Western Refining Southwest LLC
I-40 Exit 39
Jamestown, NM 87347
A subsidiary of Marathon Petroleum Corporation

August 16, 2022

Mr. Rick Shean, Chief
New Mexico Environmental Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

RE: Response to Approval with Modifications
North Drainage Ditch Area Investigation Report
Western Refining Southwest LLC, Marathon Gallup Refinery
EPA ID #NMD000333211
HWB-WRG-21-025

Dear Mr. Shean,

Attached please find the Response to Approval with Modifications, Investigation Report for the North Drainage Ditch Area as requested in the New Mexico Environment Department (NMED) Approval with Modifications letter dated April 25, 2022. Included with submittal are the response to comments, replacement pages, and an electronic version of the revised report.

A timeline of the report is provided below:

- December 17, 2021, North Drainage Ditch Area Investigation Report
- April 25, 2022, Approval with Modifications, North Drainage Ditch Area Investigation Report

If you have any questions or comments regarding the information contained herein, please do not hesitate to contact Mr. John Moore at (505) 879-7643.

Western Refining Southwest LLC
I-40 Exit 39
Jamestown, NM 87347
A subsidiary of Marathon Petroleum Corporation

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction of supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,
Marathon Petroleum Company LP, Gallup Refinery

John Moore

Ruth Cade
Vice-President

Enclosures

cc: D. Cobrain, NMED HWB
M. Suzuki, NMED HWB
L. Barr, NMEC OCD
L. King, EPA Region 6
M. Bracey, Marathon Petroleum Corporation
K. Luka, Marathon Petroleum Corporation
J. Moore, Marathon Gallup Refinery
H. Jones, Trihydro Corporation

ATTACHMENT A

New Mexico Environment Department (NMED) to Western Southwest Refining LLC (Western) Comment Letter "Approval with Modifications – North Drainage Ditch Area Investigation Report" (April 25, 2022)

NMED Comment	Western Response
Comment 1:	**Response 1:**
Section 4.0 (Analytical Results), page 16 of 19, bullets 1 and 2 indicate that residential and industrial soil screening levels (SSL) were used to evaluate soil analytical results. Since construction worker SSLs are also relevant to the soil samples collected within ten feet below ground surface (bgs), evaluate and discuss soil analytical results that include construction worker SSLs in the revised Report and provide replacement pages and tables. In addition, since soil-leachate (Dilution-Attenuation Factor [DAF]) SSLs are relevant to the vadose zone soil samples, evaluate and discuss soil analytical results with DAF SSLs in the revised Report, as appropriate, or explain why the results were not compared with DAF SSLs in the revised Report.	Construction worker soil screening levels (SSLs) have been added to Section 4.0 and Tables 4-1 through 4-8. The construction worker SSLs are compared to soil samples at depths greater than 1 foot below ground surface (ft bgs). Discussion of the comparison has also been added. The text in Section 4.0 (Analytical Results), page 16 of 19, has been revised to state: " ▪ NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level (SSL) (NMED 2019b) for all samples. ▪ NMED Risk Assessment Guidance for Site Investigations, Industrial SSL (NMED 2019b) for samples collected from 0-1 ft bgs. ▪ NMED Risk Assessment Guidance for Site Investigations, Construction Worker SSL (NMED 2019b) for samples collected at depths greater than 1 ft bgs. ▪ Analytical results were not compared to soil-leachate (dilution-attenuation factor [DAF]) SSLs. In the investigation area, the presence of LNAPL and associated smear zone effects are the primary sources of benzene, ethylbenzene, toluene, and total xylenes (BTEX) and TPH to groundwater. These sources are expected to persist longer than any vadose zone sources and, as such, a comparison to DAF SSLs is not applicable."
Comment 2:	**Response 2:**
Section 4.0 (Analytical Results), page 16 of 19, bullets 1 through 5 indicates that the NMED's 2017 and 2019 Risk Assessment Guidance for Site Investigations and Remediation (RAG) were used to reference the SSLs. The most current update to the RAG was November 2021 and the most recent version must be used for all future ongoing investigations. No revision is required.	This comment is acknowledged.

New Mexico Environment Department (NMED) to Western Southwest Refining LLC (Western) Comment Letter "Approval with Modifications – North Drainage Ditch Area Investigation Report" (April 25, 2022)

NMED Comment	Western Response
Comment 3:	**Response 3:**
In Section 4.1 (Soil Sample Results), page 16 of 19, paragraph 5, the Permittee states, "TPH-oil range organics (ORO) was only detected in NDD-MW-1 (7.5 to 8 ft bgs) and exceeded the applicable screening level." According to Table 4-4 (Soil Sample General Chemistry Results), page 1 of 3, the TPH-ORO concentrations in the soil samples collected from boring NDD-SB-2 at depths of 1.5 to 2.0 and 3.5 and 4.0 feet bgs are both recorded as ND (2,400) mg/kg. The residential SSL for TPH-ORO is 1,000 mg/kg. Therefore, it is not known whether these concentrations exceed the SSL. Similarly, according to Table 4-1 (Soil Sample Volatile Organic Compounds Results), pages 6 and 7, the detection limits of vinyl chloride and 1,2,3-trichloropropane in multiple soil samples exceeded the applicable SSLs. The detection limits of analytes must be lower than the applicable screening levels; otherwise, address the concentrations of all analytes where the detection limits are higher than the corresponding SSL as data quality exceptions and identify them as such in all related text, tables, and figures. Revise the appropriate sections in the revised Report. Furthermore, the values reported in the tables should not be reported as ND, but rather as less than the value of the detection limit. For example, boring NDD-SB-2 should be reported as <2,400 mg/kg. Revise the tables and include them in the revised Report and future submittals.	Non-detect results with detection limits greater than the soil screening levels are italicized in the tables. Discussion regarding sample results that exceeded their respective SSLs has been added to Sections 4.0 and 4.1 of the text, and the data quality exceptions are noted in Tables 4-1 through 4-8 and Figures 4-1 through 4-4. Exceedances to Residential SSLs have not been included in Section 4.1 but are noted in Tables 4-1 through 4-8 and Figures 4-1 through 4-4. Text has been added to Section 4.0, "Detected analytical results that exceeded the relevant SSLs are noted in Tables 4-1 through 4-4 as bolded values. Non-detected analytical results with reporting limits greater than the relevant SSLs are noted by italics in the tables and figures. All analytical results where the reporting limit exceeds the respective SSLs are considered data quality exceptions and will not be used to demonstrate compliance. Furthermore, all data quality exceptions are identified in the tables and figures." Elevated reporting limits (i.e., limits exceeding the cleanup levels) can be caused by a number of scenarios in the laboratory including dilution or quality control exceedances. These are generally noted by the laboratory in the report for reference. Laboratory reports are included as Appendix E. Analytical results that are less than the reporting limit are displayed in Tables 4-1 through 4-8 as "ND(x)" and the nomenclature is defined in the table notes as "not detected at the reporting limit, where (x) denotes the reporting limit concentration." This presentation of information provides easier recognition of which analytical results were not detected at the applicable reporting limit in tables with significant amounts of data. No changes were made to text, tables, or figures regarding the nomenclature.

New Mexico Environment Department (NMED) to Western Southwest Refining LLC (Western) Comment Letter "Approval with Modifications – North Drainage Ditch Area Investigation Report" (April 25, 2022)

NMED Comment	Western Response
Comment 4:	**Response 4:**
In Section 4.2 (Groundwater Sample Results), page 17 of 19, paragraph 1, the Permittee states, "[d]epth to groundwater was measured as 23.15 ft bgs, 19.33 ft bgs, and 3.41 ft bgs, in NDD-TW-2, NDD-TW-5, and NDD-MW-1, respectively. The depths to groundwater of the temporary monitoring wells, NDD-TW-2 and NDD-TW-5, were consistent with permanent wells in the area; NDD-MW-1 is not near the preexisting monitoring wells." Address the following issues: a. The Report does not include a table that summarizes gauging data collected during the investigation. Provide a table that summarizes the gauging data and includes the construction details of all temporary and permanent wells (e.g., total depth and screened interval) and the survey data (e.g., ground and groundwater elevations), where available. b. The depth to water (DTW) reading for permanent well NDD-MW-1 is stated as 3.41 feet bgs. However, the DTW readings collected from preexisting well OW-56 with a screened interval of 6 to 16 feet bgs, which is located close to permanent well NDD-MW-1 (approximately 150 north of the well), are recorded as approximately 12 to 14 feet bgs and the DTW readings (12 to 14 feet bgs) are not comparable to that of permanent well NDD-MW-1 (3.41 feet bgs). Well OW-56 exhibits unconfined conditions while permanent well NDD-MW-1 exhibits confined conditions of an aquifer. According to the well completion diagram for permanent well NDD-MW-1 included in Appendix B (Well Completion Logs), permanent well NDD-MW-1 is screened from 25 to 45 feet bgs while well OW-56 was screened to the Chinle/Alluvial interface from 6 to 16 feet bgs. Although it is not clear from the boring log included in Appendix C (Boring Logs), permanent well NDD-MW-1 may potentially have been advanced to the Sonsela since the screened interval of the well is deeper compared to that of well OW-56. Evaluate the groundwater chemistry data collected from wells OW-56 and NDD-MW-1 and discuss whether the water bearing zones are separate or continuous. Revise the appropriate section(s) of the Report.	The issues are addressed below: a. Construction details of the temporary and permanent monitoring wells have been added as Table 3-2; the "Sample PID Reading Locations and Depths" table was renumbered from Table 3-2 to Table 3-3. A table summarizing gauging data collected during the investigation has been added to Appendix F. Field forms are also available in Appendix F. b. Monitoring well NDD-MW-1 has been gauged two additional times since the first event in September 2021. Recent depth to water (DTW measurements were 31.59 ft bgs and 31.64 ft bgs (fourth quarter 2021 and first quarter 2022, respectively). Based on these fluid level measurements and measuring point elevation (6,945.95 ft), NDD-MW-1 is located in the Chinle/Alluvial aquifer. It is Western's belief that the initial DTW measurement was an error and will not be used in future reporting for the well. The text in Section 4.2, page 17 of 19, has been revised to state, "It is Western's belief that the measurement for NDD-MW-1 is inaccurate. Subsequent measurements have reflected a depth to groundwater similar to other monitoring wells in the vicinity." c. The reference of NDD-TW-2 being near a preexisting permanent monitoring well has been removed. The text in Section 4.2, page 17 of 19, has been revised to state, "The depth to groundwater of temporary monitoring well NDD-TW-5 was consistent with permanent wells in the area; NDD-TW-2 and NDD-MW-1 are not near any preexisting monitoring wells."

New Mexico Environment Department (NMED) to Western Southwest Refining LLC (Western) Comment Letter "Approval with Modifications – North Drainage Ditch Area Investigation Report" (April 25, 2022)

NMED Comment	Western Response
c. The referenced preexisting well near temporary well NDD-TW-5 is presumed to be well OW-54 based on the location and comparable DTW data. However, preexisting wells do not appear in the vicinity of temporary well NDD-TW-2 was referenced in the statement. Clarify the statement by listing the preexisting wells in the revised Report and provide replacement pages.	
Comment 5:	**Response 5:**
In Section 4.2 (Groundwater Sample Results), page 17 of 19, paragraph 2, the Permittee states, "[m]ost exceedances were observed in temporary monitoring well NDD-TW-5, including benzene, toluene, ethylbenzene, and total xylenes (BTEX), as well as naphthalene, arsenic, barium, chromium, lead, beryllium, TPH-DRO, and TPH-GRO." According to Table 4-8 (Groundwater Sample General Chemistry Results), page 2 of 2, the TPH-ORO concentration in the groundwater samples collected from temporary wells NDD-TW-2 and NDD-TW-5 are both recorded as ND (5) mg/L. The applicable screening level for TPH-ORO is 0.0858 mg/L. Therefore, as stated in Comment 3, it is not known whether these concentrations exceed the applicable screening level. Similarly, according to Table 4-5 (Groundwater Sample Volatile Organic Compounds Results), the concentrations of analytes in multiple groundwater samples (e.g., 1,1,2-trichloroethane in groundwater sample collected from well NDD-TW-5) exceed the applicable screening levels; otherwise, address the concentrations of all analytes where the detection limits are higher as data quality exceptions and identify these results as such in all text, tables, and figures. The values reported in the tables must not be reported as ND, but rather as less than the value of detection limit. In this case, boring NDD-TW-2 must be reported as <5 mg/L. Revise the tables and include them in the revised Report and for future submittals. Include a discussion about the data quality exceptions in the revised Report.	Tables 4-1 through 4-8 have been revised to show all reporting limits that are greater than the screening level in italics for results that were not detected at or above the reporting limits. See Response 3 regarding nomenclature (i.e., "ND(x)" versus "<x").
Comment 6:	**Response 6:**
In Section 5.0 (Conclusions), page 18 of 19, paragraph 2, the Permittee states, "[b]ased on the detections of hydrocarbons in soils	A second phase investigation work plan will be prepared and submitted to NMED for review by December 31, 2022.

New Mexico Environment Department (NMED) to Western Southwest Refining LLC (Western) Comment Letter "Approval with Modifications – North Drainage Ditch Area Investigation Report" (April 25, 2022)

NMED Comment	Western Response
above the screening levels, we recommend to complete additional soil delineation sampling to the south of NDD-SB-1 and NDD-SB-2, and to the northeast of NDD-SB-3." NMED concurs that the extent of soil contamination in the vicinity of the North Drainage Ditch area should be further investigated. Submit a work plan for the investigation and provide an anticipated date for the work plan to be submitted to NMED in the response letter.	

ATTACHMENT B

WESTERN REFINING SOUTHWEST LLC

D/B/A MARATHON GALLUP REFINERY

NORTH DRAINAGE DITCH AREA INVESTIGATION REPORT

DECEMBER 17, 2021

REVISED AUGUST 31, 2022

Executive Summary

Western Refining Southwest LLC (dba Marathon Gallup Refinery) (Refinery) is submitting this investigation report regarding the sampling of soils and collection of groundwater samples in an area on the north side of the refinery identified as the North Drainage Ditch. The objectives of the investigation were to:

1. Further characterize soils observed in and near the ditch.
2. Assess the area up-gradient of the ditch to help identify potential sources of hydrocarbons and metals in groundwater.
3. Determine the down-gradient extent of hydrocarbons and metals in groundwater.

Initial investigative field activities took place during August 2021. Groundwater samples from the temporary and permanent monitoring wells were collected in September 2021. Field work included the completion of six soil borings and installation of five temporary monitoring wells and two permanent monitoring wells.

Hydrocarbons in the soil were observed during the field activities and confirmed by laboratory analyses. Hydrocarbon staining and odors were noted during the soil boring activities. Detections of total petroleum hydrocarbons were above applicable soil screening levels.

Of the five temporary monitoring wells installed, two contained enough water for sampling, NDD-TW-2 and NDD-TW-5. Of the two permanent monitoring wells, one had enough water for sampling, NDD-MW-1. Groundwater quality was similar to those observed in preexisting up-gradient wells, including elevated concentrations of petroleum related compounds, and metals. At this time, no further investigative activities are currently planned or recommended for groundwater in the North Drainage Ditch area. The groundwater will be addressed with the underlying plume in the area.

Based on the detection of hydrocarbon constituents in soils (i.e., above applicable screening levels), the Refinery ~~we~~ recommends completing additional soil delineation sampling to the south of NDD-SB-1 and NDD-SB-2, and to the northeast of NDD-SB-3.

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List of Acronyms and Abbreviations

bgs	below ground surface
BTEX	benzene, ethylbenzene, toluene, and total xylenes
cm/sec	centimeters per second
DAF	dilution-attenuation factor
DRO	diesel range organics
ft	feet
GRO	gasoline range organics
mg/kg	milligrams per kilogram
MPC	Marathon Petroleum Company
MTBE	methyl tert butyl ether
NMED	New Mexico Environment Department
ORO	oil range organics
QA/QC	quality assurance/quality control
PID	photoionization detector
ppm	parts per million
SPH	separate phase hydrocarbon
SSL	soil screening level
SVOC	semi-volatile organic compounds
TPH	total petroleum hydrocarbons
USEPA	United States Environmental Protection Agency
VOC	volatile organic compounds



1.0 Introduction

This report summarizes the activities associated with a follow-on investigation of the North Drainage Ditch area conducted at the Western Refining Southwest LLC Refinery (dba Marathon Gallup Refinery) (Refinery), located 17 miles east of Gallup, New Mexico (Figure 1-1). The physical address of the Refinery is I-40, Exit #39 Jamestown, New Mexico, 87347. The investigation purpose was to characterize potential hydrocarbons and metals in the soil and groundwater to the north/northwest of the refinery tank farm, in the area identified as the North Drainage Ditch (Figure 1-2). Sampling was conducted in accordance with the investigation work plan that was approved, with modifications, by the New Mexico Environment Department (NMED) on March 4, 2021 (NMED 2021). The revised work plan was submitted to NMED on March 29, 2021 (Marathon Petroleum Company [MPC] 2021). At the time of the field investigation, and this report, a response to the revised work plan had not been received from NMED.

