo: **2215324** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0038	0.0010	0.005000	0	75.4	75	125			

Sample ID: **1911232-002EMSD** SampType: **MSD** TestCode: **EPA Method 245.1: Mercury**
Client ID: **SWMU 13-3-GW** Batch ID: **48912** RunNo: **64663**
Prep Date: **11/20/2019** Analysis Date: **11/20/2019** SeqNo: **2215325** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0040	0.0010	0.005000	0	80.8	75	125	6.93	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R64329**	RunNo: **64329**
Prep Date:	Analysis Date: **11/7/2019**	SeqNo: **2201585** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R64329**	RunNo: **64329**
Prep Date:	Analysis Date: **11/7/2019**	SeqNo: **2201586** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	99.1	90	110			
Chloride	4.6	0.50	5.000	0	92.5	90	110			
Nitrogen, Nitrite (As N)	0.91	0.10	1.000	0	91.4	90	110			
Nitrogen, Nitrate (As N)	2.4	0.10	2.500	0	96.6	90	110			
Sulfate	9.4	0.50	10.00	0	93.7	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R64346**	RunNo: **64346**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2203722** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS-B**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R64346**	RunNo: **64346**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2203724** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	5.0	0.50	5.000	0	99.2	90	110			
Sulfate	9.8	0.50	10.00	0	98.5	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48696**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **48696**	RunNo: **64417**
Prep Date: **11/11/2019**	Analysis Date: **11/12/2019**	SeqNo: **2204732** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.56		0.5000		113	81.5	152			

Sample ID: **LCS-48696**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **48696**	RunNo: **64417**
Prep Date: **11/11/2019**	Analysis Date: **11/12/2019**	SeqNo: **2204733** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.0	0.40	2.500	0	121	82	138			
Surr: DNOP	0.28		0.2500		112	81.5	152			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G64438**	RunNo: **64438**
Prep Date:	Analysis Date: **11/12/2019**	SeqNo: **2205878** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	22		20.00		110	65.8	143			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G64438**	RunNo: **64438**
Prep Date:	Analysis Date: **11/12/2019**	SeqNo: **2205879** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.47	0.050	0.5000	0	94.3	73.6	119			
Surr: BFB	25		20.00		126	65.8	143			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**

13-Jan-20

Client: Marathon

Project: SWMU 13

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **LCSW** Batch ID: **R64405** RunNo: **64405**

Prep Date: Analysis Date: **11/11/2019** SeqNo: **2204291** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	19	1.0	20.00	0	92.8	70	130			
Chlorobenzene	20	1.0	20.00	0	98.2	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	92.2	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	91.4	70	130			
Surr: 1,2-Dichloroethane-d4	8.9		10.00		88.5	70	130			
Surr: 4-Bromofluorobenzene	9.0		10.00		89.8	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	9.4		10.00		94.4	70	130			

Sample ID: **1911232-001a ms** SampType: **MS** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **SWMU 13-2-GW** Batch ID: **R64405** RunNo: **64405**

Prep Date: Analysis Date: **11/11/2019** SeqNo: **2204295** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	110	5.0	100.0	0	109	70	130			
Toluene	94	5.0	100.0	0	94.1	70	130			
Chlorobenzene	100	5.0	100.0	0	101	70	130			
1,1-Dichloroethene	96	5.0	100.0	0	95.8	70	130			
Trichloroethene (TCE)	96	5.0	100.0	0	95.6	70	130			
Surr: 1,2-Dichloroethane-d4	46		50.00		92.8	70	130			
Surr: 4-Bromofluorobenzene	50		50.00		101	70	130			
Surr: Dibromofluoromethane	56		50.00		111	70	130			
Surr: Toluene-d8	47		50.00		94.2	70	130			

Sample ID: **1911232-001a msd** SampType: **MSD** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **SWMU 13-2-GW** Batch ID: **R64405** RunNo: **64405**

Prep Date: Analysis Date: **11/11/2019** SeqNo: **2204296** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	100	5.0	100.0	0	103	70	130	5.30	20	
Toluene	89	5.0	100.0	0	89.1	70	130	5.39	20	
Chlorobenzene	96	5.0	100.0	0	96.2	70	130	4.77	20	
1,1-Dichloroethene	91	5.0	100.0	0	91.0	70	130	5.12	20	
Trichloroethene (TCE)	89	5.0	100.0	0	89.1	70	130	6.95	20	
Surr: 1,2-Dichloroethane-d4	47		50.00		93.2	70	130	0	0	
Surr: 4-Bromofluorobenzene	51		50.00		103	70	130	0	0	
Surr: Dibromofluoromethane	55		50.00		109	70	130	0	0	
Surr: Toluene-d8	46		50.00		91.9	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **rb1**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64405**	RunNo: **64405**
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2204322** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **rb1**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64405**	RunNo: **64405**
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2204322** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.9		10.00		88.6	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		91.3	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.9		10.00		99.1	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**

13-Jan-20

Client: Marathon

Project: SWMU 13

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R64333**	RunNo: **64333**							
Prep Date:	Analysis Date: **11/7/2019**	SeqNo: **2201902**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R64333**	RunNo: **64333**							
Prep Date:	Analysis Date: **11/7/2019**	SeqNo: **2201903**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.16	20.00	80.00	0	96.4	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R64333**	RunNo: **64333**							
Prep Date:	Analysis Date: **11/7/2019**	SeqNo: **2201925**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R64333**	RunNo: **64333**							
Prep Date:	Analysis Date: **11/7/2019**	SeqNo: **2201926**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.72	20.00	80.00	0	98.4	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911232**
13-Jan-20

Client: Marathon
Project: SWMU 13

Sample ID: **MB-48684**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **48684**	RunNo: **64424**
Prep Date: **11/8/2019**	Analysis Date: **11/12/2019**	SeqNo: **2205537** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-48684**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **48684**	RunNo: **64424**
Prep Date: **11/8/2019**	Analysis Date: **11/12/2019**	SeqNo: **2205538** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1060	20.0	1000	0	106	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **MARATHON GALLUP** Work Order Number: **1911232** RcptNo: **1**

Received By: **Yazmine Garduno** **11/6/2019 4:10:00 PM** Yazmine Garduno

Completed By: **Leah Baca** **11/7/2019 9:48:43 AM** Leah Baca

Reviewed By: LB 11/7/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 15, 15, 10 (<2 or >12 unless noted)

Adjusted? no

Checked by: YG 11/7/19

Special Handling (if applicable)

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

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			
2	8.9	Good	Yes			
3	8.1	Good	Yes			

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: Remark

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1911232	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	8260B (VOA)	8270 (Semi-VOA)	Metals - Total and Dissolved	Cations	Anions	Total Dissolved Solids	Alkalinity	Cyanide	Air Bubbles (Y or N)
11-6-19	0800	Water	SWMU 13-2-GW	40ml voa - 5	HCl	-001			X					X								
				250 ml amber - 1	Neat				X													
				1 liter amber - 1	Neat										X							
				250 ml plastic - 1	HNO_3											X						
				125 ml plastic - 1	HNO_3											X	X					
				125 ml plastic - 1	H_2SO_4													X				
				500 ml plastic - 1	Neat													X	X	X		
				500 ml plastic - 1	NaOH																X	

Date	Time	Relinquished by	Received by	Date	Time
11-6-19	1330	James Reis	Eugene Vigil	11/6/19	1410
11/6/19	4:10	Eugene Vigil	[signature]	11/6/19	1610

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.2 - 0.2 = 1.0

9.1 - 0.2 = 8.9

8.3 - 0.2 = 8.1

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1911232	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	8260B (VOA)	8270 (Semi-VOA)	Metals - Total and Dissolved	Cations	Anions	Total Dissolved Solids	Alkalinity	Cyanide	Air Bubbles (Y or N)
11.6.19	09:10	Water	SWMU 13-3-GW	40ml voa - 5	HCl	-002			X					X								
				250 ml amber - 1	Neat				X													
				1 liter amber - 3	Neat										X							
				250 ml plastic - 1	HNO_3											X						
				125 ml plastic - 1	HNO_3											X	X					
				125 ml plastic - 1	H_2SO_4													X				
				500 ml plastic - 1	Neat													X	X	X		
↓	↓	↓	↓	500 ml plastic - 1	NaOH	—															X	

Date	Time	Relinquished by:	Received by:	Date	Time
11.6.19	1335	James Reis	Eugene Vigil	11/6/19	2:10
11/6/19	4:10	Eugene Vigil	CDO	11/6/19	1610

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.2 - 0.2 = 1.0

9.1 - 0.2 = 8.9

8.3 - 0.2 = 8.1

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: remark)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1911232	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	8260B (VOA)	8270 (Semi-VOA)	Metals - Total and Dissolved	Cations	Anions	Total Dissolved Solids	Alkalinity	Cyanide	Air Bubbles (Y or N)
11-6-19	11:30	Water	SWMU 13-4-GW	40ml voa - 5	HCl	-003			X					X								
				250 ml amber - 1	Neat				X													
				1 liter amber - 3	Neat										X							
				250 ml plastic - 1	HNO_3											X						
				125 ml plastic - 1	HNO_3											X	X					
				125 ml plastic - 1	H_2SO_4													X				
				500 ml plastic - 1	Neat													X	X	X		
				500 ml plastic - 1	NaOH																X	

Date	Time	Relinquished by	Received by	Date	Time
11-6-19	13:35	James Ress	Eugene Vigil	11/6/19	2:10
11/6/19	4:10	Eugene Vigil	CDO	11/6/19	1610

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.2 - 0.2 = 1.0

9.1 - 0.2 = 8.9

8.3 - 0.2 = 8.1

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: Remark 5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1911232	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	8260B (VOA)	8270 (Semi-VOA)	Metals - Total and Dissolved	Cations	Anions	Total Dissolved Solids	Alkalinity	Cyanide	Air Bubbles (Y or N)
11-6-19	—	Water	DUP01	40ml voa - 5	HCl	-004			X					X								
				250 ml amber - 1	Neat				X													
				1 liter amber -3	Neat										X							
				250 ml plastic - 1	HNO_3											X						
				125 ml plastic - 1	HNO_3											X	X					
				125 ml plastic - 1	H_2SO_4													X				
				500 ml plastic - 1	Neat													X	X	X		
				500 ml plastic - 1	NaOH																X	

Date	Time	Relinquished by	Received by	Date	Time
11-6-19	1335	James Reis	Enrique Vigil	11/6/19	2:10
11/6/19	4:10	Enrique Vigil	VW CDO	11/6/19	1610

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.2 - 0.2 = 1.0

9.1 - 0.2 = 8.9

8.3 - 0.2 = 8.1

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1911232	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	8260B (VOA)	8270 (Semi-VOA)	Metals - Total and Dissolved	Cations	Anions	Total Dissolved Solids	Alkalinity	Cyanide	Air Bubbles (Y or N)
11-6-19	12:55	Water	EB01	40ml voa - 5	HCl	-005			X					X								
				250 ml amber - 1	Neat				X													
				1 liter amber - 3	Neat										X							
				250 ml plastic - 1	HNO_3											X						
				125 ml plastic - 1	HNO_3											X	X					
				125 ml plastic - 1	H_2SO_4													X				
				500 ml plastic - 1	Neat													X	X	X		
				500 ml plastic - 1	NaOH																X	

Date	Time	Relinquished by	Received by	Date	Time
11-6-19	1340	James Reis	Eugene Vigil	11/6/19	2:10
11-6-19	4:10	Eugene Vigil	CDU	11/6/19	1610

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1.2 - 0.2 = 1.0

9.1 - 0.2 = 8.9

8.3 - 0.2 = 8.1

- SW-846 Method 8260 for volatile organic compounds;
- SW-846 Method 8270 for semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline range (C5-C10), diesel range (>C10-C28), and motor oil range (>C28-C36) organics.
- Inorganics (Skinner List Metals + Iron + Manganese) – Total and Dissolved

Inorganic Analytical Methods

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

SWMU 13 – Groundwater and Equipment Blank Analytical Requirements

General Chemistry Parameters

Analyte	Analytical Method
Total Dissolved Solids	SM-2510B
Carbonate	SM-2320B
Bicarbonate	SM-2320B
Chloride	EPA method 300.0
Fluoride	EPA method 300.0
Sulfate	EPA method 300.0
Calcium	EPA method 6010/6020
Magnesium	EPA method 6010/6020
Sodium	EPA method 6010/6020
Potassium	EPA method 6010/6020
Nitrate	EPA method 300.0
Nitrite	EPA method 300.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 23, 2019

Brian Moore

Marathon Petroleum
92 Giant Crossing Rd
Gallup, NM 87301
TEL:
FAX

RE: SWMU 13 OrderNo.: 1911310

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 6 sample(s) on 11/7/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-5-GW
Project: SWMU 13
Collection Date: 11/7/2019 8:15:00 AM
Lab ID: 1911310-001
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **CLP**	
Diesel Range Organics (DRO)	0.28	0.13	0.40	J	mg/L	1	11/12/2019 3:28:11 PM	48696
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	11/12/2019 3:28:11 PM	48696
Surr: DNOP	119	0	81.5-152		%Rec	1	11/12/2019 3:28:11 PM	48696
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.33	0.021	0.050		mg/L	1	11/13/2019 12:03:16 A	G64438
Surr: BFB	1610	0	65.8-143	S	%Rec	1	11/13/2019 12:03:16 A	G64438
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	ND	0.14	0.50		mg/L	5	11/8/2019 2:29:24 PM	R64345
Chloride	6100	250	250	*	mg/L	500	11/11/2019 9:22:16 PM	R64409
Nitrogen, Nitrite (As N)	ND	0.11	2.0		mg/L	20	11/8/2019 2:41:49 PM	R64345
Nitrogen, Nitrate (As N)	0.17	0.030	0.50	J	mg/L	5	11/8/2019 2:29:24 PM	R64345
Sulfate	550	1.3	10	*	mg/L	20	11/8/2019 2:41:49 PM	R64345
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **bcv**	
Barium	0.089	0.00065	0.0020		mg/L	1	11/22/2019 9:12:56 AM	A64708
Beryllium	0.00062	0.00028	0.0020	J	mg/L	1	11/22/2019 9:12:56 AM	A64708
Cadmium	ND	0.00055	0.0020		mg/L	1	11/22/2019 9:12:56 AM	A64708
Calcium	1300	3.1	50		mg/L	50	11/22/2019 9:17:15 AM	A64708
Chromium	ND	0.0015	0.0060		mg/L	1	11/22/2019 9:12:56 AM	A64708
Cobalt	0.014	0.0031	0.0060		mg/L	1	11/22/2019 9:12:56 AM	A64708
Iron	0.094	0.0087	0.020		mg/L	1	11/22/2019 9:12:56 AM	A64708
Magnesium	230	0.25	5.0		mg/L	5	11/22/2019 9:15:08 AM	A64708
Manganese	27	0.014	0.10	*	mg/L	50	11/22/2019 9:17:15 AM	A64708
Nickel	0.25	0.0040	0.010	*	mg/L	1	11/22/2019 9:12:56 AM	A64708
Potassium	3.2	0.16	1.0		mg/L	1	11/22/2019 9:12:56 AM	A64708
Silver	0.021	0.00094	0.0050		mg/L	1	11/22/2019 9:12:56 AM	A64708
Sodium	2800	21	50		mg/L	50	11/22/2019 9:17:15 AM	A64708
Vanadium	0.0037	0.0020	0.050	J	mg/L	1	11/22/2019 9:12:56 AM	A64708
Zinc	0.0096	0.0023	0.010	J	mg/L	1	11/22/2019 9:12:56 AM	A64708
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Barium	0.088	0.00049	0.0020		mg/L	1	11/27/2019 5:39:10 PM	48748
Beryllium	0.00064	0.00022	0.0020	J	mg/L	1	11/27/2019 5:39:10 PM	48748
Cadmium	ND	0.00074	0.0020		mg/L	1	11/27/2019 5:39:10 PM	48748
Chromium	ND	0.0012	0.0060		mg/L	1	11/27/2019 5:39:10 PM	48748
Cobalt	0.013	0.0012	0.0060		mg/L	1	11/27/2019 5:39:10 PM	48748
Iron	0.15	0.0061	0.020		mg/L	1	11/27/2019 5:39:10 PM	48748
Manganese	27	0.0030	0.10	*	mg/L	50	11/27/2019 5:57:53 PM	48748
Nickel	0.24	0.0015	0.010	*	mg/L	1	11/27/2019 5:39:10 PM	48748

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-5-GW
Project: SWMU 13
Collection Date: 11/7/2019 8:15:00 AM
Lab ID: 1911310-001
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Silver	0.019	0.0014	0.0050		mg/L	1	11/27/2019 5:39:10 PM	48748
Vanadium	0.0054	0.00054	0.050	J	mg/L	1	11/27/2019 5:39:10 PM	48748
Zinc	ND	0.0058	0.010		mg/L	1	11/27/2019 5:39:10 PM	48748
EPA 200.8: DISSOLVED METALS							Analyst: **ELS**	
Antimony	ND	0.0019	0.0050		mg/L	5	11/12/2019 1:19:18 PM	A64450
Arsenic	0.0047	0.00050	0.0050	J	mg/L	5	11/12/2019 1:19:18 PM	A64450
Lead	0.00081	0.00027	0.0025	J	mg/L	5	11/12/2019 1:19:18 PM	A64450
Selenium	ND	0.00086	0.0050		mg/L	5	11/12/2019 1:19:18 PM	A64450
200.8 ICPMS METALS:TOTAL							Analyst: **ELS**	
Antimony	ND	0.00078	0.0050		mg/L	5	11/18/2019 2:08:59 PM	48748
Arsenic	0.0051	0.0016	0.0050		mg/L	5	11/18/2019 2:08:59 PM	48748
Lead	0.00080	0.00013	0.0025	J	mg/L	5	11/18/2019 2:08:59 PM	48748
Selenium	ND	0.0024	0.0050		mg/L	5	11/18/2019 2:08:59 PM	48748
EPA METHOD 245.1: MERCURY							Analyst: **rde**	
Mercury	ND	0.000038	0.00020		mg/L	1	11/20/2019 6:09:40 PM	48912
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Benzene	0.89	0.33	2.0	J	µg/L	2	11/14/2019 8:14:00 PM	R64499
Toluene	ND	0.70	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Ethylbenzene	ND	0.26	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Methyl tert-butyl ether (MTBE)	36	0.91	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,2,4-Trimethylbenzene	ND	0.43	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,3,5-Trimethylbenzene	ND	0.38	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,2-Dichloroethane (EDC)	ND	0.39	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,2-Dibromoethane (EDB)	ND	0.33	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Naphthalene	ND	0.55	4.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1-Methylnaphthalene	1.7	0.63	8.0	J	µg/L	2	11/14/2019 8:14:00 PM	R64499
2-Methylnaphthalene	ND	0.69	8.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Acetone	4.5	2.4	20	J	µg/L	2	11/14/2019 8:14:00 PM	R64499
Bromobenzene	ND	0.49	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Bromodichloromethane	ND	0.27	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Bromoform	ND	0.58	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Bromomethane	ND	0.55	6.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
2-Butanone	ND	4.2	20		µg/L	2	11/14/2019 8:14:00 PM	R64499
Carbon disulfide	ND	0.91	20		µg/L	2	11/14/2019 8:14:00 PM	R64499
Carbon Tetrachloride	ND	0.28	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Chlorobenzene	ND	0.39	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Chloroethane	ND	0.36	4.0		µg/L	2	11/14/2019 8:14:00 PM	R64499

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-5-GW
Project: SWMU 13
Collection Date: 11/7/2019 8:15:00 AM
Lab ID: 1911310-001
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Chloroform	ND	0.24	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Chloromethane	ND	0.64	6.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
2-Chlorotoluene	ND	0.49	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
4-Chlorotoluene	ND	0.47	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
cis-1,2-DCE	ND	0.38	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
cis-1,3-Dichloropropene	ND	0.28	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Dibromochloromethane	ND	0.48	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Dibromomethane	ND	0.42	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,2-Dichlorobenzene	ND	0.59	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,3-Dichlorobenzene	ND	0.50	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,4-Dichlorobenzene	ND	0.59	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Dichlorodifluoromethane	ND	0.52	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,1-Dichloroethane	ND	0.28	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,1-Dichloroethene	ND	0.41	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,2-Dichloropropane	ND	0.42	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,3-Dichloropropane	ND	0.40	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
2,2-Dichloropropane	ND	0.47	4.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,1-Dichloropropene	ND	0.33	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Hexachlorobutadiene	ND	0.62	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
2-Hexanone	ND	3.1	20		µg/L	2	11/14/2019 8:14:00 PM	R64499
Isopropylbenzene	ND	0.38	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
4-Isopropyltoluene	ND	0.43	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
4-Methyl-2-pentanone	ND	1.4	20		µg/L	2	11/14/2019 8:14:00 PM	R64499
Methylene Chloride	ND	0.31	6.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
n-Butylbenzene	ND	0.46	6.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
n-Propylbenzene	ND	0.43	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
sec-Butylbenzene	ND	0.50	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Styrene	ND	0.38	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
tert-Butylbenzene	ND	0.41	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,1,1,2-Tetrachloroethane	ND	0.41	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,1,2,2-Tetrachloroethane	ND	1.1	4.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Tetrachloroethene (PCE)	ND	0.30	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
trans-1,2-DCE	ND	0.36	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
trans-1,3-Dichloropropene	ND	0.33	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,2,3-Trichlorobenzene	ND	0.60	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,2,4-Trichlorobenzene	ND	0.39	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,1,1-Trichloroethane	ND	0.35	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
1,1,2-Trichloroethane	ND	0.43	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Trichloroethene (TCE)	ND	0.33	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-5-GW
Project: SWMU 13
Collection Date: 11/7/2019 8:15:00 AM
Lab ID: 1911310-001 **Matrix:** AQUEOUS **Received Date:** 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Trichlorofluoromethane	ND	0.38	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Vinyl chloride	ND	0.36	2.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Xylenes, Total	ND	0.91	3.0		µg/L	2	11/14/2019 8:14:00 PM	R64499
Surr: 1,2-Dichloroethane-d4	101	0	70-130		%Rec	2	11/14/2019 8:14:00 PM	R64499
Surr: 4-Bromofluorobenzene	98.9	0	70-130		%Rec	2	11/14/2019 8:14:00 PM	R64499
Surr: Dibromofluoromethane	98.0	0	70-130		%Rec	2	11/14/2019 8:14:00 PM	R64499
Surr: Toluene-d8	98.0	0	70-130		%Rec	2	11/14/2019 8:14:00 PM	R64499
SM2320B: ALKALINITY							Analyst: **JRR**	
Bicarbonate (As CaCO3)	578.6	20.00	20.00		mg/L Ca	1	11/11/2019 3:02:55 PM	R64428
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	11/11/2019 3:02:55 PM	R64428
Total Alkalinity (as CaCO3)	578.6	20.00	20.00		mg/L Ca	1	11/11/2019 3:02:55 PM	R64428
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **JMT**	
Total Dissolved Solids	13000	200	200	*D	mg/L	1	11/14/2019 9:12:00 AM	48734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-6-GW
Project: SWMU 13
Collection Date: 11/7/2019 9:30:00 AM
Lab ID: 1911310-002
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **CLP**	
Diesel Range Organics (DRO)	ND	0.13	0.40		mg/L	1	11/12/2019 3:52:19 PM	48696
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	11/12/2019 3:52:19 PM	48696
Surr: DNOP	125	0	81.5-152		%Rec	1	11/12/2019 3:52:19 PM	48696
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.042	0.021	0.050	J	mg/L	1	11/13/2019 12:25:57 A	G64438
Surr: BFB	363	0	65.8-143	S	%Rec	1	11/13/2019 12:25:57 A	G64438
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	ND	0.14	0.50		mg/L	5	11/8/2019 2:54:13 PM	R64345
Chloride	3200	250	250	*	mg/L	500	11/11/2019 9:34:41 PM	R64409
Nitrogen, Nitrite (As N)	ND	0.11	2.0		mg/L	20	11/8/2019 3:06:38 PM	R64345
Nitrogen, Nitrate (As N)	ND	0.030	0.50		mg/L	5	11/8/2019 2:54:13 PM	R64345
Sulfate	1200	33	250	*	mg/L	500	11/11/2019 9:34:41 PM	R64409
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **bcv**	
Barium	0.035	0.00065	0.0020		mg/L	1	11/22/2019 9:19:29 AM	A64708
Beryllium	0.00032	0.00028	0.0020	J	mg/L	1	11/22/2019 9:19:29 AM	A64708
Cadmium	ND	0.00055	0.0020		mg/L	1	11/22/2019 9:19:29 AM	A64708
Calcium	1200	3.1	50		mg/L	50	11/22/2019 9:30:38 AM	A64708
Chromium	ND	0.0015	0.0060		mg/L	1	11/22/2019 9:19:29 AM	A64708
Cobalt	ND	0.0031	0.0060		mg/L	1	11/22/2019 9:19:29 AM	A64708
Iron	0.018	0.0087	0.020	J	mg/L	1	11/22/2019 9:19:29 AM	A64708
Magnesium	190	0.25	5.0		mg/L	5	11/22/2019 9:28:31 AM	A64708
Manganese	4.4	0.0014	0.010	*	mg/L	5	11/22/2019 9:28:31 AM	A64708
Nickel	0.013	0.0040	0.010		mg/L	1	11/22/2019 9:19:29 AM	A64708
Potassium	2.6	0.16	1.0		mg/L	1	11/22/2019 9:19:29 AM	A64708
Silver	0.020	0.00094	0.0050		mg/L	1	11/22/2019 9:19:29 AM	A64708
Sodium	1700	21	50		mg/L	50	11/22/2019 9:30:38 AM	A64708
Vanadium	0.0050	0.0020	0.050	J	mg/L	1	11/22/2019 9:19:29 AM	A64708
Zinc	0.013	0.0023	0.010		mg/L	1	11/22/2019 9:19:29 AM	A64708
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Barium	0.22	0.00049	0.0020		mg/L	1	11/27/2019 6:00:02 PM	48748
Beryllium	0.0020	0.00022	0.0020		mg/L	1	11/27/2019 6:00:02 PM	48748
Cadmium	ND	0.00074	0.0020		mg/L	1	11/27/2019 6:00:02 PM	48748
Chromium	0.0053	0.0012	0.0060	J	mg/L	1	11/27/2019 6:00:02 PM	48748
Cobalt	0.0020	0.0012	0.0060	J	mg/L	1	11/27/2019 6:00:02 PM	48748
Iron	7.9	0.061	0.20	*	mg/L	10	11/27/2019 6:01:58 PM	48748
Manganese	4.7	0.00060	0.020	*	mg/L	10	11/27/2019 6:01:58 PM	48748
Nickel	0.025	0.0015	0.010		mg/L	1	11/27/2019 6:00:02 PM	48748

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-6-GW
Project: SWMU 13
Collection Date: 11/7/2019 9:30:00 AM
Lab ID: 1911310-002
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Silver	0.017	0.0014	0.0050		mg/L	1	11/27/2019 6:00:02 PM	48748
Vanadium	0.024	0.00054	0.050	J	mg/L	1	11/27/2019 6:00:02 PM	48748
Zinc	0.014	0.0058	0.010		mg/L	1	11/27/2019 6:00:02 PM	48748
EPA 200.8: DISSOLVED METALS							Analyst: **ELS**	
Antimony	ND	0.00039	0.0010		mg/L	1	11/12/2019 1:21:56 PM	A64450
Arsenic	0.0016	0.00010	0.0010		mg/L	1	11/12/2019 1:21:56 PM	A64450
Lead	ND	0.00027	0.0025		mg/L	5	11/12/2019 1:24:33 PM	A64450
Selenium	0.00059	0.00017	0.0010	J	mg/L	1	11/12/2019 1:21:56 PM	A64450
200.8 ICPMS METALS:TOTAL							Analyst: **ELS**	
Antimony	ND	0.00078	0.0050		mg/L	5	11/18/2019 2:11:07 PM	48748
Arsenic	0.0030	0.0016	0.0050	J	mg/L	5	11/18/2019 2:11:07 PM	48748
Lead	0.0090	0.00013	0.0025		mg/L	5	11/18/2019 2:11:07 PM	48748
Selenium	ND	0.0024	0.0050		mg/L	5	11/18/2019 2:11:07 PM	48748
EPA METHOD 245.1: MERCURY							Analyst: **rde**	
Mercury	ND	0.000038	0.00020		mg/L	1	11/20/2019 6:16:31 PM	48912
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.33	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Toluene	ND	0.70	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Ethylbenzene	ND	0.26	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Methyl tert-butyl ether (MTBE)	6.8	0.91	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,2,4-Trimethylbenzene	ND	0.43	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,3,5-Trimethylbenzene	ND	0.38	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.39	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.33	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Naphthalene	ND	0.55	4.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1-Methylnaphthalene	ND	0.63	8.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
2-Methylnaphthalene	ND	0.69	8.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Acetone	ND	2.4	20		µg/L	2	11/11/2019 7:51:02 PM	R64405
Bromobenzene	ND	0.49	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Bromodichloromethane	ND	0.27	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Bromoform	ND	0.58	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Bromomethane	ND	0.55	6.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
2-Butanone	ND	4.2	20		µg/L	2	11/11/2019 7:51:02 PM	R64405
Carbon disulfide	ND	0.91	20		µg/L	2	11/11/2019 7:51:02 PM	R64405
Carbon Tetrachloride	ND	0.28	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Chlorobenzene	ND	0.39	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Chloroethane	ND	0.36	4.0		µg/L	2	11/11/2019 7:51:02 PM	R64405