1.1 Background

The Refinery property covers approximately 810 acres. Refinery operations were indefinitely idled in August 2020. While operating, the Refinery processed crude oil transported by pipeline or tanker truck from the Four Corners region. Various process units operated at the Refinery included crude distillation, reformer, fluidized catalytic cracker, alkylation, sulfur recovery, merox treater, and hydrotreater. Past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

First indications of potential impacts in the North Drainage Ditch area were documented in an October 2009 site inspection; during a routine inspection of the site drainage features, the ditch was discovered to have “non-moving water” with possible hydrocarbon staining and a diesel-like odor. A C-141 Release Form was submitted to the New Mexico Oil Conservation Division and NMED on October 20, 2009. The potentially affected portion of the ditch was estimated to be 40 feet (ft) long.

1.1.1 Submittal History

The following work plans and reports have been submitted and received for the North Drainage Ditch area.

- C-141 Release Form, submitted October 20, 2009
- Notification of Potential Hydrocarbon Discovery, submitted April 22, 2015
- Requirement, Submittal of Work Plan, received May 12, 2015
- Investigation Work Plan, submitted August 13, 2015
- Investigation Report, submitted August 20, 2018
- Disapproval, Investigation Report, received February 8, 2019



- Investigation Work Plan, submitted April 26, 2019
- Response to Disapproval, Investigation Report, submitted May 13, 2019
- Approval with Modifications, Revised Investigation Report, received June 24, 2019
- Disapproval, Investigation Work Plan, received June 24, 2019
- Response to Approval with Modifications, Investigation Report, submitted July 30, 2019
- Response to Disapproval, Investigation Work Plan, submitted September 20, 2019
- Response to Approval with Modifications, Investigation Report, submitted December 2, 2019
- Approval, Response to Approval with Modifications, Investigation Report, received January 16, 2020
- Approval with Modifications, Investigation Report, received March 4, 2021
- Response to Approval with Modifications, Investigation Report, March 29, 2021

1.1.2 Historical Sampling and Results

After standing water was found in the area in 2009, soil and water samples were collected and analyzed following the submittal of the C-141 Form (Western 2015). The water samples were analyzed for total petroleum hydrocarbon (TPH) by method 418.1. The soil samples were analyzed for semi-volatile organic compounds (SVOCs) by method 8270, metals using the toxicity characteristic leaching procedure, and TPH by method 418.1. The water samples indicated the presence of TPH, however, at the time of sampling, no applicable screening levels had been established. The soil results were mostly non-detect. With analytical results below applicable screening levels, and due to the ephemeral nature of the water, no further action was taken. There is no record of waste or other contaminants being handled in the area of investigation.

Water potentially containing hydrocarbons was again observed in the ditch in 2015. Surface water samples were collected and sampled for volatile organic compounds (VOC), TPH, and metals; benzene, xylenes, methyl tert butyl ether (MTBE), 1,2,4-trimethlybenzene, 1,3,5-trimethylbenzene, arsenic, naphthalene, and barium were detected at concentrations above applicable screening levels. To further investigate the surface water analytical results, three soil borings (NDD-1, NDD-2, and NDD-3) were completed in the area. One boring (NDD-3) encountered saturation and a groundwater sample was collected and analyzed for VOCs, SVOCs, and TPH; MTBE and 1,2-dichloroethane were detected at concentrations above applicable screening levels (Western 2018).

Because petroleum fuel hydrocarbons and metals were detected in samples collected in 2015, continued investigative work was planned and conducted in 2016. Temporary wells were completed in

four boreholes (NDD-4, NDD-6, NDD-11, AND NDD-16) and four permanent monitoring wells (OW-53, OW-54, OW-55, and OW-56) were installed. During initial sampling efforts, both groundwater and soil samples from the well installations indicated exceedances of applicable screening levels for multiple constituents. The permanent monitoring wells have continued to be sampled quarterly, with the exception of OW-53 which has remained dry since its installation. Analytical results for the permanent monitoring wells have continued to exceed the applicable screening levels for multiple constituents and are discussed in the Annual Groundwater Reports.

Additional sampling, conducted in 2019, centered around elevated manganese concentrations observed in historical soil sample results (MPC 2019b). Samples were collected to assess if the crude oils processed at the facility resulted in the elevated manganese concentrations observed in the North Drainage Ditch. The results of the sampling effort indicated that the crude oils did not contribute to the elevated manganese concentrations (NMED 2020).

Results from investigation efforts from 2015 through 2017 were detailed in the North Drainage investigation report submitted to NMED in 2018 (Western 2018). Following the submittal of the 2018 investigation report, NMED requested an additional investigation work plan to further characterize the area (NMED 2019a). In 2019, an investigation work plan was submitted to further characterize soil and groundwater in and around the ditch, assess the area up-gradient, and determine the down-gradient extent of petroleum fuel hydrocarbons and metals in groundwater (MPC 2019a). This work plan was revised and approved with modifications by NMED on March 4, 2021 for the August 2021 investigation.

1.2 Scope of Activities

The revised Investigation Work Plan (MPC 2021) was submitted to NMED in March 2021. The objectives of the investigation were to:

1. Further characterize soils observed in and near the ditch.
2. Assess the area up-gradient of the ditch to help identify potential sources of hydrocarbons and metals in groundwater.
3. Determine the down-gradient extent of hydrocarbons and metals in groundwater.

Field activities took place from August 12 through August 24, 2021, and consisted of the following:

- Six soil borings
- Five temporary monitoring wells
- Two permanent monitoring wells

2.0 Site Conditions

This section provides a summary of the surface and subsurface conditions at the refinery in the area of the North Drainage Ditch. A discussion of the installation of soil borings, field screening of soils, and collection of soil and groundwater samples for analysis are provided in Section 3.0.

2.1 Surface Conditions

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 7,040 ft to 6,860 ft. The area of the site near the North Drainage Ditch is at an approximate elevation of 6,920 ft above mean sea level. The North Drainage Ditch is part of a larger drainage feature that begins on the north side of the tank farm, extending north approximately 200 ft and passes beneath a dirt road after which it bifurcates into two smaller segments (one to the northeast and the other to the west). The western segment extends westward approximately 400 ft and then turns northwest through a low-lying area (i.e., an area of periodic standing water) that is the focus of this investigation (Figure 1-2).

The North Drainage Ditch essentially ends (i.e., there is no clearly defined channel) approximately 90 feet north of the access road. Thereafter, surface water appears to flow north, along the east side of a dirt road, before crossing over the road.

Surface soils within most of the area of investigation are primarily Rehobeth silty clay loam. Rehobeth soil properties include a pH ranging from 8 to 9 standard units and salinity (naturally occurring and typically measuring up to approximately 8 millimhos per centimeter.

2.2 Subsurface Conditions

Based on existing boring logs, shallow subsurface fluvial and alluvial soils are comprised of primarily clays and silts with minor inter-bedded sand layers. Very low permeability bedrock (e.g., claystones and siltstones) underlie the surface soils and effectively form an aquitard. The Chinle Group, from the Upper Triassic period, crops out over a large area on the southern margin of the San Juan Basin. The uppermost recognized local Formation is the Petrified Forest Formation. The Sonsela Sandstone Bed is the uppermost recognized regional aquifer. Aquifer tests of the Sonsela Bed northeast of Prewitt indicated a transmissivity of greater than 100 square feet per day (Stone et al., 1983). The Sonsela Sandstone's highest point occurs southeast of the site and slopes downward to the northwest as it passes under the Refinery. Due to the confinement of the Chinle Formation aquitard, the Sonsela Sandstone bed acts as a water-bearing reservoir and is artesian at its lower extremis. Artesian conditions exist through much of the central and western portions of the Refinery property.

Surface soils generally consist of fluvial and alluvial deposits, primarily clay and silt with minor inter-bedded sand layers. Below the surface layer is the Chinle Formation, which consists of very low permeability clay stones and siltstones that comprise the shale of this formation. As such, the Chinle Formation effectively serves as an aquitard. Interbedded within the Chinle Formation is the Sonsela

Sandstone bed, which represents the uppermost potential aquifer in the region. The Sonsela Sandstone bed lies within and parallels the dip of the Chinle Formation. As such, its high point is located southeast of the Refinery and it slopes downward to the northwest as it passes under the Refinery.

Groundwater flow within the Chinle Formation is extremely slow and typically averages less than 10^{-10} centimeters per second (cm/sec) (i.e., less than 0.01 ft per year). Groundwater flow within the surface soil layer, above the Chinle Formation, is highly variable due to the presence of complex and irregular stratigraphy including sand stringers, cobble beds, and dense clay layers. As such, hydraulic conductivity may range from 10^{-8} cm/sec (approximately 0.01 ft per year) in the clay soil layers located near the surface and up to 10^{-2} cm/sec (approximately 10,000 ft per year) in the gravelly sands immediately overlying the Chinle Formation.

Shallow groundwater located under Refinery property generally flows along the upper contact of the Chinle Formation. Although the prevailing regional flow direction is from the southeast and toward the northwest, in the tank farm area flow is in a northeasterly direction, and in the southern marketing area flow is generally in a westerly direction.

The diverse properties, and complex irregular stratigraphy of the surface soils across the Refinery cause a wide range of hydraulic conductivity ranging from less than 10^{-2} cm/sec (approximately 10,000 ft per year) for gravel-like sands immediately overlying the Petrified Forest Formation to 10^{-8} cm/sec (approximately 0.01 ft per year) in the clay soils located near the surface. Generally, shallow groundwater at the Refinery follows the upper contact of the Petrified Forest Formation (Chinle Group) with prevailing flow from the southeast to the northwest, although localized areas may have varying flow directions based on the subsurface geology.

Groundwater in the area of the North Drainage Ditch flows from the east to the west (Figure 2-1). The new temporary and permanent monitoring wells are shown on the potentiometric surface figure (Figure 2-1) but are not included in the groundwater depths as surveying data for the elevations were not completed prior to the original submittal of this report. Surveying for the permanent monitoring wells was completed in January 2022. The survey data will be included in the 2022 Annual Groundwater Report and incorporated into the site-wide potentionmetric surface map. ~~The surveying data will be completed during the first quarter of 2022. These data will be included in the 2021 Annual Groundwater Report and incorporated into the site wide potentiometric map.~~ Up-gradient of the North Drainage Ditch includes the eastern boundary of the refinery and the tank farm.

3.0 Field Investigation

The following sections summarize the events completed during the 2021 North Drainage Ditch investigation, activities were conducted August 12, 2021 through August 24, 2021, September 9, 2021, and September 17, 2021. Seven monitoring wells (two permanent and five temporary) and six soil boring locations were completed (Figure 3-1). Fifty eight soil samples and three groundwater samples were collected. A summary of samples submitted for laboratory analyses are presented in Table 3-1. The locations are presented on Figure 3-1 and the field notes are provided in Appendix A.

3.1 Sampling Locations

Soil boring locations were chosen based on historical sample results and locations. Previously completed borings NDD-5, NDD-8, and NDD-9 detected hydrocarbons; most borings for this investigation were chosen to further delineate the subsurface surrounding these locations. All historical sample locations are provided on Figure 3-2. New soil investigation locations were completed in the following places (MPC 2021):

- South of NDD-9 (NDD-SB-1)
- South side of the ditch, between NDD-9 and NDD-5 (NDD-SB-2)
- West (down gradient) of NDD-8 (NDD-SB-3)
- East of NDD-8 and NDD-9 (NDD-SB-4)
- Near boring NDD-5 (NDD-SB-5)
- Up-gradient within the drainage feature (NDD-SB-6)

The five temporary monitoring well locations were chosen to further define the down gradient extent of petroleum fuel hydrocarbons and metals in groundwater (NDD-TW-1 through NDD-TW-5). The two permanent monitoring well locations were installed up-gradient of the North Drainage Ditch to evaluate potential up-gradient sources (NDD-MW-1 and NDD-MW-2). These monitoring wells are presented on Figure 3-1.

3.2 Sampling Methods

Soil boring locations were drilled by Terracon Consultants, Inc. using a hollow-stem auger. Soil borings were advanced to the alluvium/Chinle subsurface group (local aquitard). Monitoring wells were completed with a 0.01-inch slotted polyvinyl chloride well screen, placed at the bottom of each well and extending 10-15 ft to ensure a complete screen across the shallow water table. A 10/20 sand filter pack was installed to 2 ft over the top of the well screen. Well completion details for each location are provided in Appendix B.

Soil borings were screened at 2-ft intervals to analyze for evidence of petroleum hydrocarbons and help select sample intervals for laboratory analysis. Screening methods included visual examination, olfactory examination, and headspace vapor screening for VOCs. Headspace vapor screening was performed by placing a soil aliquot into a sealed plastic bag and letting the sample to rest for a minimum of 5 minutes to allow vapors to equilibrate. Vapors present were measured by inserting a photoionization detector (PID) probe into a small opening in the bag and recording this result (Table 3-2). Lithology, physical characteristics, and PID values were recorded on the boring logs and are included as Appendix C.

Depth to water, if present, and total depth were measured at the seven monitoring wells prior to development. Note that seven monitoring well locations were drilled however casing material was not installed at NDD-TW-3 as presented below in Section 3.3. Water was not present in wells NDD-TW-1, NDD-TW-4, or NDD-MW-2. Separate phase hydrocarbon (SPH) was not detected at any location. For temporary monitoring well NDD-TW-5, 10 casing volumes were bailed during development and additional groundwater was removed during sampling until the field parameters equilibrated. A YSI multiprobe meter was used to collect measurements of conductivity, pH, temperature, dissolved oxygen, and salinity. The remaining monitoring wells, NDD-TW-2 and NDD-MW-1, went dry during development and groundwater measurements were collected during purging and sampling (Appendix D). Construction details of the temporary and permanent monitoring wells are provided in Table 3-2.

3.3 Field Observations

The depths, method of sample collection, and physical characteristics of each soil sample (i.e., mineralogy, soil classification, moisture content, texture, color, and the presence of stains and odors), were recorded in the field by a qualified geologist and are presented in the soil boring logs (Appendix A).

Boring depths ranged from 10 ft below ground surface (bgs) (NDD-SB-3) to 48 ft bgs (NDD-MW-2). Boring depths were determined based on field observations and PID readings.

General findings during the field investigation are noted below:

- Hydrocarbon odors and staining were observed in all the soil borings and permanent monitoring wells, at various depths and degrees. Hydrocarbons were also observed in two of the temporary monitoring wells, NDD-TW-2 and NDD-TW-5 (Appendix A).
- PID readings were completed approximately every 2 ft. Readings ranged from 0 parts per million (ppm) to 1,529 ppm (6 ft bgs in NDD-SB-3). Samples were collected at the highest PID reading in each boring (Table 3-32).
- Soil borings NDD-SB-1 and NDD-SB-2 had indications of hydrocarbons throughout the entire boring. These indications included strong hydrocarbon odors and visible staining in the soil. The

borings were plugged with bentonite chips after samples were collected and the soil was disposed in on-site drums.

- NDD-TW-3 was drilled to 34 ft bgs; however, water was not encountered. Per the revised work plan (MPC 2021) a temporary monitoring well was not completed, the dry boring was filled and plugged. The lithology log for NDD-TW-3 is included in Appendix C. The soil boring for NDD-TW-3 was analyzed at three depths, 0-0.5 ft bgs, 1.5-2 ft bgs, and 33.5-34 ft bgs. Analyses were reported as non-detect with the exception of several analytes, however, no results exceeded the screening levels.

3.4 Deviations from Approved Work Plan

Deviations from the revised investigation work plan (MPC 2021) included the following:

- The work plan states that a total of 65 soil samples (5 from each soil boring and recovery well locations) were to be collected. A total of 58 soil samples (with varying numbers at each investigation location) were collected during field activities. This deviation was based on field observations and field screening results recorded by the on-site geologist.
- Monitoring wells NDD-TW-1, NDD-TW-4, and NDD-MW-2 were dry when sampling activities were conducted. Well development logs are provided in Appendix D.
- Some reporting limits were above their respective cleanup levels and are noted in Tables 4-1 through 4-8 with italics.