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-6-GW
Project: SWMU 13
Collection Date: 11/7/2019 9:30:00 AM
Lab ID: 1911310-002
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloroform	ND	0.24	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Chloromethane	ND	0.64	6.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
2-Chlorotoluene	ND	0.49	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
4-Chlorotoluene	ND	0.47	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
cis-1,2-DCE	ND	0.38	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
cis-1,3-Dichloropropene	ND	0.28	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Dibromochloromethane	ND	0.48	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Dibromomethane	ND	0.42	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,2-Dichlorobenzene	ND	0.59	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,3-Dichlorobenzene	ND	0.50	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,4-Dichlorobenzene	ND	0.59	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Dichlorodifluoromethane	ND	0.52	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,1-Dichloroethane	ND	0.28	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,1-Dichloroethene	ND	0.41	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,2-Dichloropropane	ND	0.42	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,3-Dichloropropane	ND	0.40	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
2,2-Dichloropropane	ND	0.47	4.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,1-Dichloropropene	ND	0.33	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Hexachlorobutadiene	ND	0.62	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
2-Hexanone	ND	3.1	20		µg/L	2	11/11/2019 7:51:02 PM	R64405
Isopropylbenzene	ND	0.38	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
4-Isopropyltoluene	ND	0.43	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
4-Methyl-2-pentanone	ND	1.4	20		µg/L	2	11/11/2019 7:51:02 PM	R64405
Methylene Chloride	ND	0.31	6.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
n-Butylbenzene	ND	0.46	6.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
n-Propylbenzene	ND	0.43	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
sec-Butylbenzene	ND	0.50	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Styrene	ND	0.38	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
tert-Butylbenzene	ND	0.41	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,1,1,2-Tetrachloroethane	ND	0.41	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,1,2,2-Tetrachloroethane	ND	1.1	4.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Tetrachloroethene (PCE)	ND	0.30	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
trans-1,2-DCE	ND	0.36	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
trans-1,3-Dichloropropene	ND	0.33	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,2,3-Trichlorobenzene	ND	0.60	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,2,4-Trichlorobenzene	ND	0.39	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,1,1-Trichloroethane	ND	0.35	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
1,1,2-Trichloroethane	ND	0.43	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Trichloroethene (TCE)	ND	0.33	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-6-GW
Project: SWMU 13
Collection Date: 11/7/2019 9:30:00 AM
Lab ID: 1911310-002
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.38	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Vinyl chloride	ND	0.36	2.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Xylenes, Total	ND	0.91	3.0		µg/L	2	11/11/2019 7:51:02 PM	R64405
Surr: 1,2-Dichloroethane-d4	91.1	0	70-130		%Rec	2	11/11/2019 7:51:02 PM	R64405
Surr: 4-Bromofluorobenzene	86.6	0	70-130		%Rec	2	11/11/2019 7:51:02 PM	R64405
Surr: Dibromofluoromethane	107	0	70-130		%Rec	2	11/11/2019 7:51:02 PM	R64405
Surr: Toluene-d8	94.2	0	70-130		%Rec	2	11/11/2019 7:51:02 PM	R64405
SM2320B: ALKALINITY							Analyst: **JRR**	
Bicarbonate (As CaCO3)	493.7	20.00	20.00		mg/L Ca	1	11/11/2019 3:28:39 PM	R64428
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	11/11/2019 3:28:39 PM	R64428
Total Alkalinity (as CaCO3)	493.7	20.00	20.00		mg/L Ca	1	11/11/2019 3:28:39 PM	R64428
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **JMT**	
Total Dissolved Solids	9450	200	200	*D	mg/L	1	11/14/2019 9:12:00 AM	48734

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-7-GW
Project: SWMU 13
Collection Date: 11/7/2019 10:20:00 AM
Lab ID: 1911310-003
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **CLP**	
Diesel Range Organics (DRO)	0.53	0.13	0.40		mg/L	1	11/12/2019 4:16:29 PM	48696
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	11/12/2019 4:16:29 PM	48696
Surr: DNOP	115	0	81.5-152		%Rec	1	11/12/2019 4:16:29 PM	48696
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.73	0.021	0.050		mg/L	1	11/13/2019 12:48:41 A	G64438
Surr: BFB	2410	0	65.8-143	S	%Rec	1	11/13/2019 12:48:41 A	G64438
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	12	0.14	0.50	*	mg/L	5	11/8/2019 3:19:03 PM	R64345
Chloride	5900	250	250	*	mg/L	500	11/11/2019 9:47:06 PM	R64409
Nitrogen, Nitrite (As N)	ND	0.11	2.0		mg/L	20	11/8/2019 3:31:28 PM	R64345
Nitrogen, Nitrate (As N)	ND	0.030	0.50		mg/L	5	11/8/2019 3:19:03 PM	R64345
Sulfate	240	0.33	2.5		mg/L	5	11/8/2019 3:19:03 PM	R64345
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **bcv**	
Barium	0.31	0.00065	0.0020		mg/L	1	11/22/2019 9:32:46 AM	A64708
Beryllium	ND	0.00028	0.0020		mg/L	1	11/22/2019 9:32:46 AM	A64708
Cadmium	ND	0.00055	0.0020		mg/L	1	11/22/2019 9:32:46 AM	A64708
Calcium	530	0.62	10		mg/L	10	11/22/2019 9:34:56 AM	A64708
Chromium	0.0024	0.0015	0.0060	J	mg/L	1	11/22/2019 9:32:46 AM	A64708
Cobalt	0.0031	0.0031	0.0060	J	mg/L	1	11/22/2019 9:32:46 AM	A64708
Iron	1.6	0.087	0.20	*	mg/L	10	11/22/2019 9:34:56 AM	A64708
Magnesium	150	0.50	10		mg/L	10	11/22/2019 9:34:56 AM	A64708
Manganese	5.9	0.0029	0.020	*	mg/L	10	11/22/2019 9:34:56 AM	A64708
Nickel	0.045	0.0040	0.010		mg/L	1	11/22/2019 9:32:46 AM	A64708
Potassium	40	0.16	1.0		mg/L	1	11/22/2019 9:32:46 AM	A64708
Silver	0.0094	0.00094	0.0050		mg/L	1	11/22/2019 9:32:46 AM	A64708
Sodium	3400	42	100		mg/L	100	11/22/2019 9:37:10 AM	A64708
Vanadium	0.0099	0.0020	0.050	J	mg/L	1	11/22/2019 9:32:46 AM	A64708
Zinc	0.014	0.0023	0.010		mg/L	1	11/22/2019 9:32:46 AM	A64708
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Barium	0.62	0.00049	0.0020		mg/L	1	11/27/2019 6:06:06 PM	48748
Beryllium	0.0025	0.00022	0.0020		mg/L	1	11/27/2019 6:06:06 PM	48748
Cadmium	ND	0.00074	0.0020		mg/L	1	11/27/2019 6:06:06 PM	48748
Chromium	0.043	0.0012	0.0060		mg/L	1	11/27/2019 6:06:06 PM	48748
Cobalt	0.0081	0.0012	0.0060		mg/L	1	11/27/2019 6:06:06 PM	48748
Iron	20	0.30	1.0	*	mg/L	50	11/27/2019 6:10:02 PM	48748
Manganese	6.3	0.00060	0.020	*	mg/L	10	11/27/2019 6:08:02 PM	48748
Nickel	0.062	0.0015	0.010		mg/L	1	11/27/2019 6:06:06 PM	48748

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-7-GW
Project: SWMU 13
Collection Date: 11/7/2019 10:20:00 AM
Lab ID: 1911310-003
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Silver	0.0064	0.0014	0.0050		mg/L	1	11/27/2019 6:06:06 PM	48748
Vanadium	0.044	0.00054	0.050	J	mg/L	1	11/27/2019 6:06:06 PM	48748
Zinc	0.028	0.0058	0.010		mg/L	1	11/27/2019 6:06:06 PM	48748
EPA 200.8: DISSOLVED METALS							Analyst: **ELS**	
Antimony	ND	0.0019	0.0050		mg/L	5	11/12/2019 1:29:49 PM	A64450
Arsenic	0.014	0.00010	0.0010	*	mg/L	1	11/12/2019 1:27:11 PM	A64450
Lead	0.00038	0.00027	0.0025	J	mg/L	5	11/12/2019 1:29:49 PM	A64450
Selenium	0.0067	0.00017	0.0010		mg/L	1	11/12/2019 1:27:11 PM	A64450
200.8 ICPMS METALS:TOTAL							Analyst: **ELS**	
Antimony	ND	0.00078	0.0050		mg/L	5	11/18/2019 2:13:15 PM	48748
Arsenic	0.022	0.0016	0.0050	*	mg/L	5	11/18/2019 2:13:15 PM	48748
Lead	0.013	0.00013	0.0025		mg/L	5	11/18/2019 2:13:15 PM	48748
Selenium	0.0076	0.0024	0.0050		mg/L	5	11/18/2019 2:13:15 PM	48748
EPA METHOD 245.1: MERCURY							Analyst: **rde**	
Mercury	ND	0.000038	0.00020		mg/L	1	11/20/2019 6:18:44 PM	48912
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	1.0	0.83	5.0	JD	µg/L	5	11/11/2019 8:19:36 PM	R64405
Toluene	ND	1.8	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Ethylbenzene	ND	0.66	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Methyl tert-butyl ether (MTBE)	ND	2.3	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,2,4-Trimethylbenzene	2.3	1.1	5.0	JD	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,3,5-Trimethylbenzene	ND	0.94	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.97	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.83	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Naphthalene	ND	1.4	10	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1-Methylnaphthalene	6.0	1.6	20	JD	µg/L	5	11/11/2019 8:19:36 PM	R64405
2-Methylnaphthalene	ND	1.7	20	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Acetone	18	6.0	50	JD	µg/L	5	11/11/2019 8:19:36 PM	R64405
Bromobenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Bromodichloromethane	ND	0.67	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Bromoform	ND	1.4	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Bromomethane	ND	1.4	15	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
2-Butanone	ND	10	50	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Carbon disulfide	ND	2.3	50	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Carbon Tetrachloride	ND	0.70	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Chlorobenzene	ND	0.97	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Chloroethane	ND	0.89	10	D	µg/L	5	11/11/2019 8:19:36 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-7-GW
Project: SWMU 13
Collection Date: 11/7/2019 10:20:00 AM
Lab ID: 1911310-003
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloroform	ND	0.61	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Chloromethane	ND	1.6	15	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
2-Chlorotoluene	ND	1.2	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
4-Chlorotoluene	ND	1.2	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
cis-1,2-DCE	ND	0.95	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
cis-1,3-Dichloropropene	ND	0.69	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Dibromochloromethane	ND	1.2	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Dibromomethane	ND	1.0	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,2-Dichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,3-Dichlorobenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,4-Dichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Dichlorodifluoromethane	ND	1.3	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,1-Dichloroethane	ND	0.70	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,1-Dichloroethene	ND	1.0	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,2-Dichloropropane	ND	1.0	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,3-Dichloropropane	ND	1.0	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
2,2-Dichloropropane	ND	1.2	10	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,1-Dichloropropene	ND	0.81	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Hexachlorobutadiene	ND	1.5	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
2-Hexanone	ND	7.7	50	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Isopropylbenzene	ND	0.96	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
4-Isopropyltoluene	ND	1.1	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
4-Methyl-2-pentanone	ND	3.6	50	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Methylene Chloride	ND	0.77	15	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
n-Butylbenzene	ND	1.1	15	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
n-Propylbenzene	ND	1.1	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
sec-Butylbenzene	ND	1.2	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Styrene	ND	0.96	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
tert-Butylbenzene	ND	1.0	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,1,1,2-Tetrachloroethane	ND	1.0	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,1,2,2-Tetrachloroethane	ND	2.7	10	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Tetrachloroethene (PCE)	ND	0.75	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
trans-1,2-DCE	ND	0.90	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
trans-1,3-Dichloropropene	ND	0.83	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,2,3-Trichlorobenzene	ND	1.5	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,2,4-Trichlorobenzene	ND	0.98	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,1,1-Trichloroethane	ND	0.86	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
1,1,2-Trichloroethane	ND	1.1	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Trichloroethene (TCE)	ND	0.83	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: SWMU 13-7-GW
Project: SWMU 13
Collection Date: 11/7/2019 10:20:00 AM
Lab ID: 1911310-003 **Matrix:** AQUEOUS **Received Date:** 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.95	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Vinyl chloride	ND	0.90	5.0	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Xylenes, Total	ND	2.3	7.5	D	µg/L	5	11/11/2019 8:19:36 PM	R64405
Surr: 1,2-Dichloroethane-d4	94.9	0	70-130	D	%Rec	5	11/11/2019 8:19:36 PM	R64405
Surr: 4-Bromofluorobenzene	99.6	0	70-130	D	%Rec	5	11/11/2019 8:19:36 PM	R64405
Surr: Dibromofluoromethane	112	0	70-130	D	%Rec	5	11/11/2019 8:19:36 PM	R64405
Surr: Toluene-d8	94.8	0	70-130	D	%Rec	5	11/11/2019 8:19:36 PM	R64405
SM2320B: ALKALINITY							Analyst: **JRR**	
Bicarbonate (As CaCO3)	1172	20.00	20.00		mg/L Ca	1	11/11/2019 3:50:27 PM	R64428
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	11/11/2019 3:50:27 PM	R64428
Total Alkalinity (as CaCO3)	1172	20.00	20.00		mg/L Ca	1	11/11/2019 3:50:27 PM	R64428
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **JMT**	
Total Dissolved Solids	11600	200	200	*D	mg/L	1	11/14/2019 9:12:00 AM	48734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: EB02
Project: SWMU 13
Collection Date: 11/7/2019 11:45:00 AM
Lab ID: 1911310-004
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **CLP**	
Diesel Range Organics (DRO)	ND	0.13	0.40		mg/L	1	11/12/2019 4:40:37 PM	48696
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	11/12/2019 4:40:37 PM	48696
Surr: DNOP	120	0	81.5-152		%Rec	1	11/12/2019 4:40:37 PM	48696
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/13/2019 1:11:25 AM	G64438
Surr: BFB	97.2	0	65.8-143		%Rec	1	11/13/2019 1:11:25 AM	G64438
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	ND	0.029	0.10		mg/L	1	11/8/2019 3:43:53 PM	R64345
Chloride	ND	0.50	0.50		mg/L	1	11/8/2019 3:43:53 PM	R64345
Nitrogen, Nitrite (As N)	ND	0.0054	0.10		mg/L	1	11/8/2019 3:43:53 PM	R64345
Nitrogen, Nitrate (As N)	ND	0.0061	0.10		mg/L	1	11/8/2019 3:43:53 PM	R64345
Sulfate	ND	0.067	0.50		mg/L	1	11/8/2019 3:43:53 PM	R64345
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **bcv**	
Barium	ND	0.00065	0.0020		mg/L	1	11/22/2019 9:39:30 AM	A64708
Beryllium	ND	0.00028	0.0020		mg/L	1	11/22/2019 9:39:30 AM	A64708
Cadmium	ND	0.00055	0.0020		mg/L	1	11/22/2019 9:39:30 AM	A64708
Calcium	ND	0.062	1.0		mg/L	1	11/22/2019 9:39:30 AM	A64708
Chromium	ND	0.0015	0.0060		mg/L	1	11/22/2019 9:39:30 AM	A64708
Cobalt	ND	0.0031	0.0060		mg/L	1	11/22/2019 9:39:30 AM	A64708
Iron	ND	0.0087	0.020		mg/L	1	11/22/2019 9:39:30 AM	A64708
Magnesium	ND	0.050	1.0		mg/L	1	11/22/2019 9:39:30 AM	A64708
Manganese	ND	0.00029	0.0020		mg/L	1	11/22/2019 9:39:30 AM	A64708
Nickel	ND	0.0040	0.010		mg/L	1	11/22/2019 9:39:30 AM	A64708
Potassium	ND	0.16	1.0		mg/L	1	11/22/2019 9:39:30 AM	A64708
Silver	ND	0.00094	0.0050		mg/L	1	11/22/2019 9:39:30 AM	A64708
Sodium	0.59	0.42	1.0	J	mg/L	1	11/22/2019 9:39:30 AM	A64708
Vanadium	ND	0.0020	0.050		mg/L	1	11/22/2019 9:39:30 AM	A64708
Zinc	0.013	0.0023	0.010		mg/L	1	11/22/2019 9:39:30 AM	A64708
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Barium	ND	0.00049	0.0020		mg/L	1	11/27/2019 6:12:12 PM	48748
Beryllium	ND	0.00022	0.0020		mg/L	1	11/27/2019 6:12:12 PM	48748
Cadmium	ND	0.00074	0.0020		mg/L	1	11/27/2019 6:12:12 PM	48748
Chromium	ND	0.0012	0.0060		mg/L	1	11/27/2019 6:12:12 PM	48748
Cobalt	ND	0.0012	0.0060		mg/L	1	11/27/2019 6:12:12 PM	48748
Iron	ND	0.0061	0.020		mg/L	1	11/27/2019 6:12:12 PM	48748
Manganese	0.00027	0.000060	0.0020	J	mg/L	1	11/27/2019 6:12:12 PM	48748
Nickel	0.0016	0.0015	0.010	J	mg/L	1	11/27/2019 6:12:12 PM	48748

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Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: EB02
Project: SWMU 13
Collection Date: 11/7/2019 11:45:00 AM
Lab ID: 1911310-004
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: **ELS**	
Silver	ND	0.0014	0.0050		mg/L	1	11/27/2019 6:12:12 PM	48748
Vanadium	ND	0.00054	0.050		mg/L	1	11/27/2019 6:12:12 PM	48748
Zinc	ND	0.0058	0.010		mg/L	1	11/27/2019 6:12:12 PM	48748
EPA 200.8: DISSOLVED METALS							Analyst: **ELS**	
Antimony	ND	0.00039	0.0010		mg/L	1	11/12/2019 1:32:27 PM	A64450
Arsenic	ND	0.00010	0.0010		mg/L	1	11/12/2019 1:32:27 PM	A64450
Lead	ND	0.000055	0.00050		mg/L	1	11/12/2019 1:32:27 PM	A64450
Selenium	ND	0.00017	0.0010		mg/L	1	11/12/2019 1:32:27 PM	A64450
200.8 ICPMS METALS:TOTAL							Analyst: **ELS**	
Antimony	ND	0.00016	0.0010		mg/L	1	11/15/2019 12:53:36 P	48748
Arsenic	ND	0.00031	0.0010		mg/L	1	11/15/2019 12:53:36 P	48748
Lead	ND	0.000026	0.00050		mg/L	1	11/15/2019 12:53:36 P	48748
Selenium	ND	0.00048	0.0010		mg/L	1	11/15/2019 12:53:36 P	48748
EPA METHOD 245.1: MERCURY							Analyst: **rde**	
Mercury	0.000049	0.000038	0.00020	J	mg/L	1	11/20/2019 6:20:57 PM	48912
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.17	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Toluene	ND	0.35	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Ethylbenzene	ND	0.13	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Naphthalene	ND	0.28	2.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Acetone	ND	1.2	10		µg/L	1	11/11/2019 8:48:09 PM	R64405
Bromobenzene	ND	0.24	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Bromodichloromethane	ND	0.13	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Bromoform	ND	0.29	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Bromomethane	ND	0.27	3.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
2-Butanone	ND	2.1	10		µg/L	1	11/11/2019 8:48:09 PM	R64405
Carbon disulfide	ND	0.45	10		µg/L	1	11/11/2019 8:48:09 PM	R64405
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Chlorobenzene	ND	0.19	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Chloroethane	ND	0.18	2.0		µg/L	1	11/11/2019 8:48:09 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: EB02
Project: SWMU 13
Collection Date: 11/7/2019 11:45:00 AM
Lab ID: 1911310-004
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloroform	ND	0.12	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Chloromethane	ND	0.32	3.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Dibromochloromethane	ND	0.24	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Dibromomethane	ND	0.21	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
2-Hexanone	ND	1.5	10		µg/L	1	11/11/2019 8:48:09 PM	R64405
Isopropylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	11/11/2019 8:48:09 PM	R64405
Methylene Chloride	ND	0.15	3.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
n-Butylbenzene	ND	0.23	3.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
n-Propylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Styrene	ND	0.19	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: EB02
Project: SWMU 13
Collection Date: 11/7/2019 11:45:00 AM
Lab ID: 1911310-004
Matrix: AQUEOUS
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Vinyl chloride	ND	0.18	1.0		µg/L	1	11/11/2019 8:48:09 PM	R64405
Xylenes, Total	ND	0.45	1.5		µg/L	1	11/11/2019 8:48:09 PM	R64405
Surr: 1,2-Dichloroethane-d4	93.6	0	70-130		%Rec	1	11/11/2019 8:48:09 PM	R64405
Surr: 4-Bromofluorobenzene	87.8	0	70-130		%Rec	1	11/11/2019 8:48:09 PM	R64405
Surr: Dibromofluoromethane	108	0	70-130		%Rec	1	11/11/2019 8:48:09 PM	R64405
Surr: Toluene-d8	97.3	0	70-130		%Rec	1	11/11/2019 8:48:09 PM	R64405
SM2320B: ALKALINITY							Analyst: **JRR**	
Bicarbonate (As CaCO3)	ND	20.00	20.00		mg/L Ca	1	11/11/2019 4:32:47 PM	R64428
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	11/11/2019 4:32:47 PM	R64428
Total Alkalinity (as CaCO3)	ND	20.00	20.00		mg/L Ca	1	11/11/2019 4:32:47 PM	R64428
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **JMT**	
Total Dissolved Solids	ND	20.0	20.0		mg/L	1	11/14/2019 9:12:00 AM	48734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: Trip Blank-1
Project: SWMU 13
Collection Date:
Lab ID: 1911310-005
Matrix: TRIP BLANK
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/13/2019 1:34:10 AM	G64438
Surr: BFB	96.9	0	65.8-143		%Rec	1	11/13/2019 1:34:10 AM	G64438
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.17	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Toluene	ND	0.35	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Ethylbenzene	ND	0.13	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Naphthalene	ND	0.28	2.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Acetone	ND	1.2	10		µg/L	1	11/11/2019 9:16:41 PM	R64405
Bromobenzene	ND	0.24	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Bromodichloromethane	ND	0.13	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Bromoform	ND	0.29	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Bromomethane	ND	0.27	3.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
2-Butanone	ND	2.1	10		µg/L	1	11/11/2019 9:16:41 PM	R64405
Carbon disulfide	ND	0.45	10		µg/L	1	11/11/2019 9:16:41 PM	R64405
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Chlorobenzene	ND	0.19	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Chloroethane	ND	0.18	2.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Chloroform	ND	0.12	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Chloromethane	ND	0.32	3.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Dibromochloromethane	ND	0.24	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Dibromomethane	ND	0.21	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: Trip Blank-1
Project: SWMU 13
Collection Date:
Lab ID: 1911310-005
Matrix: TRIP BLANK
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
2-Hexanone	ND	1.5	10		µg/L	1	11/11/2019 9:16:41 PM	R64405
Isopropylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	11/11/2019 9:16:41 PM	R64405
Methylene Chloride	ND	0.15	3.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
n-Butylbenzene	ND	0.23	3.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
n-Propylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Styrene	ND	0.19	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Vinyl chloride	ND	0.18	1.0		µg/L	1	11/11/2019 9:16:41 PM	R64405
Xylenes, Total	ND	0.45	1.5		µg/L	1	11/11/2019 9:16:41 PM	R64405
Surr: 1,2-Dichloroethane-d4	90.7	0	70-130		%Rec	1	11/11/2019 9:16:41 PM	R64405
Surr: 4-Bromofluorobenzene	88.9	0	70-130		%Rec	1	11/11/2019 9:16:41 PM	R64405
Surr: Dibromofluoromethane	109	0	70-130		%Rec	1	11/11/2019 9:16:41 PM	R64405
Surr: Toluene-d8	96.0	0	70-130		%Rec	1	11/11/2019 9:16:41 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: Trip Blank-2
Project: SWMU 13
Collection Date:
Lab ID: 1911310-006
Matrix: TRIP BLANK
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.021	0.050		mg/L	1	11/13/2019 1:56:49 AM	G64438
Surr: BFB	96.9	0	65.8-143		%Rec	1	11/13/2019 1:56:49 AM	G64438
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.17	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Toluene	ND	0.35	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Ethylbenzene	ND	0.13	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,2,4-Trimethylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,3,5-Trimethylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,2-Dibromoethane (EDB)	ND	0.17	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Naphthalene	ND	0.28	2.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1-Methylnaphthalene	ND	0.31	4.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Acetone	ND	1.2	10		µg/L	1	11/11/2019 9:45:16 PM	R64405
Bromobenzene	ND	0.24	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Bromodichloromethane	ND	0.13	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Bromoform	ND	0.29	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Bromomethane	ND	0.27	3.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
2-Butanone	ND	2.1	10		µg/L	1	11/11/2019 9:45:16 PM	R64405
Carbon disulfide	ND	0.45	10		µg/L	1	11/11/2019 9:45:16 PM	R64405
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Chlorobenzene	ND	0.19	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Chloroethane	ND	0.18	2.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Chloroform	ND	0.12	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Chloromethane	ND	0.32	3.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
4-Chlorotoluene	ND	0.23	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
cis-1,2-DCE	ND	0.19	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
cis-1,3-Dichloropropene	ND	0.14	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Dibromochloromethane	ND	0.24	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Dibromomethane	ND	0.21	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,2-Dichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,3-Dichlorobenzene	ND	0.25	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,1-Dichloroethane	ND	0.14	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,1-Dichloroethene	ND	0.21	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,2-Dichloropropane	ND	0.21	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Petroleum
Client Sample ID: Trip Blank-2
Project: SWMU 13
Collection Date:
Lab ID: 1911310-006
Matrix: TRIP BLANK
Received Date: 11/7/2019 2:58:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
1,3-Dichloropropane	ND	0.20	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Hexachlorobutadiene	ND	0.31	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
2-Hexanone	ND	1.5	10		µg/L	1	11/11/2019 9:45:16 PM	R64405
Isopropylbenzene	ND	0.19	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
4-Isopropyltoluene	ND	0.22	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	11/11/2019 9:45:16 PM	R64405
Methylene Chloride	ND	0.15	3.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
n-Butylbenzene	ND	0.23	3.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
n-Propylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
sec-Butylbenzene	ND	0.25	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Styrene	ND	0.19	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
tert-Butylbenzene	ND	0.21	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,1,1,2-Tetrachloroethane	ND	0.21	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,1,2,2-Tetrachloroethane	ND	0.55	2.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
trans-1,3-Dichloropropene	ND	0.17	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,2,3-Trichlorobenzene	ND	0.30	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,2,4-Trichlorobenzene	ND	0.20	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,1,1-Trichloroethane	ND	0.17	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
1,1,2-Trichloroethane	ND	0.22	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Trichloroethene (TCE)	ND	0.17	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Trichlorofluoromethane	ND	0.19	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Vinyl chloride	ND	0.18	1.0		µg/L	1	11/11/2019 9:45:16 PM	R64405
Xylenes, Total	ND	0.45	1.5		µg/L	1	11/11/2019 9:45:16 PM	R64405
Surr: 1,2-Dichloroethane-d4	91.5	0	70-130		%Rec	1	11/11/2019 9:45:16 PM	R64405
Surr: 4-Bromofluorobenzene	90.5	0	70-130		%Rec	1	11/11/2019 9:45:16 PM	R64405
Surr: Dibromofluoromethane	108	0	70-130		%Rec	1	11/11/2019 9:45:16 PM	R64405
Surr: Toluene-d8	97.1	0	70-130		%Rec	1	11/11/2019 9:45:16 PM	R64405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	191112049
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1911310
Attn:	ANDY FREEMAN		

Project Summary

The samples listed on the following page(s) were received for analysis at Anatek Labs, Inc. The analytical report is attached. All test results reported below comply with and meet current TNI standards, other applicable regulatory standards, and the Anatek Labs, Inc. Quality Assurance Manual, unless otherwise noted in the report.