4.0 Analytical Results

Analytical results for the various parameters are summarized below, with the analytical laboratory reports included in Appendix C. Analytical results were compared against the following screening levels:

Soil

- NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level (SSL) (NMED 2019b) for all samples
- NMED Risk Assessment Guidance for Site Investigations, Industrial SSL (NMED 2019b) for samples collected from 0-1 ft bgs
- NMED Risk Assessment Guidance for Site Investigations, Construction Work SSL (NMED 2019b) for samples collected at depths greater than 1 ft bgs
- Analytical results were not compared to soil-leachate (dilution-attenuation factor [DAF]) SSLs. In the investigation area, the presence of LNAPL and associated smear zone effects are the primary sources of benzene, ethylbenzene, toluene, and total xylenes (BTEX) and TPH to groundwater. These sources are expected to persist longer than any vadose zone sources and, as such, a comparison to DAF SSLs is not applicable

Groundwater

- NMED Risk Assessment Guidance for Site Investigations, Tap Water (NMED 2019b)
- United States Environmental Protection Agency (USEPA) Maximum Contaminant Level, Hazardous Quotient 1.0, May 2021 (USEPA 2021)
- NMED TPH Screening Levels, Risk Assessment Guidance for Investigations and Remediation (NMED 2017)

Analytical results that exceeded the relevant applicable ~~screening level~~SSLs are discussed below and presented in the noted tables. Detected analytical results that exceeded the relevant SSLs are noted in Tables 4-1 through 4-4 as bolded values. Non-detected analytical results with reporting limits greater than the relevant SSLs are noted by italics in Tables 4-1 through 4-8 and on Figures 4-1 through 4-4.

All analytical results where the reporting limit exceeded the respective SSLs are considered data quality exceptions and will not be used to demonstrate compliance. Furthermore, all data quality exceptions are identified in the tables and figures.

4.1 Soil Sample Results

Soil samples were collected from August 12, 2021, through August 24, 2021. Soil samples were analyzed for VOCs, SVOCs, metals, and general chemistry. Soil samples were collected from soil borings (NDD-SB-1 through NDD-SB-6), and the monitoring well borings (NDD-TW-1 through NDD-TW-5,

NDD-MW-1, and NDD-MW-2). Analytical results are provided in Tables 4-1 through 4-4. TPH results are also shown on Figure 4-1.

PID readings were completed on samples collected approximately every 2 ft. Readings ranged from 0 ppm to 1,529 ppm (6 ft bgs in NDD-SB-3) (Table 3-3). Samples were generally collected at 0 to 0.5 ft bgs, 1.5 to 2.0 ft bgs, and additional intervals based on field observations and screenings, including the highest PID reading for each soil boring.

Eight of the thirteen boring locations had TPH results that exceeded their respective SSLs (Figure 4-1). The highest detections of TPH were found in NDD-SB-2; TPH-gasoline range organics (GRO) was detected at 14,000 milligrams per kilogram (mg/kg) from 1.5 to 2.0 ft bgs and TPH-diesel range organics (DRO) was detected at 8,500 mg/kg from 3.5 to 4 ft bgs. TPH-oil range organics (ORO) was only detected in NDD-MW-1 ~~(7.5 to 8 ft bgs)~~ and exceeded the applicable SSL~~screening level~~ from depth 7.5 to 8 ft bgs. In addition, total manganese exceeded its respective SSL in six of the thirteen boring locations. The greatest detection of total manganese was in NDD-MW-2 (28.2 to 28.7 ft bgs). ~~In addition, soil boring NDD-SB-2 had exceedances of ethylbenzene and benzene between 3.5 and 4 ft bgs.~~ No other analytical results for soil samples exceeded their respective Industrial and Construction Worker SSLs~~screening levels~~.

4.2 Groundwater Sample Results

Groundwater samples were collected on September 9, 2021, from the temporary monitoring wells, and on September 17, 2021, from the permanent monitoring wells. Groundwater samples were collected from locations NDD-TW-2, NDD-TW-5, and NDD-MW-1~~;~~, the monitoring well locations, NDD-TW-~~0~~1, NDD-TW-4, and NDD-MW-2, were dry during sampling activities. Depth to groundwater was measured as 23.15 ft bgs, 19.33 ft bgs, and 3.41 ft bgs, in NDD-TW-2, NDD-TW-5, and NDD-MW-1, respectively. It is Western's belief that the measurement for NDD-MW-1 is inaccurate. Subsequent measurements have reflected a depth to groundwater similar to other monitoring wells in the vicinity. The depth~~s~~ to groundwater of ~~the~~ temporary monitoring wells~~, NDD-TW-2 and~~ NDD-TW-5~~, were~~was consistent with permanent wells in the area; ~~-~~NDD-TW-2 and NDD-MW-1 are~~is~~ not near any~~the~~ preexisting monitoring wells. Groundwater sampling field forms are available in Appendix F.

Groundwater samples were analyzed for VOCs, SVOCs, metals, and general chemistry. Several of the analytical results exceeded their respective ~~screening level~~SSLs. Most exceedances were observed in temporary monitoring well NDD-TW-5, including ~~benzene, toluene, ethylbenzene, and total xylenes (~~BTEX~~)~~, as well as naphthalene, arsenic, barium, chromium, lead, beryllium, TPH-DRO, and TPH-GRO. Exceedances in NDD-MW-1 were 1,2-dichloroethane, TPH-DRO, TPH-GRO, and TPH-ORO. Chloride was the only exceedance in NDD-TW-2.

BTEX and naphthalene results are presented on Figure 4-2. Metal results are presented on Figure 4-3. TPH results are presented on Figure 4-4. The analytical results are provided in Tables 4-5 through 4-8.

NDD-MW-1 and NDD-MW-2 will be included in the annual groundwater monitoring program and results will be included in future groundwater reports.

4.3 Quality Assurance/Quality Control

Quality Assurance/Quality Control (QA/QC) soil and groundwater analytical samples were collected during the investigation. QA/QC samples are included in the laboratory reports provided in Appendix E. The analytical data reported from the receiving laboratory underwent Tier I and Tier II data validation by Trihydro's chemical data validation services group. Data qualifiers are included in the analytical tables. The Tier II data validation reports are provided in Appendix G.

Nine equipment blanks, five methanol blanks, two trip blanks, and one field blank were collected during the soil and groundwater sampling activities. Reported detections in the blank samples included acetone, 2-butanone, chloromethane, 2-hexanone, methylene chloride, and toluene. However, none of the detections were reported above screening levels.

In addition to the blanks that were collected during the field event, field duplicates were also collected from the following locations NDD-SB-1 (5 – 5.5 ft bgs), NDD-SB-3 (6 – 6.5 ft bgs), NDD-SB-5 (9.5 – 10 ft bgs), NDD-TW-1 (34 – 34.5 ft bgs), and NDD-TW-5 (23 – 23.5 ft bgs) for the soil borings; a field duplicate groundwater sample was collected from NDD-TW-5. These field duplicates were compared to their parent samples and flagged, if necessary, as described in the Appendix D data validation reports.

5.0 Conclusions

Findings regarding the soil and groundwater in and around the North Drainage Ditch include:

- Soil and groundwater analytical results indicate that petroleum fuel hydrocarbons are present within the North Drainage Ditch area.
- Hydrocarbon staining and odors were observed in the soil borings. However, no SPH was observed in groundwater during the groundwater sampling events.
- NDD-MW-2 was dry for the September 2021 sampling event. NDD-MW-2 was installed in the area of OW-12 (deep well). OW-12 groundwater results have historically been below screening levels. Although NDD-MW-2 was dry for the September 2021 sampling event, the lack of hydrocarbons and metals in the soil boring at NDD-MW-2, and the lack of hydrocarbon detections in the groundwater of OW-12, suggest that hydrocarbons are not in NDD-MW-2 or OW-12.

Based on the detections of hydrocarbons in soils above the screening levels, ~~we~~the Refinery recommends to complete additional soil delineation sampling to the south of NDD-SB-1 and NDD-SB-2, and to the northeast of NDD-SB-3.

The observed groundwater conditions at NDD-TW-5 are generally similar to the petroleum hydrocarbon and metal concentrations observed in the surrounding observation wells. At this time, no further investigative activities are currently planned or recommended for groundwater in the North Drainage Ditch area. The groundwater quality will be addressed with the underlying plume in the area.

6.0 References

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United States Environmental Protection Agency (USEPA). 2021. Regional Screening Levels, Target Hazard Quotient 1.0, Maximum Contaminant Levels, May.

Western Refining (Western). 2015. Investigation Work Plan, OW Series Wells and Contaminant Plume Migration, Hydrocarbon Discovery North Drainage Ditch. August 13.

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Figures

NDD–TW–1				8/12/21
FT BGS	0–0.5	1.5–2	26.5–27	34–34.5
TPH–DRO	ND(9.8)	ND(9.2)	ND(9.9)	4.8J
TPH–GRO	ND(3.1)	ND(3.1)	ND(2.5)	ND(3.6)
TPH–ORO	ND(49)	ND(46)	ND(50)	ND(48)

NDD–TW–1
DRY

NDD–TW–2					8/12/21–8/13/21
FT BGS	0–0.5	1.5–2	5.5–6	30.5–31	33.5–34
TPH–DRO	ND(9.9)	ND(9.9)	ND(9.6)	4.9J	ND(9.8)
TPH–GRO	ND(4)	1J	5.5	0.99J	1.1J
TPH–ORO	ND(50)	ND(50)	ND(48)	ND(48)	ND(49)

NDD–TW–2

NDD–TW–3				8/19/21
FT BGS	0–0.5	1.5–2	33.5–34	
TPH–DRO	35	ND(9.7)	ND(9.2)	
TPH–GRO	ND(2.7)	ND(3.8)	ND(3.1)	
TPH–ORO	ND(49)	ND(49)	ND(46)	

NDD–TW–3
NC

NDD–TW–5					8/19/21–8/20/21
FT BGS	0–0.5	1.5–2	18.5–19	23–23.5	30.5–31
TPH–DRO	ND(9.6)	ND(9.8)	57	ND(9.5)	5.5J+
TPH–GRO	ND(2.8)	ND(2.6)	**370**	8.1	ND(3.1)
TPH–ORO	ND(48)	ND(49)	ND(47)	ND(47)	ND(46)

NDD–TW–5

NDD–TW–4				8/19/21
FT BGS	0–0.5	1.5–2	15–15.5	31.5–32
TPH–DRO	8.4J	8.3J+	ND(9.7)	ND(9.3)
TPH–GRO	ND(3.6)	ND(4.7)	ND(2.8)	ND(3.3)
TPH–ORO	ND(46)	ND(47)	ND(48)	ND(46)

NDD–TW–4
DRY

NDD–SB–3					8/23/21
FT BGS	0–0.5	1.5–2	6–6.5	9.5–10	
TPH–DRO	ND(10)	ND(9.2)	**1500**	ND(9.9)	
TPH–GRO	ND(2.9)	ND(3)	**210J**	ND(3.3)	
TPH–ORO	ND(50)	ND(46)	ND(470)	ND(50)	

NDD–SB–3

NDD–SB–5					8/23/21–8/24/21
FT BGS	0–0.5	1.5–2	9.5–10	12–12.5	17.5–18
TPH–DRO	23	5.3J+	ND(9.3)	ND(9.7)	ND(9.9)
TPH–GRO	ND(3.6)	ND(3.4)	ND(2.4)	2.1J	ND(4.1)
TPH–ORO	ND(48)	ND(48)	ND(46)	ND(48)	ND(49)

NDD–SB–4

NDD–SB–1

NDD–SB–5

NDD–SB–2

NDD–SB–4					8/23/21
FT BGS	1–1.5	2–2.5	2.5–3	19.5–20	
TPH–DRO	240	**3000**	**1700**	6.3J+	
TPH–GRO	**1100**	**180**	**1100**	ND(3.1)	
TPH–ORO	ND(49)	ND(490)	ND(470)	ND(46)	

NDD–SB–1					8/18/21–8/19/21
FT BGS	0–0.5	1.5–2	5–5.5	13.5–14	
TPH–DRO	ND(9.4)	12	**2500**	10	
TPH–GRO	ND(3.3)	ND(2.7)	**1100**	ND(2.7)	
TPH–ORO	ND(47)	ND(45)	ND(450)	ND(49)	

NDD–SB–2					8/20/21
FT BGS	0–0.5	1.5–2	3.5–4	19–19.5	
TPH–DRO	200	**6100**	**8500**	5.2J+	
TPH–GRO	**810**	**14000**	**8300**	1.8J	
TPH–ORO	ND(47)	ND(2400)	ND(2400)	ND(46)	

NDD–MW–1						8/16/21–8/17/21
FT BGS	0–0.5	1.5–2	7.5–8	27.5–28	35–35.5	45.5–46
TPH–DRO	ND(9.3)	27	**5400**	27J+	ND(9.7)	ND(9.5)
TPH–GRO	1.1U	1.4U	1.2U	**230**	0.94U	1.1U
TPH–ORO	130	200	**12000**	ND(49)	ND(48)	ND(47)

NDD–MW–1

NDD–MW–2					8/17/21–8/18/21
FT BGS	0–0.5	1.5–2	28.2–28.7	42.5–43	47.5–48
TPH–DRO	4.9J	9.5J	ND(9.3)	89JB	45JB
TPH–GRO	0.97U	5.2JB	0.9U	34	**150**
TPH–ORO	ND(47)	ND(48)	ND(47)	ND(47)	ND(48)

NDD–MW–2
DRY

NDD–SB–6					8/23/21
FT BGS	1.5–2	3–3.5	15–15.5	21–21.5	23.5–24
TPH–DRO	ND(9.4)	ND(9.9)	ND(9.3)	180	12
TPH–GRO	ND(2.7)	ND(3.3)	ND(3.3)	**310**	18
TPH–ORO	ND(47)	ND(50)	ND(46)	ND(44)	ND(48)

NDD–SB–6

NOTES:
1. VALUES SHOWN IN BOLD AND BLACK COLOR EXCEED NMED INDUSTRIAL SSL
2. ND(X) = NOT DETECTED AT THE REPORTING LIMIT, WHERE (X) DENOTES THE REPORTING LIMIT CONCENTRATION
3. NMED = NEW MEXICO ENVIRONMENT DEPARTMENT
4. mg/kg = MILLIGRAMS PER KILOGRAM
5. SSL = SOIL SCREENING LEVEL
6. J = ESTIMATED CONCENTRATION
7. J+ = ESTIMATED CONCENTRATION, POSSIBLY BIASED HIGH
8. JB = ESTIMATED CONCENTRATION DUE TO BLANK CONTAMINATION
9. U = EVALUATED TO BE UNDETECTED AT REPORTING LIMIT

N

0 150'

Image Cite: USDA /fsa – Aerial Photography Field Office, NAIP MrSID – Publication: 2014

EXPLANATION

- NDD–MW–2 — NEW PERMANENT MONITORING WELL LOCATION AND DESIGNATION
- NDD–TW–2 — NEW TEMPORARY MONITORING WELL LOCATION AND DESIGNATION
- NDD–SB–2 — SOIL BORING LOCATION AND DESIGNATION
- NORTH DRAINAGE DITCH BOUNDARY

CONSTITUENT TABLE EXPLANATION

SAMPLE LOCATION → NDD–MW–1	8/16/21–8/17/21 ← SAMPLE DATE
FEET BELOW GROUND SURFACE → FT BGS	1
TOTAL PETROLEUM HYDROCARBON DIESEL RANGE ORGANICS → TPH–DRO	1000 3000
TOTAL PETROLEUM HYDROCARBON GASOLINE RANGE ORGANICS → TPH–GRO	100 500
TOTAL PETROLEUM HYDROCARBON OIL RANGE ORGANICS → TPH–ORO	1000 3000
	NMED RESIDENTIAL SSL (mg/kg)
	NMED INDUSTRIAL SSL (mg/kg)

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307.745.7474 (F) 307.745.7729