The results in this report relate only to the samples analyzed. All soil and solid results are reported on a dry-weight basis unless otherwise noted. An estimation of uncertainty is available upon request.

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For questions about this report, please contact Justin Doty at 208-883-2839.

Authorized Signature

Todd Taruscio, Lab Manager

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Project Summary

Sample Summary

Anatek Sample ID	Client Sample ID	Matrix	Collection Date/Time	Received Date/Time
191112049-001	1911310-001F / SWMU 13-5-GW	Water	11/7/2019 8:15 AM	11/12/2019 2:43 PM
191112049-002	1911310-001G / SWMU 13-5-GW	Water	11/7/2019 8:15 AM	11/12/2019 2:43 PM
191112049-003	1911310-002F / SWMU 13-6-GW	Water	11/7/2019 9:30 AM	11/12/2019 2:43 PM
191112049-004	1911310-002G / SWMU 13-6-GW	Water	11/7/2019 9:30 AM	11/12/2019 2:43 PM
191112049-005	1911310-003F / SWMU 13-7-GW	Water	11/7/2019 10:20 AM	11/12/2019 2:43 PM
191112049-006	1911310-003G / SWMU 13-7-GW	Water	11/7/2019 10:20 AM	11/12/2019 2:43 PM
191112049-007	1911310-004F / EB02	Water	11/7/2019 11:45 AM	11/12/2019 2:43 PM
191112049-008	1911310-004G / EB02	Water	11/7/2019 11:45 AM	11/12/2019 2:43 PM

QA/QC Summary

QC Parameter	Yes / No (if No, see Comments below)
1. Sample Holding Time Valid?	Yes
2. Instrument Tunes Valid?	Yes
3. Method Blank(s) Valid?	Yes
4. Internal Standard Response(s) Valid?	No
5. Initial Calibration Curve(s) Valid?	Yes
6. Continuing Calibration(s) Valid?	Yes
7. Surrogate Recoveries Valid?	No
8. QC Sample Recoveries Valid?	Yes

Comments:

One of the four SVOC samples had low internal standard response and was qualified - Surrogate recovery was above laboratory and method acceptance limits (potential chemist error thus data for this analyte is suspect).

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-001 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2019 2:43 PM
Client Sample ID 1911310-001F / SWMU 13-5-GW **Sampling Time** 8:15 AM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	0.0325	mg/L	0.01	11/15/2019 1:00:00 PM	BKP	EPA 335.4	

Sample Number 191112049-003 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2019 2:43 PM
Client Sample ID 1911310-002F / SWMU 13-6-GW **Sampling Time** 9:30 AM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	0.0203	mg/L	0.01	11/15/2019 1:00:00 PM	BKP	EPA 335.4	

Sample Number 191112049-005 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2019 2:43 PM
Client Sample ID 1911310-003F / SWMU 13-7-GW **Sampling Time** 10:20 AM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	0.0203	mg/L	0.01	11/15/2019 1:00:00 PM	BKP	EPA 335.4	

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	191112049
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1911310
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	191112049-007	**Sampling Date**	11/7/2019	**Date/Time Received**	11/12/2019 2:43 PM
Client Sample ID	1911310-004F / EB02			**Sampling Time**	11:45 AM
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	11/21/2019 9:00:00 AM	BKP	EPA 335.4	

Authorized Signature

Todd Taruscio, Lab Manager

MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

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Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Cyanide	0.528	mg/L	0.5	105.6	90-110	11/20/2019	11/21/2019
Cyanide	0.516	mg/L	0.5	103.2	90-110	11/15/2019	11/15/2019

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
191112049-007	Cyanide	ND	0.517	mg/L	0.5	103.4	80-120	11/20/2019	11/21/2019
191114010-003	Cyanide	ND	0.527	mg/L	0.5	105.4	80-120	11/15/2019	11/15/2019

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Cyanide	0.520	mg/L	0.5	104.0	0.6	0-20	11/20/2019	11/21/2019
Cyanide	0.530	mg/L	0.5	106.0	0.6	0-20	11/15/2019	11/15/2019

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide	ND	mg/L	0.01	11/20/2019	11/21/2019
Cyanide	ND	mg/L	0.01	11/15/2019	11/15/2019

AR Acceptable Range
ND Not Detected
PQL Practical Quantitation Limit
RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	191112049
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1911310
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	191112049-002	**Sampling Date**	11/7/2019	**Date/Time Received**	11/12/2012:43 PM
Client Sample ID	1911310-001G / SWMU 13-5-GW			**Extraction Date**	11/14/2019
Matrix	Water	**Sampling Time**	8:15 AM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Dibenz[a,h]anthracene	ND	ug/L	0.025	12/9/2019 11:37:00 PM	TGT	EPA 8270D	
1,4-Dioxane	6.05	ug/L	1	12/3/2019 11:35:00 PM	TGT	EPA 8270D	
Benzoic acid	ND	ug/L	1	12/3/2019 11:35:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191112049-002

Surrogate Standard	Method	Percent Recovery	Control Limits
1,4-Dioxane-d8	EPA 8270D	58.3	39-111
Terphenyl-d14	EPA 8270D	90.4	22-133

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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-004 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2012:43 PM
Client Sample ID 1911310-002G / SWMU 13-6-GW **Extraction Date** 11/14/2019
Matrix Water **Sampling Time** 9:30 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Dibenz[a,h]anthracene	ND	ug/L	0.025	12/10/2019 12:01:00 AM	TGT	EPA 8270D	
1,4-Dioxane	3.88	ug/L	1	12/3/2019 11:58:00 PM	TGT	EPA 8270D	
Benzoic acid	ND	ug/L	1	12/3/2019 11:58:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191112049-004

Surrogate Standard	Method	Percent Recovery	Control Limits
1,4-Dioxane-d8	EPA 8270D	74.7	39-111
Terphenyl-d14	EPA 8270D	87.6	22-133

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	191112049
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1911310
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	191112049-006	**Sampling Date**	11/7/2019	**Date/Time Received**	11/12/2012:43 PM
Client Sample ID	1911310-003G / SWMU 13-7-GW			**Extraction Date**	11/14/2019
Matrix	Water	**Sampling Time**	10:20 AM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Dibenz[a,h]anthracene	ND	ug/L	0.025	12/10/2019 2:18:00 AM	TGT	EPA 8270D	
1,4-Dioxane	11.9	ug/L	1	12/4/2019 1:31:00 AM	TGT	EPA 8270D	
Benzoic acid	ND	ug/L	1	12/4/2019 1:31:00 AM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191112049-006

Surrogate Standard	Method	Percent Recovery	Control Limits
1,4-Dioxane-d8	EPA 8270D	85.5	39-111
Terphenyl-d14	EPA 8270D	119.6	22-133

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	191112049
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1911310
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	191112049-008	**Sampling Date**	11/7/2019	**Date/Time Received**	11/12/2012:43 PM
Client Sample ID	1911310-004G / EB02			**Extraction Date**	11/14/2019
Matrix	Water	**Sampling Time**	11:45 AM		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Dibenz[a,h]anthracene	ND	ug/L	0.025	12/10/2019 12:23:00 AM	TGT	EPA 8270D	
1,4-Dioxane	ND	ug/L	1	12/4/2019 12:45:00 AM	TGT	EPA 8270D	
Benzoic acid	ND	ug/L	1	12/4/2019 12:45:00 AM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191112049-008

Surrogate Standard	Method	Percent Recovery	Control Limits
1,4-Dioxane-d8	EPA 8270D	62.0	39-111
Terphenyl-d14	EPA 8270D	94.4	22-133

Authorized Signature

Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Dibenz[a,h]anthracene	5.29	ug/L	5	105.8	52-140	11/14/2019	12/9/2019
1,4-Dioxane	7.15	ug/L	10	71.5	45-135	11/14/2019	11/18/2019

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Dibenz[a,h]anthracene	5.49	ug/L	5	109.8	3.7	0-20	11/14/2019	12/9/2019
1,4-Dioxane	5.97	ug/L	10	59.7	18.0	0-25	11/14/2019	11/18/2019

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
1,4-Dioxane	ND	ug/L	0.5	11/14/2019	11/18/2019
Benzoic acid	ND	ug/L	0.5	11/14/2019	11/18/2019
Dibenz[a,h]anthracene	ND	ug/L	0.01	11/14/2019	12/9/2019

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-002 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2012:43 PM
Client Sample ID 1911310-001G / SWMU 13-5-GW **Extraction Date** 11/14/2019
Matrix Water **Sampling Time** 8:15 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.2	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-002 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2012:43 PM
Client Sample ID 1911310-001G / SWMU 13-5-GW **Extraction Date** 11/14/2019
Matrix Water **Sampling Time** 8:15 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Acenaphthene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Acenaphthylene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Aniline	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.1	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.1	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.1	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Butylbenzylphthalate	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-002 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2012:43 PM
Client Sample ID 1911310-001G / SWMU 13-5-GW **Extraction Date** 11/14/2019
Matrix Water **Sampling Time** 8:15 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.2	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Isophorone	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Phenol	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/9/2019 8:41:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191112049-002

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	107.4	43-120
2-Fluorobiphenyl	EPA 8270D	110.0	55-127
2-Fluorophenol	EPA 8270D	78.6	41-119
Nitrobenzene-d5	EPA 8270D	84.0	55-120
Phenol-d5	EPA 8270D	81.2	52-115
Terphenyl-d14	EPA 8270D	86.4	22-135

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-004 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2012:43 PM
Client Sample ID 1911310-002G / SWMU 13-6-GW **Extraction Date** 11/14/2019
Matrix Water **Sampling Time** 9:30 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.2	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-004 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2012:43 PM
Client Sample ID 1911310-002G / SWMU 13-6-GW **Extraction Date** 11/14/2019
Matrix Water **Sampling Time** 9:30 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Acenaphthylene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Aniline	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.1	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.1	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.1	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Butylbenzylphthalate	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.2	12/9/2019 9:08:00 PM	TGT	EPA 8270D	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-004 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2012:43 PM
Client Sample ID 1911310-002G / SWMU 13-6-GW **Extraction Date** 11/14/2019
Matrix Water **Sampling Time** 9:30 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Isophorone	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Phenol	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/9/2019 9:08:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191112049-004

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	101.2	43-120
2-Fluorobiphenyl	EPA 8270D	118.0	55-127
2-Fluorophenol	EPA 8270D	91.6	41-119
Nitrobenzene-d5	EPA 8270D	92.4	55-120
Phenol-d5	EPA 8270D	92.0	52-115
Terphenyl-d14	EPA 8270D	82.8	22-135

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-006 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2012:43 PM
Client Sample ID 1911310-003G / SWMU 13-7-GW **Extraction Date** 11/14/2019
Matrix Water **Sampling Time** 10:20 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
1,2-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
1,3-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
1,4-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
1-Methylnaphthalene	3.26	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2,4-Dichlorophenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2,4-Dimethylphenol	1.47	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2,4-Dinitrophenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2,4-Dinitrotoluene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2,6-Dinitrotoluene	ND	ug/L	0.2	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2-Chloronaphthalene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2-Chlorophenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2-Methylnaphthalene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2-Methylphenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2-Nitroaniline	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
2-Nitrophenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
3+4-Methylphenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
3-Nitroaniline	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
4-Nitroaniline	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
4-Nitrophenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Acenaphthene	0.97	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-006 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2012:43 PM
Client Sample ID 1911310-003G / SWMU 13-7-GW **Extraction Date** 11/14/2019
Matrix Water **Sampling Time** 10:20 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Acenaphthylene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Aniline	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Anthracene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Benzo(ghi)perylene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Benzo[a]anthracene	ND	ug/L	0.1	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Benzo[a]pyrene	ND	ug/L	0.1	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Benzo[b]fluoranthene	ND	ug/L	0.1	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Benzo[k]fluoranthene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Benzyl alcohol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Butylbenzylphthalate	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Carbazole	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Chrysene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Dibenzofuran	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Diethylphthalate	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Dimethylphthalate	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Di-n-butylphthalate	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Di-n-octylphthalate	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Fluoranthene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Fluorene	0.50	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Hexachlorobenzene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Hexachlorobutadiene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Hexachloroethane	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.2	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-006 **Sampling Date** 11/7/2019 **Date/Time Received** 11/12/2012:43 PM
Client Sample ID 1911310-003G / SWMU 13-7-GW **Extraction Date** 11/14/2019
Matrix Water **Sampling Time** 10:20 AM
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Isophorone	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Naphthalene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Nitrobenzene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Pentachlorophenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Phenanthrene	0.38	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20 . J
Phenol	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Pyrene	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20
Pyridine	ND	ug/L	0.5	12/9/2019 10:56:00 PM	TGT	EPA 8270D	S20

Surrogate Data

Sample Number 191112049-006

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	144.6	43-120
2-Fluorobiphenyl	EPA 8270D	158.8	55-127
2-Fluorophenol	EPA 8270D	110.4	41-119
Nitrobenzene-d5	EPA 8270D	116.8	55-120
Phenol-d5	EPA 8270D	108.4	52-115
Terphenyl-d14	EPA 8270D	111.2	22-135

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-008
Client Sample ID 1911310-004G / EB02
Matrix Water
Comments

Sampling Date 11/7/2019
Sampling Time 11:45 AM

Date/Time Received 11/12/2012:43 PM
Extraction Date 11/14/2019

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.2	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-008
Client Sample ID 1911310-004G / EB02
Matrix Water
Comments

Sampling Date 11/7/2019
Sampling Time 11:45 AM

Date/Time Received 11/12/2012:43 PM
Extraction Date 11/14/2019

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Acenaphthylene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Aniline	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.1	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.1	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.1	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Benzyl alcohol	1.51	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Butylbenzylphthalate	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.2	12/9/2019 9:35:00 PM	TGT	EPA 8270D	

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Address: 4901 HAWKINS NE SUITE D
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Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Sample Number 191112049-008
Client Sample ID 1911310-004G / EB02
Matrix Water
Comments

Sampling Date 11/7/2019
Sampling Time 11:45 AM

Date/Time Received 11/12/2012:43 PM
Extraction Date 11/14/2019

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Isophorone	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Phenol	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/9/2019 9:35:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number 191112049-008