FIGURE 4-1

TOTAL PETROLEUM HYDROCARBON SOIL ANALYTICAL RESULTS

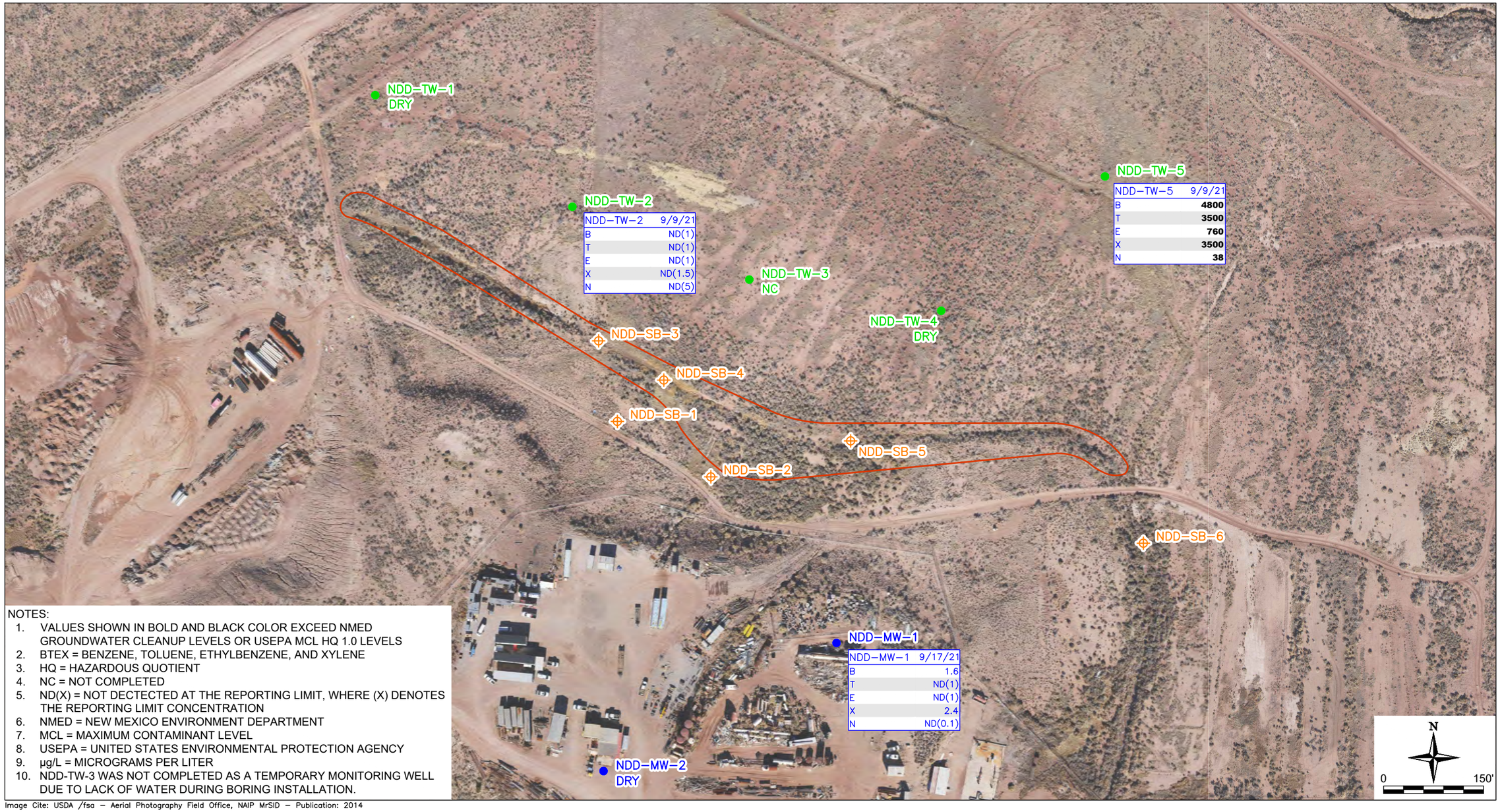
WESTERN REFINING SOUTHWEST LLC MARATHON GALLUP REFINERY GALLUP, NEW MEXICO

Drawn By: EAD	Checked By: CF	Scale:1" = 150'	Date: 11/4/2021	File: 697-NDD-SAMPLEDATA-202110

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Received by OCD: 9/19/2022 12:31:41 PM

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NOTES:

1. VALUES SHOWN IN BOLD AND BLACK COLOR EXCEED NMED GROUNDWATER CLEANUP LEVELS OR USEPA MCL HQ 1.0 LEVELS
2. BTEX = BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENE
3. HQ = HAZARDOUS QUOTIENT
4. NC = NOT COMPLETED
5. ND(X) = NOT DECTECTED AT THE REPORTING LIMIT, WHERE (X) DENOTES THE REPORTING LIMIT CONCENTRATION
6. NMED = NEW MEXICO ENVIRONMENT DEPARTMENT
7. MCL = MAXIMUM CONTAMINANT LEVEL
8. USEPA = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
9. µg/L = MICROGRAMS PER LITER
10. NDD-TW-3 WAS NOT COMPLETED AS A TEMPORARY MONITORING WELL DUE TO LACK OF WATER DURING BORING INSTALLATION.

Image Cite: USDA /fsa – Aerial Photography Field Office, NAIP MrSID – Publication: 2014

EXPLANATION

- NDD–MW–2 — NEW PERMANENT MONITORING WELL LOCATION AND DESIGNATION
- NDD–TW–2 — NEW TEMPORARY MONITORING WELL LOCATION AND DESIGNATION
- NDD–SB–2 — SOIL BORING LOCATION AND DESIGNATION
- NORTH DRAINAGE DITCH BOUNDARY

CONSTITUENT TABLE EXPLANATION

SAMPLE LOCATION	NDD–MW–1	9/17/21 ← SAMPLE DATE
BENZENE	B	5	5
TOLUENE	T	1000	1000
ETHYLBENZENE	E	700	700
XYLENE	X	620	10000
NAPHTHALENE	N	30	NA
NMED GROUNDWATER CLEANUP LEVELS (ug/L)			
USEPA MCL HQ 1.0 (µg/L)			

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www.trihydro.com
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FIGURE 4-2

BTEX AND NAPHTHALENE GROUNDWATER ANALYTICAL RESULTS

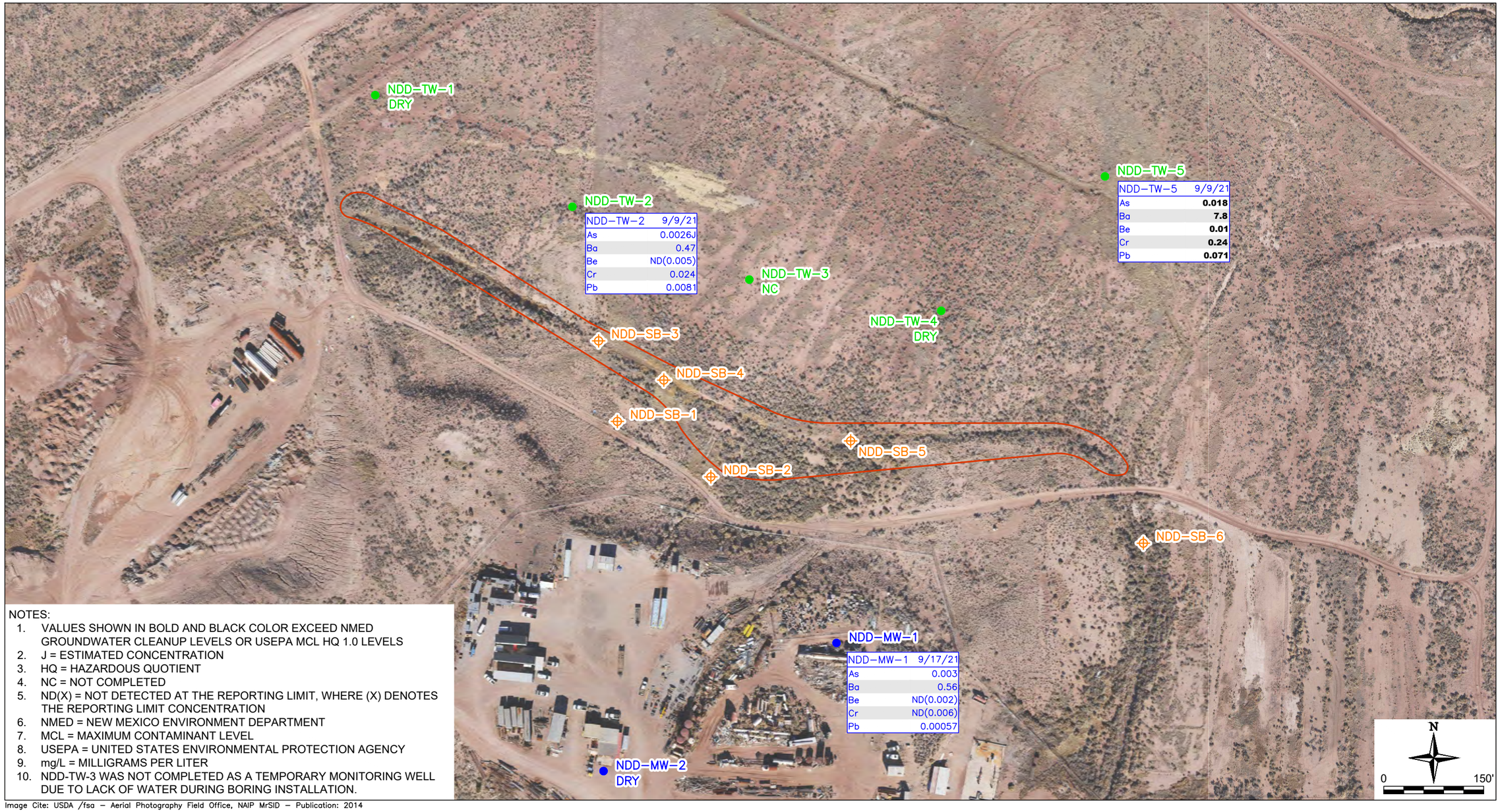
**WESTERN REFINING SOUTHWEST LLC
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO**

Drawn By: EAD	Checked By: CF	Scale:1" = 150'	Date: 11/4/2021	File: 697-NDD-SAMPLEDATA-202110

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NOTES:

1. VALUES SHOWN IN BOLD AND BLACK COLOR EXCEED NMED GROUNDWATER CLEANUP LEVELS OR USEPA MCL HQ 1.0 LEVELS
2. J = ESTIMATED CONCENTRATION
3. HQ = HAZARDOUS QUOTIENT
4. NC = NOT COMPLETED
5. ND(X) = NOT DETECTED AT THE REPORTING LIMIT, WHERE (X) DENOTES THE REPORTING LIMIT CONCENTRATION
6. NMED = NEW MEXICO ENVIRONMENT DEPARTMENT
7. MCL = MAXIMUM CONTAMINANT LEVEL
8. USEPA = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
9. mg/L = MILLIGRAMS PER LITER
10. NDD-TW-3 WAS NOT COMPLETED AS A TEMPORARY MONITORING WELL DUE TO LACK OF WATER DURING BORING INSTALLATION.

Image Cite: USDA /fsa – Aerial Photography Field Office, NAIP MrSID – Publication: 2014

EXPLANATION

- NDD-MW-2 — NEW PERMANENT MONITORING WELL LOCATION AND DESIGNATION
- NDD-TW-2 — NEW TEMPORARY MONITORING WELL LOCATION AND DESIGNATION
- NDD-SB-2 — SOIL BORING LOCATION AND DESIGNATION
- NORTH DRAINAGE DITCH BOUNDARY

CONSTITUENT TABLE EXPLANATION

SAMPLE LOCATION	NDD-MW-1	9/17/21 ← SAMPLE DATE
ARSENIC	As	0.01	0.01
BARIUM	Ba	2	2
BERYLLIUM	Be	0.004	0.004
CHROMIUM	Cr	0.05	0.1
LEAD	Pb	0.015	0.015
NMED GROUNDWATER CLEANUP LEVELS (mg/L)			
USEPA MCL HQ 1.0 (mg/L)			

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FIGURE 4-3

TOTAL METALS GROUNDWATER ANALYTICAL RESULTS

**WESTERN REFINING SOUTHWEST LLC
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO**

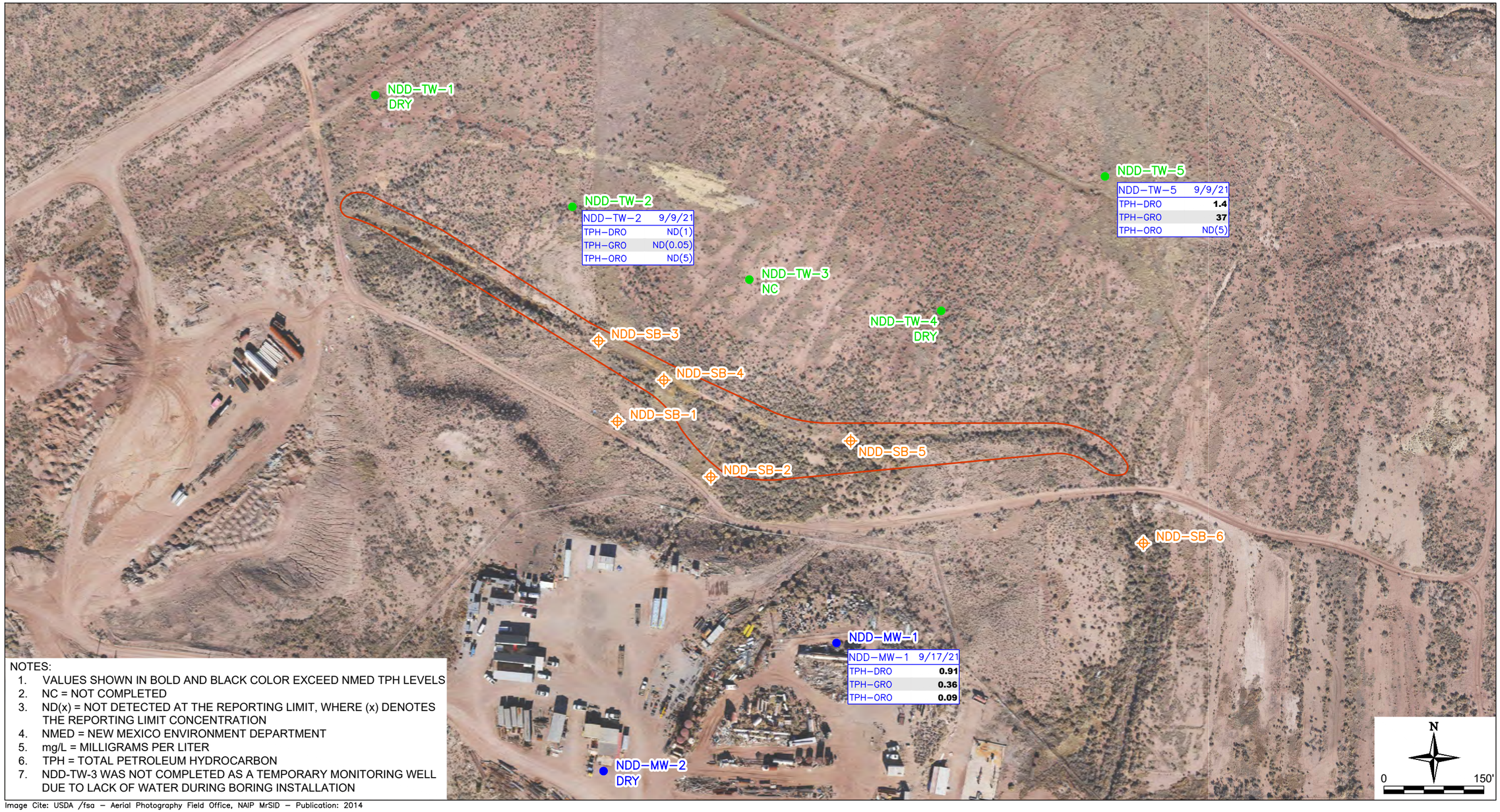
Drawn By: EAD	Checked By: CF	Scale:1" = 150'	Date: 11/4/2021	File: 697-NDD-SAMPLEDATA-202110

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NOTES:

1. VALUES SHOWN IN BOLD AND BLACK COLOR EXCEED NMED TPH LEVELS
2. NC = NOT COMPLETED
3. ND(x) = NOT DETECTED AT THE REPORTING LIMIT, WHERE (x) DENOTES THE REPORTING LIMIT CONCENTRATION
4. NMED = NEW MEXICO ENVIRONMENT DEPARTMENT
5. mg/L = MILLIGRAMS PER LITER
6. TPH = TOTAL PETROLEUM HYDROCARBON
7. NDD-TW-3 WAS NOT COMPLETED AS A TEMPORARY MONITORING WELL DUE TO LACK OF WATER DURING BORING INSTALLATION

Image Cite: USDA /fsa – Aerial Photography Field Office, NAIP MrSID – Publication: 2014

EXPLANATION

- NDD–MW–2 — NEW PERMANENT MONITORING WELL LOCATION AND DESIGNATION
- NDD–TW–2 — NEW TEMPORARY MONITORING WELL LOCATION AND DESIGNATION
- NDD–SB–2 — SOIL BORING LOCATION AND DESIGNATION
- NORTH DRAINAGE DITCH BOUNDARY

CONSTITUENT TABLE EXPLANATION

SAMPLE LOCATION →	NDD–MW–1	9/17/21 ← SAMPLE DATE
TOTAL PETROLEUM HYDROCARBON DIESEL RANGE ORGANICS →	TPH–DRO	0.0167
TOTAL PETROLEUM HYDROCARBON GASOLINE RANGE ORGANICS →	TPH–GRO	0.0101
TOTAL PETROLEUM HYDROCARBON OIL RANGE ORGANICS →	TPH–ORO	0.0858
NMED TPH LEVELS (mg/L) ←		

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FIGURE 4-4

TOTAL PETROLEUM HYDROCARBON GROUNDWATER ANALYTICAL RESULTS

**WESTERN REFINING SOUTHWEST LLC
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO**

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Tables

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TABLE 3-2. WELL CONSTRUCTION DATA
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Sample Date	Date of Installation	Casing Diameter (in)	Surface Elevation (ft)	Well Casing Rim Elevation (ft)	Stick-up length (ft)	Total Well Depth (ft)	DTW (ft)	Well Casing Bottom Elevation (ft)	Screened Interval Depth Top to Bottom (ft)
NDD-TW-1	9/8/2021	8/12/2021	2	NM*	NM*	NM*	34.5	26.5	34.5	18-32.8
NDD-TW-2	9/8/2021	8/13/2021	2	NM*	NM*	NM*	34	30.5	34	18-32.7
NDD-TW-4	9/8/2021	8/19/2021	2	NM*	NM*	NM*	32	15	26	10-24.7
NDD-TW-5	9/8/2021	8/20/2021	2	NM*	NM*	NM*	31	23	31	13-27.7
NDD-MW-1	9/8/2021	8/17/2021	2	6943.65	6943.06	0.59	46	35	46	25-44.7
NDD-MW-2	9/8/2021	8/18/2021	2	6943.07	6945.95	-2.88	48	28.2	34	13-32.7

Notes
*Temporary monitoring wells were plugged and abandoned following sampling.
NDD-MW-1 and NDD-MW-2 renamed OW-70 and OW-12A, respectively, to match site well nomenclature.
NDD-TW-3 not completed in the field due to lack of water in boring.
NM = not measured
ft = feet
msl = relative mean sea level
bgs = below ground surface

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TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,1,1,2-Tetrachloroethane (mg/kg)	1,1,1-Trichloro-ethane (mg/kg)	1,1,2,2-Tetrachloroethane (mg/kg)	1,1,2-Trichloro-ethane (mg/kg)	1,1-Dichloro-ethane (mg/kg)	1,1-Dichloro-ethene (mg/kg)	1,1-Dichloro-propene (mg/kg)	1,2,3-Trichloro-benzene (mg/kg)	1,2,3-Trichloro-propane (mg/kg)		1,2,4-Trichloro-benzene (mg/kg)	1,2,4-Trimethyl-benzene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.069)	ND(0.069)	*ND(0.069)*	[c]	ND(0.035)	ND(0.035)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.072)	*ND(0.072)*	[c]	ND(0.036)	ND(0.036)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.077)	ND(0.077)	*ND(0.077)*	[c]	ND(0.039)	ND(0.039)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.24)	ND(0.24)	*ND(0.24)*	[c]	ND(0.12)	2.1
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.055)	ND(0.055)	*ND(0.055)*	[c]	ND(0.027)	ND(0.027)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.065)	*ND(0.065)*	[c]	ND(0.033)	ND(0.033)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.053)	*ND(0.053)*	[c]	ND(0.026)	0.01 J
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.061)	*ND(0.061)*	[c]	ND(0.03)	ND(0.03)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.062)	*ND(0.062)*	[c]	ND(0.031)	0.013 J
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.057)	ND(0.057)	*ND(0.057)*	[c]	ND(0.028)	ND(0.028)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.073)	ND(0.073)	*ND(0.073)*	[c]	ND(0.037)	0.2
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.4)	*ND(0.4)*	[c]	ND(0.2)	1.7
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.065)	*ND(0.065)*	[c]	ND(0.033)	ND(0.033)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.054)	*ND(0.054)*	[c]	ND(0.027)	ND(0.027)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.054)	*ND(0.054)*	[c]	ND(0.027)	0.0087 J
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.28) UJ	ND(0.28) UJ	*ND(0.28) UJ*	[c]	ND(0.14) UJ	42 J-
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.27)	ND(0.27)	*ND(0.27)*	[c]	ND(0.14)	37
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.34)	ND(0.34)	*ND(0.34)*	[c]	ND(0.17)	3.6
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(3.8)	ND(3.8)	*ND(3.8)*	[c]	ND(1.9)	180
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.033)	ND(0.033)	0.011 J	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.067)	ND(0.067)	*ND(0.067)*	[c]	ND(0.033)	0.014 J
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	ND(2.9)	ND(2.9)	*ND(2.9)*	[c]	ND(1.4)	120
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.059)	ND(0.059)	*ND(0.059)*	[c]	ND(0.029)	ND(0.029)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.061)	*ND(0.061)*	[c]	ND(0.03)	ND(0.03)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.56)	ND(0.56)	*ND(0.56)*	[c]	ND(0.28)	2.8 J
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.57)	ND(0.57)	*ND(0.57)*	[c]	ND(0.28)	7.2 J
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.066)	*ND(0.066)*	[c]	ND(0.033)	ND(0.033)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.62)	ND(0.62)	*ND(0.62)*	[c]	ND(0.31)	15
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.062)	*ND(0.062)*	[c]	ND(0.031)	0.0065 J
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.61)	ND(0.61)	*ND(0.61)*	[c]	ND(0.31)	19
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.3)	ND(0.3)	*ND(0.3)*	[c]	ND(0.15)	1.7
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.071)	*ND(0.071)*	[c]	ND(0.036)	ND(0.036)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.068)	ND(0.068)	*ND(0.068)*	[c]	ND(0.034)	ND(0.034)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.053)	*ND(0.053)*	[c]	ND(0.026)	0.0045 J
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.082)	ND(0.082)	*ND(0.082)*	[c]	ND(0.041)	ND(0.041)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.049)	ND(0.049)	ND(0.049)		ND(0.024)	ND(0.024)
[a] 2019 Industrial NMED SSL		137	72,500	39.4	92.1	383	2,260	NA	NA	1.21		1,250	NA
[b] 2019 Construction Worker NMED SSL		659	13,600	197	4,300	1,820	424	NA	NA	8.26		8,540	NA
[c] 2019 Residential NMED SSL		28.1	14,400	7.98	18.8	78.6	440	NA	NA	0.051		240	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2-Dibromo 3-chloropropane (mg/kg)	1,2-Dibromo-ethane (mg/kg)	1,2-Dichloro-benzene (mg/kg)	1,2-Dichloro-ethane (mg/kg)	1,2-Dichloro-propane (mg/kg)	1,3,5-Trimethyl-benzene (mg/kg)	1,3-Dichloro-benzene (mg/kg)	1,3-Dichloro-propane (mg/kg)	1,4-Dichloro-benzene (mg/kg)	1-Methyl-naphthalene (mg/kg)	2,2-Dichloro-propane (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.069)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.14)	ND(0.069)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(0.072)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	0.092 J	ND(0.072)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(0.077)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.15)	ND(0.077)
NDD-MW-1 (27.5-28 ft)	08/17/21	*ND(0.24)* [c]	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	0.72	ND(0.12)	ND(0.12)	ND(0.12)	0.32 J	ND(0.24)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.055)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.055)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.065)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.065)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.053)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.066 J	ND(0.053)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.061)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.12)	ND(0.061)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.062)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.12)	ND(0.062)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.057)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.11)	ND(0.057)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.073)	0.026 J	ND(0.037)	0.02 J	ND(0.037)	0.073	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.15)	ND(0.073)
NDD-MW-2 (47.5-48 ft)	08/18/21	*ND(0.4)* [c]	ND(0.2)	ND(0.2)	0.1 J	ND(0.2)	0.61	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.8)	ND(0.4)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.065)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.065)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.054)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.054)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.054)	ND(0.027)	ND(0.027)	0.02 J	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.054)
NDD-SB-1 (5-5.5 ft)	08/18/21	*ND(0.28) UJ* [c]	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	13 J-	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	16 J-	ND(0.28) UJ
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	*ND(0.27)* [c]	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	13	ND(0.14)	ND(0.14)	ND(0.14)	14	ND(0.27)
NDD-SB-2 (0-0.5 ft)	08/20/21	*ND(0.34)* [c]	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	13	ND(0.17)	ND(0.17)	ND(0.17)	21	ND(0.34)
NDD-SB-2 (1.5-2 ft)	08/20/21	*ND(3.8)* [c]	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(1.9)	63	ND(1.9)	ND(1.9)	ND(1.9)	24	ND(3.8)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.067)	ND(0.033)	ND(0.033)	0.017 J	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.067)
NDD-SB-2 (3.5-4 ft)	08/20/21	*ND(2.9)* [c]	*ND(1.4)* [c]	ND(1.4)	1.3 J	ND(1.4)	40	ND(1.4)	ND(1.4)	ND(1.4)	17	ND(2.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.059)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.12)	ND(0.059)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.061)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.12)	ND(0.061)
NDD-SB-3 (6-6.5 ft)	08/23/21	*ND(0.56)* [c]	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	0.84 J	ND(0.28)	ND(0.28)	ND(0.28)	0.77 J	ND(0.56)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	*ND(0.57)* [c]	ND(0.28)	ND(0.28)	ND(0.14)	ND(0.28)	2.1 J	ND(0.28)	ND(0.28)	ND(0.28)	2.1	ND(0.57)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.066)	ND(0.033)	ND(0.033)	0.016 J	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.066)
NDD-SB-4 (1-1.5 ft)	08/23/21	*ND(0.62)* [c]	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	6	ND(0.31)	ND(0.31)	ND(0.31)	2.2	ND(0.62)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.062)	ND(0.031)	ND(0.031)	0.017 J	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.12)	ND(0.062)
NDD-SB-4 (2.5-3 ft)	08/23/21	*ND(0.61)* [c]	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	6.2	ND(0.31)	ND(0.31)	ND(0.31)	4.5	ND(0.61)
NDD-SB-4 (2-2.5 ft)	08/23/21	*ND(0.3)* [c]	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	0.6	ND(0.15)	ND(0.15)	ND(0.15)	0.51 J	ND(0.3)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.071)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.14)	ND(0.071)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.068)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.14)	ND(0.068)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.053)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.11)	ND(0.053)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.082)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.16)	ND(0.082)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.049)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.098)	ND(0.049)
[a] 2019 Industrial NMED SSL		1.18	3.31	13,000	40.7	86.8	NA	NA	NA	6,730	813	NA
[b] 2019 Construction Worker NMED SSL		5.53	16.3	2,500	195	415	NA	NA	NA	45,900	6,060	NA
[c] 2019 Residential NMED SSL		0.0858	0.672	2,150	8.32	17.8	NA	NA	NA	1,290	172	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Butanone (mg/kg)	2-Chlorotoluene (mg/kg)	2-Hexanone (mg/kg)	2-Methyl-naphthalene (mg/kg)	4-Chlorotoluene (mg/kg)	4-Methyl-2-Pentanone (mg/kg)	Acetone (mg/kg)	Benzene (mg/kg)	Bromobenzene (mg/kg)	Bromodichloro-methane (mg/kg)	Bromoform (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	0.18 J	ND(0.035)	0.022 J	ND(0.14)	ND(0.035)	ND(0.35)	ND(0.52)	ND(0.017)	ND(0.035)	ND(0.035)	ND(0.035)
NDD-MW-1 (1.5-2 ft)	08/16/21	0.21 J	ND(0.036)	0.044 J	0.078 J	ND(0.036)	ND(0.36)	ND(0.54)	ND(0.018)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	0.21 J	ND(0.039)	ND(0.39)	ND(0.15)	ND(0.039)	ND(0.39)	ND(0.58)	ND(0.019)	ND(0.039)	ND(0.039)	ND(0.039)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(1.2)	ND(0.12)	ND(1.2)	0.54	ND(0.12)	ND(1.2)	ND(1.8)	0.58	ND(0.12)	ND(0.12)	ND(0.12)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.27)	ND(0.027)	0.019 J	ND(0.11)	ND(0.027)	ND(0.27)	ND(0.41)	ND(0.014)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.49)	ND(0.016)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.26)	ND(0.026)	ND(0.26)	0.097 J	ND(0.026)	0.032 J	ND(0.4)	0.0051 J	ND(0.026)	ND(0.026)	ND(0.026)
NDD-MW-2 (0-0.5 ft)	08/17/21	0.14 J	ND(0.03)	0.018 J	ND(0.12)	ND(0.03)	ND(0.3)	ND(0.46)	ND(0.015)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.31)	ND(0.031)	ND(0.31)	ND(0.12)	ND(0.031)	2.2	ND(0.47)	ND(0.016)	ND(0.031)	0.0061 J	ND(0.031)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.28)	ND(0.028)	ND(0.28)	ND(0.11)	ND(0.028)	ND(0.28)	ND(0.42)	ND(0.014)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.37)	ND(0.037)	ND(0.37)	ND(0.15)	ND(0.037)	ND(0.37)	ND(0.55)	0.012 J	ND(0.037)	0.024 J	ND(0.037)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(2)	ND(0.2)	1.4 J	0.34 J	ND(0.2)	ND(2)	ND(3)	0.065 J	ND(0.2)	0.092 J	ND(0.2)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.49)	ND(0.016)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.27)	ND(0.027)	ND(0.27)	ND(0.11)	ND(0.027)	ND(0.27)	ND(0.41)	ND(0.014)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.27)	ND(0.027)	ND(0.27)	0.039 J	ND(0.027)	ND(0.27)	ND(0.41)	0.013 J	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(1.4) UJ	ND(0.14) UJ	ND(1.4) UJ	25 J-	ND(0.14) UJ	ND(1.4) UJ	ND(2.1) UJ	6.2 J-	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.4)	ND(0.14)	ND(1.4)	21	ND(0.14)	ND(1.4)	ND(2.1)	4.4	ND(0.14)	ND(0.14)	ND(0.14)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.7)	ND(0.17)	ND(1.7)	27	ND(0.17)	ND(1.7)	ND(2.5)	0.077 J	ND(0.17)	ND(0.17)	ND(0.17)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(19)	0.29 J	ND(19)	37	ND(1.9)	ND(19)	ND(28)	7.6	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	0.22 J	ND(0.033)	0.031 J	ND(0.13)	ND(0.033)	0.064 J	ND(0.5)	0.015 J	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(14)	ND(1.4)	ND(14)	25	ND(1.4)	ND(14)	ND(22)	**47** [c]	ND(1.4)	ND(1.4)	ND(1.4)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.29)	ND(0.029)	ND(0.29)	ND(0.12)	ND(0.029)	ND(0.29)	ND(0.44)	ND(0.015)	ND(0.029)	ND(0.029)	ND(0.029)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.3)	ND(0.03)	ND(0.3)	ND(0.12)	ND(0.03)	ND(0.3)	ND(0.46)	ND(0.015)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(2.8)	ND(0.28)	0.48 J	1.2 J	ND(0.28)	1.8 J	ND(4.2)	0.65	ND(0.28)	0.091 J	ND(0.28)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2.8)	ND(0.28)	ND(2.8)	3.2 J	ND(0.28)	ND(2.8)	ND(4.3)	0.95	ND(0.28)	ND(0.28)	ND(0.28)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.5)	0.059	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(3.1)	ND(0.31)	ND(3.1)	3.3	ND(0.31)	ND(3.1)	ND(4.6)	1.3	ND(0.31)	ND(0.31)	ND(0.31)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.31)	ND(0.031)	0.022 J	0.039 J	ND(0.031)	ND(0.31)	ND(0.47)	0.15	ND(0.031)	ND(0.031)	ND(0.031)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(3.1)	ND(0.31)	ND(3.1)	7.1	ND(0.31)	ND(3.1)	ND(4.6)	1.8	ND(0.31)	ND(0.31)	ND(0.31)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(1.5)	ND(0.15)	ND(1.5)	0.77	ND(0.15)	ND(1.5)	ND(2.3)	0.25	ND(0.15)	ND(0.15)	ND(0.15)
NDD-SB-5 (0-0.5 ft)	08/23/21	0.16 J	ND(0.036)	ND(0.36)	ND(0.14)	ND(0.036)	ND(0.36)	ND(0.53)	ND(0.018)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.34)	ND(0.034)	ND(0.34)	ND(0.14)	ND(0.034)	ND(0.34)	ND(0.51)	ND(0.017)	ND(0.034)	ND(0.034)	ND(0.034)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.26)	ND(0.026)	ND(0.26)	ND(0.11)	ND(0.026)	ND(0.26)	ND(0.4)	0.023	ND(0.026)	ND(0.026)	ND(0.026)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.41)	ND(0.041)	ND(0.41)	ND(0.16)	ND(0.041)	ND(0.41)	ND(0.62)	ND(0.021)	ND(0.041)	ND(0.041)	ND(0.041)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.24)	ND(0.024)	ND(0.24)	ND(0.098)	ND(0.024)	ND(0.24)	ND(0.37)	ND(0.012)	ND(0.024)	ND(0.024)	ND(0.024)
[a] 2019 Industrial NMED SSL		411,000	26,000	NA	3,370	NA	81,600	960,000	87.2	NA	30.2	1,760
[b] 2019 Construction Worker NMED SSL		91,700	7,080	NA	1,000	NA	20,200	242,000	423	NA	143	23,700
[c] 2019 Residential NMED SSL		37,400	1,560	NA	232	NA	5,810	66,300	17.8	NA	6.19	674