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	100.2	43-120
2-Fluorobiphenyl	EPA 8270D	120.4	55-127
2-Fluorophenol	EPA 8270D	85.8	41-119
Nitrobenzene-d5	EPA 8270D	94.0	55-120
Phenol-d5	EPA 8270D	90.4	52-115
Terphenyl-d14	EPA 8270D	84.0	22-135

Authorized Signature

Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit
S20 Surrogate recovery was above laboratory and method acceptance limits. Potential chemist error thus data for this anayte is suspect.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Pyrene	5.66	ug/L	5	113.2	45-139	11/14/2019	12/2/2019
Phenol	4.39	ug/L	5	87.8	45-134	11/14/2019	12/2/2019
Pentachlorophenol	4.64	ug/L	5	92.8	22-138	11/14/2019	12/2/2019
Naphthalene	4.23	ug/L	5	84.6	53-120	11/14/2019	12/2/2019
bis(2-Ethylhexyl)phthalate	5.64	ug/L	5	112.8	51-149	11/14/2019	12/2/2019
Benzo[a]pyrene	5.07	ug/L	5	101.4	63-120	11/14/2019	12/2/2019
Acenaphthene	4.74	ug/L	5	94.8	45-129	11/14/2019	12/2/2019
4-Nitrophenol	4.19	ug/L	5	83.8	19-141	11/14/2019	12/2/2019
4-Chloro-3-methylphenol	4.69	ug/L	5	93.8	42-139	11/14/2019	12/2/2019
2-Methylnaphthalene	4.18	ug/L	5	83.6	56-128	11/14/2019	12/2/2019
2-Chlorophenol	4.16	ug/L	5	83.2	50-131	11/14/2019	12/2/2019
2,4-Dinitrotoluene	5.00	ug/L	5	100.0	42-143	11/14/2019	12/2/2019
1-Methylnaphthalene	4.19	ug/L	5	83.8	57-124	11/14/2019	12/2/2019
1,4-Dichlorobenzene	3.43	ug/L	5	68.6	28-108	11/14/2019	12/2/2019
1,2,4-Trichlorobenzene	3.67	ug/L	5	73.4	33-109	11/14/2019	12/2/2019

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Pyrene	5.78	ug/L	5	115.6	2.1	0-20	11/14/2019	12/2/2019
Phenol	4.40	ug/L	5	88.0	0.2	0-25	11/14/2019	12/2/2019
Pentachlorophenol	4.43	ug/L	5	88.6	4.6	0-39	11/14/2019	12/2/2019
Naphthalene	4.31	ug/L	5	86.2	1.9	0-20	11/14/2019	12/2/2019
bis(2-Ethylhexyl)phthalate	5.95	ug/L	5	119.0	5.3	0-43	11/14/2019	12/2/2019
Benzo[a]pyrene	4.91	ug/L	5	98.2	3.2	0-20	11/14/2019	12/2/2019
Acenaphthene	4.84	ug/L	5	96.8	2.1	0-22	11/14/2019	12/2/2019
4-Nitrophenol	3.63	ug/L	5	72.6	14.3	0-51	11/14/2019	12/2/2019
4-Chloro-3-methylphenol	4.50	ug/L	5	90.0	4.1	0-20	11/14/2019	12/2/2019
2-Methylnaphthalene	4.19	ug/L	5	83.8	0.2	0-24	11/14/2019	12/2/2019
2-Chlorophenol	4.24	ug/L	5	84.8	1.9	0-24	11/14/2019	12/2/2019
2,4-Dinitrotoluene	4.87	ug/L	5	97.4	2.6	0-20	11/14/2019	12/2/2019
1-Methylnaphthalene	4.23	ug/L	5	84.6	1.0	0-20	11/14/2019	12/2/2019
1,4-Dichlorobenzene	3.50	ug/L	5	70.0	2.0	0-31	11/14/2019	12/2/2019
1,2,4-Trichlorobenzene	3.77	ug/L	5	75.4	2.7	0-33	11/14/2019	12/2/2019

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Quality Control Data

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
1,2,4-Trichlorobenzene	ND	ug/L	0.5	11/14/2019	12/2/2019
1,2-Dichlorobenzene	ND	ug/L	0.5	11/14/2019	12/2/2019
1,3-Dichlorobenzene	ND	ug/L	0.5	11/14/2019	12/2/2019
1,4-Dichlorobenzene	ND	ug/L	0.5	11/14/2019	12/2/2019
1-Methylnaphthalene	ND	ug/L	0.5	11/14/2019	12/2/2019
2,4,5-Trichlorophenol	ND	ug/L	0.5	11/14/2019	12/2/2019
2,4,6-Trichlorophenol	ND	ug/L	0.5	11/14/2019	12/2/2019
2,4-Dichlorophenol	ND	ug/L	0.5	11/14/2019	12/2/2019
2,4-Dimethylphenol	ND	ug/L	0.5	11/14/2019	12/2/2019
2,4-Dinitrophenol	ND	ug/L	0.5	11/14/2019	12/2/2019
2,4-Dinitrotoluene	ND	ug/L	0.5	11/14/2019	12/2/2019
2,6-Dinitrotoluene	ND	ug/L	0.5	11/14/2019	12/2/2019
2-Chloronaphthalene	ND	ug/L	0.5	11/14/2019	12/2/2019
2-Chlorophenol	ND	ug/L	0.5	11/14/2019	12/2/2019
2-Methylnaphthalene	ND	ug/L	0.5	11/14/2019	12/2/2019
2-Methylphenol	ND	ug/L	0.5	11/14/2019	12/2/2019
2-Nitroaniline	ND	ug/L	0.5	11/14/2019	12/2/2019
2-Nitrophenol	ND	ug/L	0.5	11/14/2019	12/2/2019
3,3'-Dichlorobenzidine	ND	ug/L	0.5	11/14/2019	12/2/2019
3+4-Methylphenol	ND	ug/L	0.5	11/14/2019	12/2/2019
3-Nitroaniline	ND	ug/L	0.5	11/14/2019	12/2/2019
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	11/14/2019	12/2/2019
4-Bromophenyl-phenylether	ND	ug/L	0.5	11/14/2019	12/2/2019
4-Chloro-3-methylphenol	ND	ug/L	0.5	11/14/2019	12/2/2019
4-Chlorophenyl-phenylether	ND	ug/L	0.5	11/14/2019	12/2/2019
4-Nitroaniline	ND	ug/L	0.5	11/14/2019	12/2/2019
4-Nitrophenol	ND	ug/L	0.5	11/14/2019	12/2/2019
Acenaphthene	ND	ug/L	0.5	11/14/2019	12/2/2019
Acenaphthylene	ND	ug/L	0.5	11/14/2019	12/2/2019
Aniline	ND	ug/L	0.5	11/14/2019	12/2/2019
Anthracene	ND	ug/L	0.5	11/14/2019	12/2/2019
Benzo(ghi)perylene	ND	ug/L	0.5	11/14/2019	12/2/2019
Benzo[a]anthracene	ND	ug/L	0.5	11/14/2019	12/2/2019
Benzo[a]pyrene	ND	ug/L	0.5	11/14/2019	12/2/2019
Benzo[b]fluoranthene	ND	ug/L	0.5	11/14/2019	12/2/2019
Benzo[k]fluoranthene	ND	ug/L	0.5	11/14/2019	12/2/2019
Benzyl alcohol	ND	ug/L	0.5	11/14/2019	12/2/2019

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Address: 4901 HAWKINS NE SUITE D
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Attn: ANDY FREEMAN

Batch #: 191112049
Project Name: 1911310

Analytical Results Report

Quality Control Data

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	11/14/2019	12/2/2019
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	11/14/2019	12/2/2019
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	11/14/2019	12/2/2019
Butylbenzylphthalate	ND	ug/L	0.5	11/14/2019	12/2/2019
Carbazole	ND	ug/L	0.5	11/14/2019	12/2/2019
Chrysene	ND	ug/L	0.5	11/14/2019	12/2/2019
Dibenz[a,h]anthracene	ND	ug/L	0.5	11/14/2019	12/2/2019
Dibenzofuran	ND	ug/L	0.5	11/14/2019	12/2/2019
Diethylphthalate	ND	ug/L	0.5	11/14/2019	12/2/2019
Dimethylphthalate	ND	ug/L	0.5	11/14/2019	12/2/2019
Di-n-butylphthalate	ND	ug/L	0.5	11/14/2019	12/2/2019
Di-n-octylphthalate	ND	ug/L	0.5	11/14/2019	12/2/2019
Fluoranthene	ND	ug/L	0.5	11/14/2019	12/2/2019
Fluorene	ND	ug/L	0.5	11/14/2019	12/2/2019
Hexachlorobenzene	ND	ug/L	0.5	11/14/2019	12/2/2019
Hexachlorobutadiene	ND	ug/L	0.5	11/14/2019	12/2/2019
Hexachlorocyclopentadiene	ND	ug/L	0.5	11/14/2019	12/2/2019
Hexachloroethane	ND	ug/L	0.5	11/14/2019	12/2/2019
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	11/14/2019	12/2/2019
Isophorone	ND	ug/L	0.5	11/14/2019	12/2/2019
Naphthalene	ND	ug/L	0.5	11/14/2019	12/2/2019
Nitrobenzene	ND	ug/L	0.5	11/14/2019	12/2/2019
n-Nitrosodiphenylamine	ND	ug/L	0.5	11/14/2019	12/2/2019
Pentachlorophenol	ND	ug/L	0.5	11/14/2019	12/2/2019
Phenanthrene	ND	ug/L	0.5	11/14/2019	12/2/2019
Phenol	ND	ug/L	0.5	11/14/2019	12/2/2019
Pyrene	ND	ug/L	0.5	11/14/2019	12/2/2019
Pyridine	ND	ug/L	0.5	11/14/2019	12/2/2019

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **MB-A** SampType: **MBLK** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW** Batch ID: **A64708** RunNo: **64708**
Prep Date: Analysis Date: **11/22/2019** SeqNo: **2217285** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Silver	ND	0.0050								
Sodium	ND	1.0								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: **LLLCS-A** SampType: **LCSLL** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC** Batch ID: **A64708** RunNo: **64708**
Prep Date: Analysis Date: **11/22/2019** SeqNo: **2217286** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0021	0.0020	0.002000	0	104	50	150			
Beryllium	0.0018	0.0020	0.002000	0	90.2	50	150			J
Cadmium	0.0022	0.0020	0.002000	0	109	50	150			
Calcium	0.55	1.0	0.5000	0	110	50	150			J
Chromium	0.0068	0.0060	0.006000	0	113	50	150			
Cobalt	0.0063	0.0060	0.006000	0	105	50	150			
Iron	0.021	0.020	0.02000	0	104	50	150			
Magnesium	0.52	1.0	0.5000	0	105	50	150			J
Manganese	0.0020	0.0020	0.002000	0	102	50	150			
Nickel	0.0066	0.010	0.005000	0	132	50	150			J
Potassium	0.52	1.0	0.5000	0	104	50	150			J
Silver	0.0039	0.0050	0.005000	0	78.7	50	150			J
Sodium	0.63	1.0	0.5000	0	127	50	150			J
Vanadium	0.0094	0.050	0.01000	0	93.6	50	150			J
Zinc	0.011	0.010	0.01000	0	111	50	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **LCS-A** SampType: **LCS** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW** Batch ID: **A64708** RunNo: **64708**
Prep Date: Analysis Date: **11/22/2019** SeqNo: **2217287** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0020	0.5000	0	101	85	115			
Beryllium	0.51	0.0020	0.5000	0	102	85	115			
Cadmium	0.51	0.0020	0.5000	0	102	85	115			
Calcium	52	1.0	50.00	0	103	85	115			
Chromium	0.50	0.0060	0.5000	0	99.7	85	115			
Cobalt	0.49	0.0060	0.5000	0	97.8	85	115			
Iron	0.50	0.020	0.5000	0	101	85	115			
Magnesium	50	1.0	50.00	0	101	85	115			
Manganese	0.50	0.0020	0.5000	0	100	85	115			
Nickel	0.50	0.010	0.5000	0	99.4	85	115			
Potassium	50	1.0	50.00	0	99.3	85	115			
Silver	0.11	0.0050	0.1000	0	105	85	115			
Sodium	49	1.0	50.00	0	97.4	85	115			
Vanadium	0.51	0.050	0.5000	0	102	85	115			
Zinc	0.50	0.010	0.5000	0	99.5	85	115			

Sample ID: **1911310-004DMS** SampType: **MS** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **EB02** Batch ID: **A64708** RunNo: **64708**
Prep Date: Analysis Date: **11/22/2019** SeqNo: **2217304** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.0020	0.5000	0	103	70	130			
Beryllium	0.52	0.0020	0.5000	0	104	70	130			
Cadmium	0.52	0.0020	0.5000	0	104	70	130			
Calcium	52	1.0	50.00	0	104	70	130			
Chromium	0.50	0.0060	0.5000	0	100	70	130			
Cobalt	0.50	0.0060	0.5000	0	101	70	130			
Iron	0.50	0.020	0.5000	0	99.4	70	130			
Magnesium	49	1.0	50.00	0	98.6	70	130			
Manganese	0.50	0.0020	0.5000	0	101	70	130			
Nickel	0.51	0.010	0.5000	0	103	70	130			
Potassium	49	1.0	50.00	0	98.0	70	130			
Silver	0.11	0.0050	0.1000	0	105	70	130			
Sodium	48	1.0	50.00	0.5944	95.4	70	130			
Vanadium	0.51	0.050	0.5000	0	103	70	130			
Zinc	0.53	0.010	0.5000	0.01337	103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **1911310-004DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **EB02** Batch ID: **A64708** RunNo: **64708**
Prep Date: Analysis Date: **11/22/2019** SeqNo: **2217305** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.0020	0.5000	0	104	70	130	0.470	20	
Beryllium	0.53	0.0020	0.5000	0	106	70	130	1.47	20	
Cadmium	0.52	0.0020	0.5000	0	105	70	130	0.342	20	
Calcium	52	1.0	50.00	0	105	70	130	0.441	20	
Chromium	0.50	0.0060	0.5000	0	101	70	130	0.371	20	
Cobalt	0.50	0.0060	0.5000	0	101	70	130	0.362	20	
Iron	0.51	0.020	0.5000	0	103	70	130	3.03	20	
Magnesium	50	1.0	50.00	0	99.2	70	130	0.571	20	
Manganese	0.51	0.0020	0.5000	0	102	70	130	1.44	20	
Nickel	0.51	0.010	0.5000	0	103	70	130	0.275	20	
Potassium	49	1.0	50.00	0	98.4	70	130	0.478	20	
Silver	0.11	0.0050	0.1000	0	107	70	130	1.53	20	
Sodium	48	1.0	50.00	0.5944	95.7	70	130	0.324	20	
Vanadium	0.51	0.050	0.5000	0	102	70	130	0.331	20	
Zinc	0.53	0.010	0.5000	0.01337	104	70	130	1.11	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **MB-48748** SampType: **MBLK** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **PBW** Batch ID: **48748** RunNo: **64458**
Prep Date: **11/12/2019** Analysis Date: **11/13/2019** SeqNo: **2206830** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	0.0095	0.020								J
Manganese	0.00015	0.0020								J
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: **LCSLL-48748** SampType: **LCSLL** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **BatchQC** Batch ID: **48748** RunNo: **64458**
Prep Date: **11/12/2019** Analysis Date: **11/13/2019** SeqNo: **2206835** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0019	0.0020	0.002000	0	93.2	50	150			J
Beryllium	0.0021	0.0020	0.002000	0	105	50	150			
Cadmium	0.0019	0.0020	0.002000	0	96.3	50	150			J
Chromium	0.0059	0.0060	0.006000	0	98.2	50	150			J
Cobalt	0.0070	0.0060	0.006000	0	117	50	150			
Iron	0.025	0.020	0.02000	0	123	50	150			
Manganese	0.0020	0.0020	0.002000	0	102	50	150			
Nickel	0.0044	0.010	0.005000	0	88.1	50	150			J
Silver	0.0045	0.0050	0.005000	0	89.7	50	150			J
Vanadium	0.0096	0.050	0.01000	0	96.5	50	150			J
Zinc	0.0092	0.010	0.01000	0	92.4	50	150			J

Sample ID: **LCS-48748** SampType: **LCS** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **LCSW** Batch ID: **48748** RunNo: **64458**
Prep Date: **11/12/2019** Analysis Date: **11/13/2019** SeqNo: **2206836** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	96.2	85	115			
Beryllium	0.50	0.0020	0.5000	0	101	85	115			
Cadmium	0.47	0.0020	0.5000	0	94.5	85	115			
Chromium	0.47	0.0060	0.5000	0	93.4	85	115			
Cobalt	0.45	0.0060	0.5000	0	89.1	85	115			
Iron	0.51	0.020	0.5000	0	103	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**

23-Dec-19

Client: Marathon Petroleum

Project: SWMU 13

Sample ID: **LCS-48748** SampType: **LCS** TestCode: **EPA Method 200.7: Total Metals**

Client ID: **LCSW** Batch ID: **48748** RunNo: **64458**

Prep Date: **11/12/2019** Analysis Date: **11/13/2019** SeqNo: **2206836** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.48	0.0020	0.5000	0	95.7	85	115			
Nickel	0.45	0.010	0.5000	0	90.4	85	115			
Silver	0.097	0.0050	0.1000	0	96.8	85	115			
Vanadium	0.51	0.050	0.5000	0	101	85	115			
Zinc	0.46	0.010	0.5000	0	93.0	85	115			

Sample ID: **MB-48748** SampType: **MBLK** TestCode: **EPA Method 200.7: Total Metals**

Client ID: **PBW** Batch ID: **48748** RunNo: **64458**

Prep Date: **11/12/2019** Analysis Date: **11/13/2019** SeqNo: **2206858** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	0.000089	0.0020								J
Nickel	0.0023	0.010								J
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: **LCSLL-48748** SampType: **LCSLL** TestCode: **EPA Method 200.7: Total Metals**

Client ID: **BatchQC** Batch ID: **48748** RunNo: **64458**

Prep Date: **11/12/2019** Analysis Date: **11/13/2019** SeqNo: **2206859** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0020	0.0020	0.002000	0	99.4	50	150			J
Beryllium	0.0020	0.0020	0.002000	0	101	50	150			
Cadmium	0.0021	0.0020	0.002000	0	104	50	150			
Chromium	0.0058	0.0060	0.006000	0	96.3	50	150			J
Cobalt	0.0062	0.0060	0.006000	0	103	50	150			
Iron	0.020	0.020	0.02000	0	97.8	50	150			J
Manganese	0.0021	0.0020	0.002000	0	106	50	150			
Nickel	0.0056	0.010	0.005000	0	112	50	150			J
Silver	0.0047	0.0050	0.005000	0	93.2	50	150			J
Vanadium	0.0094	0.050	0.01000	0	93.9	50	150			J
Zinc	0.010	0.010	0.01000	0	101	50	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **LCS-48748** SampType: **LCS** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **LCSW** Batch ID: **48748** RunNo: **64458**
Prep Date: **11/12/2019** Analysis Date: **11/13/2019** SeqNo: **2206860** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0020	0.5000	0	97.8	85	115			
Beryllium	0.50	0.0020	0.5000	0	101	85	115			
Cadmium	0.50	0.0020	0.5000	0	100	85	115			
Chromium	0.48	0.0060	0.5000	0	96.9	85	115			
Cobalt	0.48	0.0060	0.5000	0	95.4	85	115			
Iron	0.49	0.020	0.5000	0	98.9	85	115			
Manganese	0.49	0.0020	0.5000	0	98.5	85	115			
Nickel	0.48	0.010	0.5000	0	96.3	85	115			
Silver	0.10	0.0050	0.1000	0	103	85	115			
Vanadium	0.50	0.050	0.5000	0	99.8	85	115			
Zinc	0.47	0.010	0.5000	0	94.4	85	115			

Sample ID: **1911310-001EMS** SampType: **MS** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **SWMU 13-5-GW** Batch ID: **48748** RunNo: **64829**
Prep Date: **11/12/2019** Analysis Date: **11/27/2019** SeqNo: **2222293** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.53	0.0020	0.5000	0.08822	87.8	70	130			
Beryllium	0.45	0.0020	0.5000	0.0006372	89.7	70	130			
Cadmium	0.48	0.0020	0.5000	0	96.6	70	130			
Chromium	0.42	0.0060	0.5000	0	83.5	70	130			
Cobalt	0.41	0.0060	0.5000	0.01303	79.5	70	130			
Iron	0.67	0.020	0.5000	0.1516	104	70	130			
Nickel	0.64	0.010	0.5000	0.2419	80.5	70	130			
Silver	0.13	0.0050	0.1000	0.01869	110	70	130			
Vanadium	0.47	0.050	0.5000	0.005434	93.7	70	130			
Zinc	0.38	0.010	0.5000	0	76.4	70	130			

Sample ID: **1911310-001EMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **SWMU 13-5-GW** Batch ID: **48748** RunNo: **64829**
Prep Date: **11/12/2019** Analysis Date: **11/27/2019** SeqNo: **2222294** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.54	0.0020	0.5000	0.08822	90.2	70	130	2.29	20	
Beryllium	0.46	0.0020	0.5000	0.0006372	91.6	70	130	2.10	20	
Cadmium	0.49	0.0020	0.5000	0	99.0	70	130	2.40	20	
Chromium	0.42	0.0060	0.5000	0	84.8	70	130	1.57	20	
Cobalt	0.42	0.0060	0.5000	0.01303	81.4	70	130	2.31	20	
Iron	0.67	0.020	0.5000	0.1516	105	70	130	0.224	20	
Nickel	0.66	0.010	0.5000	0.2419	82.9	70	130	1.87	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **1911310-001EMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **SWMU 13-5-GW** Batch ID: **48748** RunNo: **64829**
Prep Date: **11/12/2019** Analysis Date: **11/27/2019** SeqNo: **2222294** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.13	0.0050	0.1000	0.01869	112	70	130	1.57	20	
Vanadium	0.48	0.050	0.5000	0.005434	95.9	70	130	2.22	20	
Zinc	0.39	0.010	0.5000	0	77.8	70	130	1.79	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A64450**	RunNo: **64450**
Prep Date:	Analysis Date: **11/12/2019**	SeqNo: **2206343** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: **LLLCS**	SampType: **LCSLL**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **A64450**	RunNo: **64450**
Prep Date:	Analysis Date: **11/12/2019**	SeqNo: **2206345** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00085	0.0010	0.001000	0	84.6	50	150			J
Arsenic	0.00096	0.0010	0.001000	0	96.4	50	150			J
Lead	0.00052	0.00050	0.0005000	0	104	50	150			
Selenium	0.0011	0.0010	0.001000	0	107	50	150			

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A64450**	RunNo: **64450**
Prep Date:	Analysis Date: **11/12/2019**	SeqNo: **2206347** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.025	0.0010	0.02500	0	99.1	85	115			
Arsenic	0.025	0.0010	0.02500	0	98.5	85	115			
Lead	0.012	0.00050	0.01250	0	99.9	85	115			
Selenium	0.026	0.0010	0.02500	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **MB-48748**	SampType: **MBLK**	TestCode: **200.8 ICPMS Metals:Total**
Client ID: **PBW**	Batch ID: **48748**	RunNo: **64504**
Prep Date: **11/12/2019**	Analysis Date: **11/14/2019**	SeqNo: **2208379** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: **MSLCSLL-48748**	SampType: **LCSLL**	TestCode: **200.8 ICPMS Metals:Total**
Client ID: **BatchQC**	Batch ID: **48748**	RunNo: **64504**
Prep Date: **11/12/2019**	Analysis Date: **11/14/2019**	SeqNo: **2208380** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00097	0.0010	0.001000	0	96.7	50	150			J
Arsenic	0.00098	0.0010	0.001000	0	98.2	50	150			J
Lead	0.00050	0.00050	0.0005000	0	100	50	150			
Selenium	0.0012	0.0010	0.001000	0	122	50	150			

Sample ID: **MSLCS-48748**	SampType: **LCS**	TestCode: **200.8 ICPMS Metals:Total**
Client ID: **LCSW**	Batch ID: **48748**	RunNo: **64504**
Prep Date: **11/12/2019**	Analysis Date: **11/14/2019**	SeqNo: **2208381** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.027	0.0010	0.02500	0	109	85	115			
Arsenic	0.025	0.0010	0.02500	0	98.8	85	115			
Lead	0.013	0.00050	0.01250	0	100	85	115			
Selenium	0.026	0.0010	0.02500	0	103	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**

23-Dec-19

Client: Marathon Petroleum

Project: SWMU 13

Sample ID: **MB-48912**	SampType: **MBLK**	TestCode: **EPA Method 245.1: Mercury**
Client ID: **PBW**	Batch ID: **48912**	RunNo: **64663**
Prep Date: **11/20/2019**	Analysis Date: **11/20/2019**	SeqNo: **2215294** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000039	0.00020								J

Sample ID: **LCS-48912**	SampType: **LCS**	TestCode: **EPA Method 245.1: Mercury**
Client ID: **LCSW**	Batch ID: **48912**	RunNo: **64663**
Prep Date: **11/20/2019**	Analysis Date: **11/20/2019**	SeqNo: **2215295** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R64345**	RunNo: **64345**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2203184** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R64345**	RunNo: **64345**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2203185** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	100	90	110			
Chloride	4.7	0.50	5.000	0	93.1	90	110			
Nitrogen, Nitrite (As N)	0.93	0.10	1.000	0	92.8	90	110			
Nitrogen, Nitrate (As N)	2.4	0.10	2.500	0	97.3	90	110			
Sulfate	9.4	0.50	10.00	0	94.1	90	110			

Sample ID: **1911310-004CMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**
Client ID: **EB02**	Batch ID: **R64345**	RunNo: **64345**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2203218** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.53	0.10	0.5000	0	106	58.2	131			
Chloride	4.8	0.50	5.000	0	95.8	89.9	117			
Nitrogen, Nitrite (As N)	0.95	0.10	1.000	0	95.2	76.7	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	100	89.3	114			
Sulfate	9.7	0.50	10.00	0	96.8	90.3	117			

Sample ID: **1911310-004CMSD**	SampType: **msd**	TestCode: **EPA Method 300.0: Anions**
Client ID: **EB02**	Batch ID: **R64345**	RunNo: **64345**
Prep Date:	Analysis Date: **11/8/2019**	SeqNo: **2203219** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.53	0.10	0.5000	0	106	58.2	131	0.394	20	
Chloride	4.8	0.50	5.000	0	96.3	89.9	117	0.528	20	
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	95.6	76.7	110	0.407	20	
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	89.3	114	0.508	20	
Sulfate	9.7	0.50	10.00	0	97.3	90.3	117	0.480	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R64409**	RunNo: **64409**
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2204410** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS-B**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R64409**	RunNo: **64409**
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2204416** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	91.9	90	110			
Sulfate	9.3	0.50	10.00	0	93.0	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **MB-48696**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **48696**	RunNo: **64417**
Prep Date: **11/11/2019**	Analysis Date: **11/12/2019**	SeqNo: **2204732** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.56		0.5000		113	81.5	152			

Sample ID: **LCS-48696**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **48696**	RunNo: **64417**
Prep Date: **11/11/2019**	Analysis Date: **11/12/2019**	SeqNo: **2204733** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.0	0.40	2.500	0	121	82	138			
Surr: DNOP	0.28		0.2500		112	81.5	152			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G64438**	RunNo: **64438**
Prep Date:	Analysis Date: **11/12/2019**	SeqNo: **2205878** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	22		20.00		110	65.8	143			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G64438**	RunNo: **64438**
Prep Date:	Analysis Date: **11/12/2019**	SeqNo: **2205879** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.47	0.050	0.5000	0	94.3	73.6	119			
Surr: BFB	25		20.00		126	65.8	143			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R64405**	RunNo: **64405**
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2204291** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	19	1.0	20.00	0	92.8	70	130			
Chlorobenzene	20	1.0	20.00	0	98.2	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	92.2	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	91.4	70	130			
Surr: 1,2-Dichloroethane-d4	8.9		10.00		88.5	70	130			
Surr: 4-Bromofluorobenzene	9.0		10.00		89.8	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	9.4		10.00		94.4	70	130			

Sample ID: **rb1**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64405**	RunNo: **64405**
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2204322** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **rb1**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64405**	RunNo: **64405**
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2204322** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**

23-Dec-19

Client: Marathon Petroleum

Project: SWMU 13

Sample ID: **rb1**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64405**	RunNo: **64405**
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2204322** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.9		10.00		88.6	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		91.3	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.9		10.00		99.1	70	130			