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bromomethane (mg/kg)	Carbon Disulfide (mg/kg)	Carbon tetrachloride (mg/kg)	Chlorobenzene (mg/kg)	Chloroethane (mg/kg)	Chloroform (mg/kg)	Chloromethane (mg/kg)	cis-1,2-Dichloro-ethene (mg/kg)	Cis-1,3-dichloro-propene (mg/kg)	Dibromo-chloromethane (mg/kg)	Dibromomethane (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.1)	ND(0.35)	ND(0.035)	ND(0.035)	ND(0.069)	ND(0.035)	ND(0.1)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(0.11)	ND(0.36)	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(0.12)	ND(0.39)	ND(0.039)	ND(0.039)	ND(0.077)	ND(0.039)	ND(0.12)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(0.37)	ND(1.2)	ND(0.12)	0.049 J	ND(0.24)	0.11 J	ND(0.37)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.082)	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.055)	ND(0.027)	ND(0.082)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.098)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.033)	ND(0.098)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.079)	ND(0.26)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.026)	ND(0.079)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.091)	ND(0.3)	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.03)	ND(0.091)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.093)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.085)	ND(0.28)	ND(0.028)	ND(0.028)	ND(0.057)	ND(0.028)	ND(0.085)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.11)	ND(0.37)	ND(0.037)	0.01 J	ND(0.073)	0.022 J	ND(0.11)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(0.6)	ND(2)	ND(0.2)	0.078 J	ND(0.4)	0.09 J	ND(0.6)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.098)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.033)	ND(0.098)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.081)	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.081)	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(0.42) UJ	ND(1.4) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.28) UJ	ND(0.14) UJ	ND(0.42) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(0.41)	ND(1.4)	ND(0.14)	ND(0.14)	ND(0.27)	ND(0.14)	ND(0.41)	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(0.51)	ND(1.7)	ND(0.17)	ND(0.17)	ND(0.34)	ND(0.17)	ND(0.51)	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(5.7)	ND(19)	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(5.7)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	0.056 J	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.067)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(4.3)	ND(14)	ND(1.4)	0.45 J	ND(2.9)	ND(1.4)	ND(4.3)	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.088)	ND(0.29)	ND(0.029)	ND(0.029)	ND(0.059)	ND(0.029)	ND(0.088)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.091)	ND(0.3)	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.03)	ND(0.091)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(0.84)	ND(2.8)	ND(0.28)	0.051 J	ND(0.56)	ND(0.28)	ND(0.84)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(0.85)	ND(2.8)	ND(0.28)	ND(0.28)	ND(0.57)	ND(0.28)	ND(0.85)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.099)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.099)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(0.93)	ND(3.1)	ND(0.31)	0.068 J	0.16 J	ND(0.31)	ND(0.93)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.094)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.094)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(0.92)	ND(3.1)	ND(0.31)	0.097 J	ND(0.61)	ND(0.31)	ND(0.92)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(0.45)	ND(1.5)	ND(0.15)	ND(0.15)	ND(0.3)	0.12 J	ND(0.45)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.11)	ND(0.36)	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.1)	ND(0.34)	ND(0.034)	ND(0.034)	ND(0.068)	ND(0.034)	ND(0.1)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.079)	ND(0.26)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.026)	ND(0.079)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.12)	ND(0.41)	ND(0.041)	ND(0.041)	ND(0.082)	ND(0.041)	ND(0.12)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.073)	ND(0.24)	ND(0.024)	ND(0.024)	ND(0.049)	ND(0.024)	ND(0.073)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)
[a] 2019 Industrial NMED SSL		94.5	8,540	52.5	2,160	89,500	28.7	201	2,600	NA	67.4	288
[b] 2019 Construction Worker NMED SSL		17.9	1,620	252	412	16,600	134	956	708	NA	340	53.9
[c] 2019 Residential NMED SSL		17.7	1,550	10.7	378	19,000	5.9	41.1	156	NA	13.9	57.9

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Dichlorodifluoro-methane (mg/kg)	Ethylbenzene (mg/kg)	Hexachloro-butadiene (mg/kg)	Isopropylbenzene (mg/kg)	Methylene Chloride (mg/kg)	MTBE (mg/kg)	Naphthalene (mg/kg)	n-Butylbenzene (mg/kg)	n-Propylbenzene (mg/kg)	p-Isopropyl-toluene (mg/kg)	sec-Butylbenzene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.035)	ND(0.035)	ND(0.069)	ND(0.035)	ND(0.1)	ND(0.035)	ND(0.069)	ND(0.1)	ND(0.035)	ND(0.035)	ND(0.035)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.036)	ND(0.11)	ND(0.036)	0.016 J	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(0.039)	ND(0.039)	ND(0.077)	ND(0.039)	ND(0.12)	ND(0.039)	ND(0.077)	ND(0.12)	ND(0.039)	ND(0.039)	ND(0.039)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(0.12)	1.1	ND(0.24)	0.19	ND(0.37)	ND(0.12)	0.34	0.19 J	0.44	0.08 J	0.12 J
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.027)	ND(0.027)	ND(0.055)	ND(0.027)	ND(0.082)	0.016 J	ND(0.055)	ND(0.082)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.033)	ND(0.098)	ND(0.033)	ND(0.065)	ND(0.098)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.026)	0.007 J	ND(0.053)	ND(0.026)	ND(0.079)	ND(0.026)	0.024 J	ND(0.079)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.03)	ND(0.091)	ND(0.03)	ND(0.061)	ND(0.091)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.031)	0.11	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.062)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.028)	ND(0.028)	ND(0.057)	ND(0.028)	ND(0.085)	ND(0.028)	ND(0.057)	ND(0.085)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.037)	0.087	ND(0.073)	0.032 J	ND(0.11)	ND(0.037)	0.018 J	0.022 J	0.051	0.014 J	ND(0.037)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(0.2)	0.35	ND(0.4)	0.2 J	ND(0.6)	ND(0.2)	0.19 J	0.19 J	0.35	0.11 J	ND(0.2)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.033)	ND(0.098)	ND(0.033)	ND(0.065)	ND(0.098)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.054)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	0.017 J	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(0.14) UJ	12 J-	ND(0.28) UJ	1.8 J-	ND(0.42) UJ	ND(0.14) UJ	12 J-	3.3 J-	5.8 J-	1.5 J-	1.4 J-
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(0.14)	9.5	ND(0.27)	1.6	ND(0.41)	ND(0.14)	12	3.2	5.2	1.4	1.3
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(0.17)	0.39	ND(0.34)	ND(0.17)	ND(0.51)	ND(0.17)	10	ND(0.51)	0.11 J	3.3	ND(0.17)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	65	ND(3.8)	20	ND(5.7)	ND(1.9)	22	15	35	10	12
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.033)	0.0087 J	ND(0.067)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.067)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.4)	**78** [c]	ND(2.9)	16	ND(4.3)	ND(1.4)	18	8.3	28	5.6	6.9
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.029)	ND(0.029)	ND(0.059)	ND(0.029)	ND(0.088)	ND(0.029)	ND(0.059)	ND(0.088)	ND(0.029)	ND(0.029)	ND(0.029)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.03)	ND(0.091)	ND(0.03)	ND(0.061)	ND(0.091)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(0.28)	0.79 J	ND(0.56)	0.14 J	ND(0.84)	ND(0.28)	0.65 J	0.33 J	0.41 J	0.085 J	ND(0.28)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(0.28)	1.9 J	ND(0.57)	0.28 J	ND(0.85)	ND(0.28)	1.5 J	0.69 J	0.98 J	0.26 J	ND(0.28)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.099)	ND(0.033)	ND(0.066)	ND(0.099)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(0.31)	3.1	ND(0.62)	0.76	ND(0.93)	ND(0.31)	2.2	0.71 J	1.3	0.76	0.5
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.031)	0.033	ND(0.062)	ND(0.031)	ND(0.094)	ND(0.031)	0.022 J	ND(0.094)	0.0066 J	ND(0.031)	ND(0.031)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(0.31)	4.3	ND(0.61)	0.95	ND(0.92)	ND(0.31)	4	1.4	2.5	0.86	0.78
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(0.15)	0.34	ND(0.3)	0.072 J	ND(0.45)	ND(0.15)	0.43	0.13 J	0.18	0.074 J	ND(0.15)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.071)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.034)	ND(0.034)	ND(0.068)	ND(0.034)	ND(0.1)	ND(0.034)	ND(0.068)	ND(0.1)	ND(0.034)	ND(0.034)	ND(0.034)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.026)	0.035	ND(0.053)	0.012 J	ND(0.079)	ND(0.026)	ND(0.053)	0.009 J	0.012 J	ND(0.026)	ND(0.026)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.041)	ND(0.041)	ND(0.082)	ND(0.041)	ND(0.12)	ND(0.041)	ND(0.082)	ND(0.12)	ND(0.041)	ND(0.041)	ND(0.041)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.024)	ND(0.024)	ND(0.049)	ND(0.024)	ND(0.073)	ND(0.024)	ND(0.049)	ND(0.073)	ND(0.024)	ND(0.024)	ND(0.024)
[a] 2019 Industrial NMED SSL		865	368	52.1	14,200	14,400	NA	241	NA	NA	NA	NA
[b] 2019 Construction Worker NMED SSL		161	1,770	2,400	2,740	89,600	NA	1,110	NA	NA	NA	NA
[c] 2019 Residential NMED SSL		182	75.1	68.3	2,360	766	NA	49.7	NA	NA	NA	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Styrene (mg/kg)	tert-Butylbenzene (mg/kg)	Tetrachloroethene (mg/kg)	Toluene (mg/kg)	trans-1,2-Dichloroethene (mg/kg)	trans-1,3-Dichloropropene (mg/kg)	Trichloroethene (mg/kg)	Trichloro-fluoromethane (mg/kg)	Vinyl Chloride (mg/kg)	Xylenes, Total (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.069)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(0.036)	ND(0.036)	ND(0.036)	0.0088 J	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.072)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.077)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(0.12)	ND(0.12)	ND(0.12)	0.044 J	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	5.6
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.055)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.065)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.026)	ND(0.026)	ND(0.026)	0.0041 J	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.031 J
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.061)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.031)	ND(0.031)	ND(0.031)	0.25	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	0.76
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.057)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.037)	ND(0.037)	ND(0.037)	0.14	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	0.48
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(0.2)	ND(0.2)	ND(0.2)	0.24	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	2.3
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.065)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	1.1 J-	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	80 J-
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(0.14)	ND(0.14)	ND(0.14)	0.7	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	69
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(0.17)	0.32	ND(0.17)	0.9	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	3.8
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	110	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	410
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.033)	ND(0.033)	ND(0.033)	0.0084J/ND(0.033) U*	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	0.031 J
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.4)	ND(1.4)	ND(1.4)	320	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	*ND(1.4)* [c]	560
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.059)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.061)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(0.28)	ND(0.28)	ND(0.28)	0.061 J	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	4.8 J
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(0.28)	ND(0.28)	ND(0.28)	0.13 J	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	12 J
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(0.31)	ND(0.31)	ND(0.31)	7.4	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	42
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	0.017 J
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(0.31)	ND(0.31)	ND(0.31)	4.9	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	35
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(0.15)	ND(0.15)	ND(0.15)	0.47	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	3.2
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.071)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.068)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.053)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.082)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.049)
[a] 2019 Industrial NMED SSL		51,300	NA	1,650	61,300	1,610	NA	112	6,030	28.4	4,280
[b] 2019 Construction Worker NMED SSL		10,200	NA	7,910	14,000	305	NA	5,370	1,130	161	798
[c] 2019 Residential NMED SSL		7,260	NA	337	5,230	295	NA	15.5	1,230	0.742	871

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,1,1,2-Tetrachloroethane (mg/kg)	1,1,1-Trichloroethane (mg/kg)	1,1,2,2-Tetrachloroethane (mg/kg)	1,1,2-Trichloroethane (mg/kg)	1,1-Dichloroethane (mg/kg)	1,1-Dichloroethene (mg/kg)	1,1-Dichloropropene (mg/kg)	1,2,3-Trichlorobenzene (mg/kg)	1,2,3-Trichloropropane (mg/kg)		1,2,4-Trichlorobenzene (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)		ND(0.025)	ND(0.025)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.054)	*ND(0.054)*	c	ND(0.027)	ND(0.027)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.066)	*ND(0.066)*	c	ND(0.033)	ND(0.033)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.59)	ND(0.59)	*ND(0.59)*	c	ND(0.29)	0.54
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.054)	*ND(0.054)*	c	ND(0.027)	0.087
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.066)	*ND(0.066)*	c	ND(0.033)	ND(0.033)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.063)	*ND(0.063)*	c	ND(0.031)	ND(0.031)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.062)	*ND(0.062)*	c	ND(0.031)	ND(0.031)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.051)	ND(0.051)	*ND(0.051)*	c	ND(0.025)	ND(0.025)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.071)	*ND(0.071)*	c	ND(0.036)	ND(0.036)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.076)	ND(0.076)	*ND(0.076)*	c	ND(0.038)	ND(0.038)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.081)	ND(0.081)	*ND(0.081)*	c	ND(0.04)	ND(0.04)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.057)	ND(0.057)	*ND(0.057)*	c	ND(0.029)	ND(0.029)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.064)	ND(0.064)	*ND(0.064)*	c	ND(0.032)	ND(0.032)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.073)	ND(0.073)	*ND(0.073)*	c	ND(0.037)	ND(0.037)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.051)	ND(0.051)	*ND(0.051)*	c	ND(0.026)	0.62
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.054)	*ND(0.054)*	c	ND(0.027)	0.0067 J
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.075)	ND(0.075)	*ND(0.075)*	c	ND(0.038)	ND(0.038)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.062)	*ND(0.062)*	c	ND(0.031)	ND(0.031)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.072)	*ND(0.072)*	c	ND(0.036)	ND(0.036)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.094)	ND(0.094)	*ND(0.094)*	c	ND(0.047)	ND(0.047)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.056)	ND(0.056)	*ND(0.056)*	c	ND(0.028)	ND(0.028)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.067)	ND(0.067)	*ND(0.067)*	c	ND(0.033)	0.0076 J
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.055)	ND(0.055)	*ND(0.055)*	c	ND(0.028)	ND(0.028)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.053)	*ND(0.053)*	c	ND(0.026)	ND(0.026)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.25)	ND(0.25)	*ND(0.25)*	c	ND(0.12)	7.9
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.049)	ND(0.049)	ND(0.049)		ND(0.024)	0.16
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.051)	ND(0.051)	*ND(0.051)*	c	ND(0.026)	0.13
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.063)	*ND(0.063)*	c	ND(0.031)	0.0075 J
[a] 2019 Industrial NMED SSL		137	72,500	39.4	92.1	383	2,260	NA	NA	1.21		1,250	NA
[b] 2019 Construction Worker NMED SSL		659	13,600	197	4,300	1,820	424	NA	NA	8.26		8,540	NA
[c] 2019 Residential NMED SSL		28.1	14,400	7.98	18.8	78.6	440	NA	NA	0.051		240	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2-Dibromo 3-chloropropane (mg/kg)	1,2-Dibromo-ethane (mg/kg)	1,2-Dichloro-benzene (mg/kg)	1,2-Dichloro-ethane (mg/kg)	1,2-Dichloro-propane (mg/kg)	1,3,5-Trimethyl-benzene (mg/kg)	1,3-Dichloro-benzene (mg/kg)	1,3-Dichloro-propane (mg/kg)	1,4-Dichloro-benzene (mg/kg)	1-Methyl-naphthalene (mg/kg)	2,2-Dichloro-propane (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.05)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.1)	ND(0.05)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.054)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.054)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.066)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.066)
NDD-SB-6 (21-21.5 ft)	08/23/21	*ND(0.59)* [c]	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	0.24 J	ND(0.29)	ND(0.29)	ND(0.29)	ND(1.2)	ND(0.59)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.054)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	0.038	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.054)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.066)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.066)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.063)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.13)	ND(0.063)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.062)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.12)	ND(0.062)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.051)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.1)	ND(0.051)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.071)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.14)	ND(0.071)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.076)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.15)	ND(0.076)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.081)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.16)	ND(0.081)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.057)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.11)	ND(0.057)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.064)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.13)	ND(0.064)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.073)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.15)	ND(0.073)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.051)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.048	ND(0.026)	ND(0.026)	ND(0.026)	0.16	ND(0.051)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.054)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.054)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.075)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.15)	ND(0.075)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.062)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.12)	ND(0.062)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.072)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.14)	ND(0.072)
NDD-TW-4 (1.5-2 ft)	08/19/21	*ND(0.094)* [c]	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.19)	ND(0.094)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.056)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.11)	ND(0.056)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.067)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.067)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.055)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.11)	ND(0.055)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.053)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.11)	ND(0.053)
NDD-TW-5 (18.5-19 ft)	08/19/21	*ND(0.25)* [c]	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	3	ND(0.12)	ND(0.12)	ND(0.12)	0.7	ND(0.25)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.049)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	0.036	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.097)	ND(0.049)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.051)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.031	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.1)	ND(0.051)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.063)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.13)	ND(0.063)
[a] 2019 Industrial NMED SSL		1.18	3.31	13,000	40.7	86.8	NA	NA	NA	6,730	813	NA
[b] 2019 Construction Worker NMED SSL		5.53	16.3	2,500	195	415	NA	NA	NA	45,900	6,060	NA
[c] 2019 Residential NMED SSL		0.0858	0.672	2,150	8.32	17.8	NA	NA	NA	1,290	172	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Butanone (mg/kg)	2-Chlorotoluene (mg/kg)	2-Hexanone (mg/kg)	2-Methyl-naphthalene (mg/kg)	4-Chlorotoluene (mg/kg)	4-Methyl-2-Pentanone (mg/kg)	Acetone (mg/kg)	Benzene (mg/kg)	Bromobenzene (mg/kg)	Bromodichloro-methane (mg/kg)	Bromoform (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.25)	ND(0.025)	ND(0.25)	ND(0.1)	ND(0.025)	ND(0.25)	ND(0.38)	ND(0.013)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.27)	ND(0.027)	ND(0.27)	ND(0.11)	ND(0.027)	ND(0.27)	ND(0.4)	ND(0.013)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.5)	ND(0.017)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(2.9)	ND(0.29)	0.98 J	ND(1.2)	ND(0.29)	0.37 J	ND(4.4)	ND(0.15)	ND(0.29)	ND(0.29)	ND(0.29)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.27)	ND(0.027)	ND(0.27)	0.034 J	ND(0.027)	ND(0.27)	ND(0.41)	ND(0.014)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.5)	ND(0.017)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.31)	ND(0.031)	ND(0.31)	ND(0.13)	ND(0.031)	ND(0.31)	ND(0.47)	ND(0.016)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.31)	ND(0.031)	ND(0.31)	ND(0.12)	ND(0.031)	ND(0.31)	ND(0.46)	ND(0.015)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.25)	ND(0.025)	ND(0.25)	ND(0.1)	ND(0.025)	ND(0.25)	ND(0.38)	ND(0.013)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.36)	ND(0.036)	ND(0.36)	ND(0.14)	ND(0.036)	ND(0.36)	ND(0.53)	ND(0.018)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.38)	ND(0.038)	ND(0.38)	ND(0.15)	ND(0.038)	ND(0.38)	ND(0.57)	ND(0.019)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.4)	ND(0.04)	ND(0.4)	ND(0.16)	ND(0.04)	ND(0.4)	ND(0.61)	ND(0.02)	ND(0.04)	ND(0.04)	ND(0.04)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.29)	ND(0.029)	ND(0.29)	ND(0.11)	ND(0.029)	ND(0.29)	ND(0.43)	ND(0.014)	ND(0.029)	ND(0.029)	ND(0.029)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.32)	ND(0.032)	ND(0.32)	ND(0.13)	ND(0.032)	ND(0.32)	ND(0.48)	ND(0.016)	ND(0.032)	ND(0.032)	ND(0.032)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.37)	ND(0.037)	ND(0.37)	ND(0.15)	ND(0.037)	ND(0.37)	ND(0.55)	ND(0.018)	ND(0.037)	ND(0.037)	ND(0.037)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.26)	ND(0.026)	ND(0.26)	0.025 J	ND(0.026)	ND(0.26)	ND(0.38)	0.099	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.27)	ND(0.027)	ND(0.27)	ND(0.11)	ND(0.027)	ND(0.27)	ND(0.41)	ND(0.014)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.38)	ND(0.038)	ND(0.38)	ND(0.15)	ND(0.038)	ND(0.38)	ND(0.56)	ND(0.019)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.31)	ND(0.031)	ND(0.31)	ND(0.12)	ND(0.031)	ND(0.31)	ND(0.47)	ND(0.016)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.36)	ND(0.036)	ND(0.36)	ND(0.14)	ND(0.036)	ND(0.36)	ND(0.54)	ND(0.018)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.47)	ND(0.047)	ND(0.47)	ND(0.19)	ND(0.047)	ND(0.47)	ND(0.7)	ND(0.023)	ND(0.047)	ND(0.047)	ND(0.047)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.28)	ND(0.028)	ND(0.28)	ND(0.11)	ND(0.028)	ND(0.28)	ND(0.42)	ND(0.014)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.5)	ND(0.017)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.28)	ND(0.028)	ND(0.28)	ND(0.11)	ND(0.028)	ND(0.28)	ND(0.41)	ND(0.014)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.26)	ND(0.026)	ND(0.26)	ND(0.11)	ND(0.026)	ND(0.26)	ND(0.4)	ND(0.013)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(1.2)	ND(0.12)	ND(1.2)	1.3	ND(0.12)	ND(1.2)	ND(1.9)	4	ND(0.12)	ND(0.12)	ND(0.12)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.24)	ND(0.024)	ND(0.24)	0.039 J	ND(0.024)	ND(0.24)	ND(0.36)	0.75 J	ND(0.024)	ND(0.024)	ND(0.024)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.26)	ND(0.026)	ND(0.26)	0.044 J	ND(0.026)	ND(0.26)	ND(0.39)	0.43 J	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.31)	ND(0.031)	ND(0.31)	ND(0.13)	ND(0.031)	ND(0.31)	ND(0.47)	0.026	ND(0.031)	ND(0.031)	ND(0.031)
[a] 2019 Industrial NMED SSL		411,000	26,000	NA	3,370	NA	81,600	960,000	87.2	NA	30.2	1,760
[b] 2019 Construction Worker NMED SSL		91,700	7,080	NA	1,000	NA	20,200	242,000	423	NA	143	23,700
[c] 2019 Residential NMED SSL		37,400	1,560	NA	232	NA	5,810	66,300	17.8	NA	6.19	674

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

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TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bromomethane (mg/kg)	Carbon Disulfide (mg/kg)	Carbon tetrachloride (mg/kg)	Chlorobenzene (mg/kg)	Chloroethane (mg/kg)	Chloroform (mg/kg)	Chloromethane (mg/kg)	cis-1,2-Dichloro-ethene (mg/kg)	Cis-1,3-dichloro-propene (mg/kg)	Dibromo-chloromethane (mg/kg)	Dibromomethane (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.075)	ND(0.25)	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.025)	ND(0.075)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-SB-6 (1.5-2 ft)	08/23/21	0.045 J	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.099)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.099)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(0.88)	ND(2.9)	ND(0.29)	ND(0.29)	ND(0.59)	0.15 J	ND(0.88)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.081)	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.1)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.094)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.031)	ND(0.094)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.093)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.076)	ND(0.25)	ND(0.025)	ND(0.025)	ND(0.051)	ND(0.025)	ND(0.076)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.11)	ND(0.36)	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.11)	ND(0.38)	ND(0.038)	ND(0.038)	ND(0.076)	ND(0.038)	ND(0.11)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.12)	ND(0.4)	ND(0.04)	ND(0.04)	ND(0.081)	ND(0.04)	ND(0.12)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.086)	ND(0.29)	ND(0.029)	ND(0.029)	ND(0.057)	ND(0.029)	ND(0.086)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.096)	ND(0.32)	ND(0.032)	ND(0.032)	ND(0.064)	ND(0.032)	ND(0.096)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.11)	ND(0.37)	ND(0.037)	ND(0.037)	ND(0.073)	ND(0.037)	ND(0.11)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.077)	ND(0.26)	ND(0.026)	ND(0.026)	0.019 J	0.0066 J	ND(0.077)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.081)	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.11)	ND(0.38)	ND(0.038)	ND(0.038)	ND(0.075)	ND(0.038)	ND(0.11)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.093)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.11)	ND(0.36)	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.14)	ND(0.47)	ND(0.047)	ND(0.047)	ND(0.094)	ND(0.047)	ND(0.14)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.084)	ND(0.28)	ND(0.028)	ND(0.028)	ND(0.056)	ND(0.028)	ND(0.084)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.1)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.067)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.083)	ND(0.28)	ND(0.028)	ND(0.028)	ND(0.055)	ND(0.028)	ND(0.083)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.079)	ND(0.26)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.026)	ND(0.079)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.37)	ND(1.2)	ND(0.12)	ND(0.12)	ND(0.25)	ND(0.12)	ND(0.37)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.073)	ND(0.24)	ND(0.024)	ND(0.024)	ND(0.049)	ND(0.024)	ND(0.073)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.077)	ND(0.26)	ND(0.026)	ND(0.026)	ND(0.051)	ND(0.026)	ND(0.077)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.094)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.031)	ND(0.094)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
[a] 2019 Industrial NMED SSL		94.5	8,540	52.5	2,160	89,500	28.7	201	2,600	NA	67.4	288
[b] 2019 Construction Worker NMED SSL		17.9	1,620	252	412	16,600	134	956	708	NA	340	53.9
[c] 2019 Residential NMED SSL		17.7	1,550	10.7	378	19,000	5.9	41.1	156	NA	13.9	57.9

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Dichlorodifluoro-methane (mg/kg)	Ethylbenzene (mg/kg)	Hexachloro-butadiene (mg/kg)	Isopropylbenzene (mg/kg)	Methylene Chloride (mg/kg)	MTBE (mg/kg)	Naphthalene (mg/kg)	n-Butylbenzene (mg/kg)	n-Propylbenzene (mg/kg)	p-Isopropyl-toluene (mg/kg)	sec-Butylbenzene (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.025)	ND(0.075)	ND(0.025)	ND(0.05)	ND(0.075)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.054)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.099)	ND(0.033)	ND(0.066)	ND(0.099)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(0.29)	ND(0.29)	ND(0.59)	ND(0.29)	ND(0.88)	ND(0.29)	ND(0.59)	0.12 J	0.12 J	ND(0.29)	ND(0.29)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.054)	0.0074 J	0.018 J	ND(0.027)	ND(0.027)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.066)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.031)	ND(0.094)	ND(0.031)	ND(0.063)	ND(0.094)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.062)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.025)	ND(0.025)	ND(0.051)	ND(0.025)	ND(0.076)	ND(0.025)	ND(0.051)	ND(0.076)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.071)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.038)	ND(0.038)	ND(0.076)	ND(0.038)	ND(0.11)	ND(0.038)	ND(0.076)	ND(0.11)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.04)	ND(0.04)	ND(0.081)	ND(0.04)	ND(0.12)	ND(0.04)	ND(0.081)	ND(0.12)	ND(0.04)	ND(0.04)	ND(0.04)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.029)	ND(0.029)	ND(0.057)	ND(0.029)	ND(0.086)	ND(0.029)	ND(0.057)	ND(0.086)	ND(0.029)	0.012 J	ND(0.029)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.032)	ND(0.032)	ND(0.064)	ND(0.032)	ND(0.096)	ND(0.032)	0.015 J	ND(0.096)	ND(0.032)	ND(0.032)	ND(0.032)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.037)	ND(0.037)	ND(0.073)	ND(0.037)	ND(0.11)	ND(0.037)	ND(0.073)	ND(0.11)	ND(0.037)	ND(0.037)	ND(0.037)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.026)	0.083	ND(0.051)	0.034	ND(0.077)	ND(0.026)	0.33	0.06 J	0.11	0.015 J	0.026
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.054)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.038)	ND(0.038)	ND(0.075)	ND(0.038)	ND(0.11)	ND(0.038)	ND(0.075)	ND(0.11)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.062)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.072)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.047)	ND(0.047)	ND(0.094)	ND(0.047)	ND(0.14)	ND(0.047)	ND(0.094)	ND(0.14)	ND(0.047)	ND(0.047)	ND(0.047)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.056)	ND(0.028)	ND(0.084)	0.019 J	ND(0.056)	ND(0.084)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.033)	ND(0.033)	ND(0.067)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.067)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.055)	ND(0.028)	ND(0.083)	ND(0.028)	ND(0.055)	ND(0.083)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.026)	ND(0.079)	ND(0.026)	ND(0.053)	ND(0.079)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.12)	3.9	ND(0.25)	0.24	ND(0.37)	ND(0.12)	1.2	0.4	1.4	0.089 J	0.12 J
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.024)	0.15	ND(0.049)	ND(0.024)	ND(0.073)	0.065	0.059	ND(0.073)	0.017 J	ND(0.024)	ND(0.024)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.026)	0.11	ND(0.051)	ND(0.026)	ND(0.077)	0.046	0.06	ND(0.077)	0.013 J	ND(0.026)	ND(0.026)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.031)	ND(0.094)	0.031	ND(0.063)	ND(0.094)	ND(0.031)	ND(0.031)	ND(0.031)
[a] 2019 Industrial NMED SSL		865	368	52.1	14,200	14,400	NA	241	NA	NA	NA	NA
[b] 2019 Construction Worker NMED SSL		161	1,770	2,400	2,740	89,600	NA	1,110	NA	NA	NA	NA
[c] 2019 Residential NMED SSL		182	75.1	68.3	2,360	766	NA	49.7	NA	NA	NA	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Styrene (mg/kg)	tert-Butylbenzene (mg/kg)	Tetrachloroethene (mg/kg)	Toluene (mg/kg)	trans-1,2-Dichloroethene (mg/kg)	trans-1,3-Dichloropropene (mg/kg)	Trichloroethene (mg/kg)	Trichloro-fluoromethane (mg/kg)	Vinyl Chloride (mg/kg)	Xylenes, Total (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.05)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.59)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.063)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.051)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.071)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.076)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.081)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.057)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.064)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.073)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.07
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.075)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.072)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.094)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.056)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.067)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.055)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.053)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.12)	ND(0.12)	ND(0.12)	2.7	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	14
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.024)	ND(0.024)	ND(0.024)	0.39 J	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	0.88
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.026)	ND(0.026)	ND(0.026)	0.22 J	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.63
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.031)	ND(0.031)	ND(0.031)	0.013J/ND(0.031) U*	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.063)
[a] 2019 Industrial NMED SSL		51,300	NA	1,650	61,300	1,610	NA	112	6,030	28.4	4,280
[b] 2019 Construction Worker NMED SSL		10,200	NA	7,910	14,000	305	NA	5,370	1,130	161	798
[c] 2019 Residential NMED SSL		7,260	NA	337	5,230	295	NA	15.5	1,230	0.742	871

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,4-Trichloro-benzene (mg/kg)	1,2-Dichloro-benzene (mg/kg)	1,3-Dichloro-benzene (mg/kg)	1,4-Dichloro-benzene (mg/kg)	1-Methyl-naphthalene (mg/kg)	2,4,5-Trichloro-phenol (mg/kg)	2,4,6-Trichloro-phenol (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	19	ND(2)	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	12	ND(1.9)	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	27	ND(1.9)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	39	ND(1.9)	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
[a] 2019 Industrial NMED SSL		1,250	13,000	NA	6,730	813	91,600	2,330
[b] 2019 Construction Worker NMED SSL		8,540	2,500	NA	45,900	6,060	26,900	17,000
[c] 2019 Residential NMED SSL		240	2,150	NA	1,290	172	6,160	484