Sample ID: **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R64499**	RunNo: **64499**
Prep Date:	Analysis Date: **11/14/2019**	SeqNo: **2209538** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.0	70	130			
Toluene	19	1.0	20.00	0	97.0	70	130			
Chlorobenzene	20	1.0	20.00	0	99.8	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	93.7	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	93.8	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.8	70	130			
Surr: Dibromofluoromethane	10		10.00		99.8	70	130			
Surr: Toluene-d8	9.8		10.00		98.1	70	130			

Sample ID: **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64499**	RunNo: **64499**
Prep Date:	Analysis Date: **11/14/2019**	SeqNo: **2209539** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64499**	RunNo: **64499**
Prep Date:	Analysis Date: **11/14/2019**	SeqNo: **2209539** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64499**	RunNo: **64499**
Prep Date:	Analysis Date: **11/14/2019**	SeqNo: **2209539** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	9.9		10.00		98.9	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**

23-Dec-19

Client: Marathon Petroleum

Project: SWMU 13

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R64428**	RunNo: **64428**							
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2205475**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R64428**	RunNo: **64428**							
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2205476**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.24	20.00	80.00	0	96.6	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R64428**	RunNo: **64428**							
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2205498**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R64428**	RunNo: **64428**							
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2205499**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.80	20.00	80.00	0	97.3	90	110			

Sample ID: **mb-3 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R64428**	RunNo: **64428**							
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2205521**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-3 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R64428**	RunNo: **64428**							
Prep Date:	Analysis Date: **11/11/2019**	SeqNo: **2205522**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.88	20.00	80.00	0	97.4	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911310**
23-Dec-19

Client: Marathon Petroleum
Project: SWMU 13

Sample ID: **MB-48734** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW** Batch ID: **48734** RunNo: **64490**
Prep Date: **11/12/2019** Analysis Date: **11/14/2019** SeqNo: **2207771** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-48734** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW** Batch ID: **48734** RunNo: **64490**
Prep Date: **11/12/2019** Analysis Date: **11/14/2019** SeqNo: **2207772** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **MARATHON GALLUP** Work Order Number: **1911310** RcptNo: **1**

Received By: **Isaiah Ortiz** **11/7/2019 2:58:00 PM** I-OK

Completed By: **Leah Baca** **11/7/2019 5:41:12 PM** Leah Baca

Reviewed By: 300 unp. DM 11/8/19
DAD 11/11/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 12 4 (≤2 or ≥12 unless noted)

Adjusted? no

Checked by: DM 11/11/19

300 unpreserved: YG 11/8/19 1130

Special Handling (if applicable)

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

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.0	Good	Yes			
2	3.3	Good	Yes			

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1911310	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	8260B (VOA)	8270 (Semi-VOA)	Metals - Total and Dissolved	Cations	Anions	Total Dissolved Solids	Alkalinity	Cyanide	Air Bubbles (Y or N)
11-7-19	0815	Water	SWMU 13-5-GW	40ml voa - 5	HCl	-001			X					X								
				250 ml amber - 1	Neat	-001			X													
				1 liter amber - 3	Neat										X							
				250 ml plastic - 1	HNO_3											X						
				125 ml plastic - 1	HNO_3											X	X					
				125 ml plastic - 1	H_2SO_4													X				
				500 ml plastic - 1	Neat													X	X	X		
				500 ml plastic - 1	NaOH																X	
11-7-19	-	Water	Trip Blank	40ml voa-3	HCl	LB 11/7/19 -005								X								

Date	Time	Relinquished by:	Received by:	Date	Time
11-7-19	1458	James Reis	client	11/7/19	1458
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1. 3.1 - 0.1 /CF/ 3.0 °C

2. 3.4 - 0.1 /CF/ 3.3 °C

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	8260B (VOA)	8270 (Semi-VOA)	Metals - Total and Dissolved	Cations	Anions	Total Dissolved Solids	Alkalinity	Cyanide	Air Bubbles (Y or N)
11-7-19	0930	Water	SWMU 13-6-GW	40ml voa - 5	HCl	-002			X					X								
				250 ml amber - 1	Neat				X													
				1 liter amber - 3	Neat										X							
				250 ml plastic - 1	HNO_3											X						
				125 ml plastic - 1	HNO_3											X	X					
				125 ml plastic - 1	H_2SO_4													X				
				500 ml plastic - 1	Neat													X	X	X		
				500 ml plastic - 1	NaOH																X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
11.7.19	1458	James Reis	client	11/07/19	1458
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1. 3.1-0.1 /cf/ 3.0°c

2. 3.4-0.1 kf/ 3.3°c

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☑ Yes ☐ No

Sample Temperature: Remark>

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	8260B (VOA)	8270 (Semi-VOA)	Metals - Total and Dissolved	Cations	Anions	Total Dissolved Solids	Alkalinity	Cyanide	Air Bubbles (Y or N)
11.7.19	1020	Water	SWMU 13-7-GW	40ml voa - 5	HCl	-003			X					X								
				250 ml amber - 1	Neat				X													
				1 liter amber - 3	Neat										X							
				250 ml plastic - 1	HNO_3											X						
				125 ml plastic - 1	HNO_3											X	X					
				125 ml plastic - 1	H_2SO_4													X				
				500 ml plastic - 1	Neat													X	X	X		
				500 ml plastic - 1	NaOH																X	
11.7.19	-		Trip Blank			-006																

Date	Time	Relinquished by:	Received by:	Date	Time
11.7.19	14:58	James Reis	client	11/7/19	1458
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1 - 3.1 - 0.1 KF / 3.0°C

2 - 3.4 - 0.1 KF / 3.3°C

Chain-of-Custody Record

Client: **Marathon Petroleum Company LP**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

Email: Bmoore1@marathonpetroleum.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other _____

X EDD (Type) **EXCEL**

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **SWMU 13**

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature: Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	8260B (VOA)	8270 (Semi-VOA)	Metals - Total and Dissolved	Cations	Anions	Total Dissolved Solids	Alkalinity	Cyanide	Air Bubbles (Y or N)
11-7-19	1145	Water	EB02	40ml voa - 5	HCl	-004			X					X								
				250 ml amber - 1	Neat				X													
				1 liter amber - 3	Neat										X							
				250 ml plastic - 1	HNO_3											X						
				125 ml plastic - 1	HNO_3											X	X					
				125 ml plastic - 1	H_2SO_4													X				
				500 ml plastic - 1	Neat													X	X	X		
				500 ml plastic - 1	NaOH																X	

Date	Time	Relinquished by:	Received by:	Date	Time
11-7-19	14:58	James Reis	In Cooler client	11/7/19	1958
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached sheet for Analytical Methods and Target Analytes.

1. 3.1 -0.1 kf 3.0°C

2. 3.4 -0.1 kf 3.3°C

- SW-846 Method 8260 for volatile organic compounds;
- SW-846 Method 8270 for semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline range (C5-C10), diesel range (>C10-C28), and motor oil range (>C28-C36) organics.
- Inorganics (Skinner List Metals + Iron + Manganese) – Total and Dissolved

Inorganic Analytical Methods

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

SWMU 13 – Groundwater and Equipment Blank Analytical Requirements

General Chemistry Parameters

Analyte	Analytical Method
Total Dissolved Solids	SM-2510B
Carbonate	SM-2320B
Bicarbonate	SM-2320B
Chloride	EPA method 300.0
Fluoride	EPA method 300.0
Sulfate	EPA method 300.0
Calcium	EPA method 6010/6020
Magnesium	EPA method 6010/6020
Sodium	EPA method 6010/6020
Potassium	EPA method 6010/6020
Nitrate	EPA method 300.0
Nitrite	EPA method 300.0

Semivolatiles Limits * Report only these compounds. MDL must be met.
Dibenz(a,h)anthracene will be analzyed by Hall by Method 8310

	New Mexico WQCC Standards	NMED Tap Water	NMED TapW_ key	EPA Screening Levels.Tap Water	EPA TapW_ key	MCL	MDL	Analytical Method
1,2,4-Trichlorobenzene	-	1.15E+01	c	1.20E+00	c	**70**	4.04	8270
1,2-Dichlorobenzene	**600**	3.70E+02	n	3.00E+02	n	600	4.77	8270
1,3-Dichlorobenzene	-	-	-	-	-	-	5.27	8270
1,4-Dichlorobenzene	**75**	4.82E+00	c	4.80E-01	c	75	4.42	8270
1,4-Dioxane	-	**4.59E+00**	c	4.60E-01	c	-	2.00	8270/8270SIM
1-Methylnaphthalene	-	**1.14E+01**	c	1.10E+00	c	-	3.07	8270
2,4,5-Trichlorophenol	-	**1.17E+03**	n	1.20E+03	n	-	2.97	8270
2,4,6-Trichlorophenol	-	**1.19E+01**	n	4.10E+00	c**	-	2.33	8270
2,4-Dichlorophenol	-	**4.53E+01**	n	4.60E+01	n	-	2.92	8270
2,4-Dimethylphenol	-	**3.54E+02**	n	3.60E+02	n	-	2.97	8270
2,4-Dinitrophenol	-	**3.87E+01**	n	3.90E+01	n	-	2.59	8270
2,4-Dinitrotoluene	-	**2.37E+00**	c	2.40E-01	c	-	2.00	8270
2,6-Dinitrotoluene	-	**4.85E-01**	n	4.90E-02	c	-	0.20	8270
2-Chloronaphthalene	-	**7.33E+02**	n	7.50E+02	n	-	3.07	8270
2-Chlorophenol	-	**9.10E+01**	n	9.10E+01	n	-	2.69	8270
2-Methylnaphthalene	-	**3.51E+01**	n	3.60E+01	n	-	3.02	8270
2-Methylphenol	-	-	-	**9.30E+02**	n	-	2.86	8270
2-Nitroaniline	-	-	-	**1.90E+02**	n	-	3.17	8270
2-Nitrophenol	-	-	-	-	-	-	2.97	8270
3,3´-Dichlorobenzidine	-	**1.25E+00**	c	1.30E-01	c	-	1.00	8270
3+4-Methylphenol	-	-	-	**9.30E+02**	n	-	3.58	8270
3-Nitroaniline	-	-	-	-	-	-	3.24	8270
4,6-Dinitro-2-methylphenol	-	**1.52E+00**	n	-	-	-	1.00	8270
4-Bromophenyl phenyl ether	-	-	-	-	-	-	3.00	8270
4-Chloro-3-methylphenol	-	-	-	-	-	-	3.41	8270
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	2.44	8270
4-Nitroaniline	-	-	-	**3.80E+00**	c*	-	2.69	8270
4-Nitrophenol	-	-	-	-	-	-	7.57	8270
Acenaphthene	-	**5.35E+02**	n	5.30E+02	n	-	2.96	8270
Acenaphthylene	-	-	-	-	-	-	2.40	8270
Aniline	-	-	-	**1.30E+01**	c*	-	3.58	8270
Anthracene	-	**1.72E+03**	n	1.80E+03	n	-	2.66	8270
Benz(a)anthracene	-	**1.20E-01**	c	3.00E-02	c	-	0.10	8270
Benzo(a)pyrene	**0.2**	2.51E-01	c	2.50E-02	c	0.2	0.10	8270
Benzo(b)fluoranthene	-	**3.43E-01**	c	2.50E-01	c	-	0.10	8270
Benzo(g,h,i)perylene	-	-	-	-	-	-	2.23	8270
Benzo(k)fluoranthene	-	**3.43E+00**	c	2.50E+00	c	-	2.88	8270
Benzoic acid	-	-	-	**7.50E+04**	n	-	10.72	8270
Benzyl alcohol	-	-	-	**2.00E+03**	n	-	2.36	8270
Bis(2-chloroethoxy)methane	-	-	-	**5.90E+01**	n	-	2.60	8270

Bis(2-chloroisopropyl)ether	-	**9.81E+00**	c	-	-	-	3.86	8270
Bis(2-ethylhexyl)phthalate	-	5.56E+01	c	5.60E+00	c*	**6**	4.30	8270
Butyl benzyl phthalate	-	-	-	**1.60E+01**	c	-	3.33	8270
Carbazole	-	-	-	-	-	-	2.89	8270
Chrysene	-	**3.43E+01**	c	2.50E+01	c	-	2.79	8270
Dibenz(a,h)anthracene	-	**3.43E-02**	c	2.50E-02	c	-	0.03	8310
Dibenzofuran	-	-	-	**7.90E+00**	n	-	3.19	8270
Diethyl phthalate	-	**1.48E+04**	n	1.50E+04	n	-	2.87	8270
Dimethyl phthalate	-	**6.12E+02**	n	-	-	-	3.24	8270
Di-n-butyl phthalate	-	**8.85E+02**	n	-	-	-	2.71	8270
Di-n-octyl phthalate	-	-	-	-	-	-	3.52	8270
Fluoranthene	-	**8.02E+02**	n	8.00E+02	n	-	2.41	8270
Fluorene	-	**2.88E+02**	n	2.90E+02	n	-	2.89	8270
Hexachlorobenzene	-	9.76E-02	c	9.80E-03	c	**1**	1.00	8270
Hexachlorobutadiene	-	**1.39E+00**	c	1.40E-01	c*	-	1.00	8270
Hexachlorocyclopentadiene	-	4.11E-01	n	4.10E-01	n	**50**	3.58	8270
Hexachloroethane	-	**3.28E+00**	c	3.30E-01	c**	-	2.00	8270
Indeno(1,2,3-cd)pyrene	-	**3.43E-01**	c	2.50E-01	c	-	0.20	8270
Isophorone	-	**7.81E+02**	c	7.80E+01	c	-	3.05	8270
Naphthalene	-	**1.65E+00**	c	1.70E-01	c*	-	1.00	8270
Nitrobenzene	-	**1.40E+00**	c	1.40E-01	c	-	1.00	8270
N-Nitrosodiphenylamine	-	**1.22E+02**	c	1.20E+01	c	-	2.38	8270
Phenanthrene	-	**1.70E+02**	n	-	-	-	2.78	8270
Pentachlorophenol	**1**	4.13E-01	c	4.10E-02	c	1	1.00	8270
Phenol	-	**5.76E+03**	n	5.80E+03	n	-	8.04	8270
Pyrene	-	**1.17E+02**	n	1.20E+02	n	-	2.50	8270
Pyridine	-	-	-	**2.00E+01**	n	-	9.60	8270