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2,4-Dichloro-phenol (mg/kg)	2,4-Dimethyl-phenol (mg/kg)	2,4-Dinitro-phenol (mg/kg)	2,4-Dinitro Toluene (mg/kg)	2,6-Dinitro Toluene (mg/kg)	2-Chloro-naphthalene (mg/kg)	2-Chloro-phenol (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(7.7)	ND(5.8)	ND(9.6)	ND(9.6)	*ND(9.6)* [c]	ND(4.8)	ND(3.9)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(7.9)	ND(5.9)	ND(9.8)	ND(9.8)	*ND(9.8)* [c]	ND(4.9)	ND(3.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(3.9)	ND(2.9)	ND(4.8)	ND(4.8)	*ND(4.8)* [c]	ND(2.4)	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(7.9)	ND(5.9)	ND(9.9)	ND(9.9)	*ND(9.9)* [c]	ND(4.9)	ND(3.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(8)	ND(6)	ND(10)	ND(10)	*ND(10)* [c]	ND(5)	ND(4)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(7.9)	ND(6)	ND(9.9)	ND(9.9)	*ND(9.9)* [c]	ND(5)	ND(4)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(4)	ND(3)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(3.8)	ND(2.9)	ND(4.8)	ND(4.8)	*ND(4.8)* [c]	ND(2.4)	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(3.8)	ND(2.8)	ND(4.7)	ND(4.7)	*ND(4.7)* [c]	ND(2.4)	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(3.8)	ND(2.8)	ND(4.7)	ND(4.7)	*ND(4.7)* [c]	ND(2.4)	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(3.8)	ND(2.9)	ND(4.8)	ND(4.8)	*ND(4.8)* [c]	ND(2.4)	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
[a] 2019 Industrial NMED SSL		2,750	18,300	1,830	82.3	17.2	104,000	6,490
[b] 2019 Construction Worker NMED SSL		807	5,380	538	600	165	28,300	1,770
[c] 2019 Residential NMED SSL		185	1,230	123	17.1	3.56	6,260	391

Notes:
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ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Methyl-4,6-dinitrophenol (mg/kg)	2-Methyl-naphthalene (mg/kg)	2-Methylphenol (mg/kg)	2-Nitroaniline (mg/kg)	2-Nitrophenol (mg/kg)	3,3'-Dichloro-benzidine (mg/kg)	3,4-Methyl phenol (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(7.7)	ND(3.9)	ND(7.7)	ND(3.9)	ND(3.9)	ND(4.8)	ND(3.9)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(7.9)	ND(3.9)	ND(7.9)	ND(3.9)	ND(3.9)	ND(4.9)	ND(3.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(7.9)	ND(3.9)	ND(7.9)	ND(3.9)	ND(3.9)	ND(4.9)	ND(3.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(8)	ND(4)	ND(8)	ND(4)	ND(4)	ND(5)	ND(4)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(7.9)	ND(4)	ND(7.9)	ND(4)	ND(4)	ND(5)	ND(4)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(3.9)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(3.9)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(3.8)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(4)	30	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(3.8)	18	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(3.8)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(3.9)	43	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(3.8)	59	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
[a] 2019 Industrial NMED SSL		NA	3,370	NA	NA	NA	57	NA
[b] 2019 Construction Worker NMED SSL		NA	1,000	NA	NA	NA	410	NA
[c] 2019 Residential NMED SSL		NA	232	NA	NA	NA	11.8	NA

Notes:
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NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	3-Nitroaniline (mg/kg)	4-Bromophenyl-phenylether (mg/kg)	4-Chloro-3-Methylphenol (mg/kg)	4-Chloroaniline (mg/kg)	4-Chlorophenyl-phenylether (mg/kg)	4-Nitroaniline (mg/kg)	4-Nitrophenol (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(3.9)	ND(3.9)	ND(9.6)	ND(9.6)	ND(3.9)	ND(7.7)	ND(4.8)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(3.9)	ND(3.9)	ND(9.8)	ND(9.8)	ND(3.9)	ND(7.9)	ND(4.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(1.9)	ND(1.9)	ND(4.8)	ND(4.8)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(3.9)	ND(3.9)	ND(9.9)	ND(9.9)	ND(3.9)	ND(7.9)	ND(4.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(4)	ND(4)	ND(10)	ND(10)	ND(4)	ND(8)	ND(5)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(4)	ND(4)	ND(9.9)	ND(9.9)	ND(4)	ND(7.9)	ND(5)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(4)	ND(2.5)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(3.9)	ND(2.5)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(3.9)	ND(2.5)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(4.8)	ND(4.8)	ND(1.9)	ND(3.8)	ND(2.4)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.9)	ND(1.9)	ND(4.7)	ND(4.7)	ND(1.9)	ND(3.8)	ND(2.4)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(4.7)	ND(4.7)	ND(1.9)	ND(3.8)	ND(2.4)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(4.8)	ND(4.8)	ND(1.9)	ND(3.8)	ND(2.4)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
[a] 2019 Industrial NMED SSL		NA	NA	NA	NA	NA	NA	NA
[b] 2019 Construction Worker NMED SSL		NA	NA	NA	NA	NA	NA	NA
[c] 2019 Residential NMED SSL		NA	NA	NA	NA	NA	NA	NA

Notes:
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Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Acenaphthene (mg/kg)	Acenaph-thylene (mg/kg)	Aniline (mg/kg)	Anthracene (mg/kg)	Azobenzene (mg/kg)	Benzo(a)-anthracene (mg/kg)	Benzo(a)-pyrene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	*ND(3.9)* [c]
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	*ND(3.9)* [c]
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	*ND(3.9)* [c]
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	*ND(4)* [c]	*ND(4)* [c]
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	*ND(4)* [c]	*ND(4)* [c]
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
[a] 2019 Industrial NMED SSL		50,500	NA	NA	253,000	NA	32.3	23.6
[b] 2019 Construction Worker NMED SSL		15,100	NA	NA	75,300	NA	240	173
[c] 2019 Residential NMED SSL		3,480	NA	NA	17,400	NA	1.53	1.12

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzo(b)fluor-anthene (mg/kg)	Benzo(ghi)-perylene (mg/kg)	Benzo(k)fluor-anthene (mg/kg)	Benzoic Acid (mg/kg)	Benzyl Alcohol (mg/kg)	Bis(2-chloro ethoxy)methane (mg/kg)	Bis(2-chloro ethyl)ether (mg/kg)	
NDD-MW-1 (0-0.5 ft)	08/16/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-MW-1 (1.5-2 ft)	08/16/21	*ND(3.9)*	ND(3.9)	ND(3.9)	ND(19)	ND(3.9)	ND(3.9)	*ND(3.9)*	b,c
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	*ND(3.9)*	ND(3.9)	ND(3.9)	ND(20)	ND(3.9)	ND(3.9)	*ND(3.9)*	b,c
NDD-MW-1 (27.5-28 ft)	08/17/21	*ND(2)*	ND(2)	ND(2)	ND(9.9)	ND(2)	ND(2)	*ND(2)*	b
NDD-MW-1 (35-35.5 ft)	08/17/21	*ND(2)*	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	*ND(2)*	b
NDD-MW-1 (45.5-46 ft)	08/17/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.6)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-MW-1 (7.5-8 ft)	08/17/21	*ND(3.9)*	ND(3.9)	ND(3.9)	ND(20)	ND(3.9)	ND(3.9)	*ND(3.9)*	b,c
NDD-MW-2 (0-0.5 ft)	08/17/21	*ND(4)*	ND(4)	ND(4)	ND(20)	ND(4)	ND(4)	*ND(4)*	c
NDD-MW-2 (1.5-2 ft)	08/17/21	*ND(4)*	ND(4)	ND(4)	ND(20)	ND(4)	ND(4)	*ND(4)*	b,c
NDD-MW-2 (28.2-28.7 ft)	08/17/21	*ND(2)*	ND(2)	ND(2)	ND(9.9)	ND(2)	ND(2)	*ND(2)*	b
NDD-MW-2 (42.5-43 ft)	08/18/21	*ND(2)*	ND(2)	ND(2)	ND(9.8)	ND(2)	ND(2)	*ND(2)*	b
NDD-MW-2 (47.5-48 ft)	08/18/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-1 (0-0.5 ft)	08/18/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-1 (1.5-2 ft)	08/18/21	*ND(2)*	ND(2)	ND(2)	ND(9.8)	ND(2)	ND(2)	*ND(2)*	b
NDD-SB-1 (13.5-14 ft)	08/19/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.5)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-1 (5-5.5 ft)	08/18/21	*ND(2)*	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	*ND(2)*	b
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.5)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-2 (0-0.5 ft)	08/20/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.4)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-2 (1.5-2 ft)	08/20/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.99)	ND(0.2)	ND(0.2)	ND(0.2)	
NDD-SB-2 (3.5-4 ft)	08/20/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.6)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-3 (0-0.5 ft)	08/23/21	*ND(2)*	ND(2)	ND(2)	ND(9.9)	ND(2)	ND(2)	ND(2)	
NDD-SB-3 (1.5-2 ft)	08/23/21	*ND(2)*	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	*ND(2)*	b
[a] 2019 Industrial NMED SSL		32.3	NA	323	NA	NA	NA	15.7	
[b] 2019 Construction Worker NMED SSL		240	NA	2,310	NA	NA	NA	1.95	
[c] 2019 Residential NMED SSL		1.53	NA	15.3	NA	NA	NA	3.11	

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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bis(2-chloro isopropyl)ether (mg/kg)	Bis(2-ethyl hexyl)phthalate (mg/kg)	Benzyl Butyl Phthalate (mg/kg)	Carbazole (mg/kg)	Chrysene (mg/kg)	Dibenz(a,h) anthracene (mg/kg)	Dibenzofuran (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(3.9)	ND(9.6)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	ND(3.9)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(3.9)	ND(9.8)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	ND(3.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(1.9)	ND(4.8)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(3.9)	ND(9.9)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	ND(3.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(4)	ND(10)	ND(4)	ND(4)	ND(4)	*ND(4)* [a,c]	ND(4)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(4)	ND(9.9)	ND(4)	ND(4)	ND(4)	*ND(4)* [c]	ND(4)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(1.9)	ND(4.8)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.9)	ND(4.7)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.9)	ND(4.7)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.9)	ND(4.8)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
[a] 2019 Industrial NMED SSL		NA	1,830	NA	NA	3,230	3.23	NA
[b] 2019 Construction Worker NMED SSL		NA	13,400	NA	NA	23,100	24	NA
[c] 2019 Residential NMED SSL		NA	380	NA	NA	153	0.153	NA

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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Diethyl-phthalate (mg/kg)	Dimethyl Phthalate (mg/kg)	Di-n-butyl-phthalate (mg/kg)	Di-n-octyl-phthalate (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Hexachloro Benzene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(9.6)	ND(3.9)	ND(7.7)	ND(7.7)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(9.8)	ND(3.9)	ND(7.9)	ND(7.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(4.8)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(9.9)	ND(3.9)	ND(7.9)	ND(7.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(10)	ND(4)	ND(8)	ND(8)	ND(4)	ND(4)	*ND(4)* [c]
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(9.9)	ND(4)	ND(7.9)	ND(7.9)	ND(4)	ND(4)	*ND(4)* [c]
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(4.9)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(4.9)	ND(2)	ND(3.9)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(4.9)	ND(2)	ND(3.9)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(4.8)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(4.7)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(4.7)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	1 J	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.5)	ND(0.2)	0.45	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(4.8)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	1.7 J	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
[a] 2019 Industrial NMED SSL		733,000	NA	91,600	NA	33,700	33,700	16
[b] 2019 Construction Worker NMED SSL		215,000	NA	26,900	NA	10,000	10,000	117
[c] 2019 Residential NMED SSL		49,300	NA	6,160	NA	2,320	2,320	3.33

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NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Hexachloro-butadiene (mg/kg)	Hexachloro-cyclopentadiene (mg/kg)	Hexachloro-ethane (mg/kg)	Indeno(1,2,3-cd) pyrene (mg/kg)	Isophorone (mg/kg)	Naphthalene (mg/kg)	Nitrobenzene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(3.9)	*ND(3.9)* [c]	ND(3.9)	*ND(3.9)* [c]	ND(7.7)	ND(3.9)	ND(7.7)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(3.9)	*ND(3.9)* [c]	ND(3.9)	*ND(3.9)* [c]	ND(7.9)	ND(3.9)	ND(7.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(3.9)	*ND(3.9)* [c]	ND(3.9)	*ND(3.9)* [c]	ND(7.9)	ND(3.9)	ND(7.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(4)	*ND(4)* [c]	ND(4)	*ND(4)* [c]	ND(8)	ND(4)	ND(8)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(4)	*ND(4)* [c]	ND(4)	*ND(4)* [c]	ND(7.9)	ND(4)	ND(7.9)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(3.9)	ND(2)	ND(3.9)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(3.9)	ND(2)	ND(3.9)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	ND(1.9)	ND(3.8)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	13 J	ND(4)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	7.4 J	ND(3.8)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	ND(1.9)	ND(3.8)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	19	ND(3.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	30	ND(3.8)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
[a] 2019 Industrial NMED SSL		52.1	5,490	641	32.3	27,000	241	293
[b] 2019 Construction Worker NMED SSL		2,400	867	4,670	240	198,000	1,110	1,350
[c] 2019 Residential NMED SSL		68.3	2.3	133	1.53	5,610	49.7	60.4

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	N-Nitroso-dimethylamine (mg/kg)	N-Nitrosodi-n-propylamine (mg/kg)	N-Nitroso-diphenylamine (mg/kg)	Pentachloro-phenol (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	*ND(1.9)* [a,c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	*ND(3.9)* [b,c]	ND(3.9)	ND(3.9)	ND(7.7)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	*ND(3.9)* [b,c]	ND(3.9)	ND(3.9)	ND(7.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	*ND(3.9)* [b,c]	ND(3.9)	ND(3.9)	ND(7.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	*ND(4)* [a,c]	ND(4)	ND(4)	ND(8)	ND(4)	ND(4)	ND(4)
NDD-MW-2 (1.5-2 ft)	08/17/21	*ND(4)* [b,c]	ND(4)	ND(4)	ND(7.9)	ND(4)	ND(4)	ND(4)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	*ND(2)* [c]	ND(2)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	*ND(1.9)* [a,c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	*ND(2)* [c]	ND(2)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	*ND(1.9)* [a,c]	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	1.7 J	ND(1.9)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.8)	2.4	ND(1.9)	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	*ND(2)* [a,c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
[a] 2019 Industrial NMED SSL		0.503	NA	5,240	44.5	25,300	275,000	25,300
[b] 2019 Construction Worker NMED SSL		3.66	NA	37,900	346	7,530	77,400	7,530
[c] 2019 Residential NMED SSL		0.0234	NA	1,090	9.85	1,740	18,500	1,740

Notes:
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J - Estimated concentration
mg/kg - Milligram per kilogram
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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Pyridine (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(3.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(7.7)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(7.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(4)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(4)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(3.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(7.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(8)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(7.9)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(4)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(3.9)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(3.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(3.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(3.9)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(3.8)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(4)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(3.8)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(3.8)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(3.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.4)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(3.8)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(4)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(4)
[a] 2019 Industrial NMED SSL		NA
[b] 2019 Construction Worker NMED SSL		NA
[c] 2019 Residential NMED SSL		NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,4-Trichloro-benzene (mg/kg)	1,2-Dichloro-benzene (mg/kg)	1,3-Dichloro-benzene (mg/kg)	1,4-Dichloro-benzene (mg/kg)	1-Methyl-naphthalene (mg/kg)	2,4,5-Trichloro-phenol (mg/kg)	2,4,6-Trichloro-phenol (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	4.6	ND(1.9)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	4.5	ND(2)	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	2.5	ND(2)	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	7.7	ND(1.9)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	9.6	ND(2)	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		1,250	13,000	NA	6,730	813	91,600	2,330
[b] 2019 Construction Worker NMED SSL		8,540	2,500	NA	45,900	6,060	26,900	17,000
[c] 2019 Residential NMED SSL		240	2,150	NA	1,290	172	6,160	484

Notes:
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J - Estimated concentration
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NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2,4-Dichloro-phenol (mg/kg)	2,4-Dimethyl-phenol (mg/kg)	2,4-Dinitro-phenol (mg/kg)	2,4-Dinitro Toluene (mg/kg)	2,6-Dinitro Toluene (mg/kg)	2-Chloro-naphthalene (mg/kg)	2-Chloro-phenol (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(3.8)	ND(2.8)	ND(4.7)	ND(4.7)	*ND(4.7)* [c]	ND(2.4)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.39)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(3.9)	ND(3)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.25)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(3.8)	ND(2.8)	ND(4.7)	ND(4.7)	*ND(4.7)* [c]	ND(2.3)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.24)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.39)	ND(0.3)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.25)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(7.7)	ND(5.8)	ND(9.6)	ND(9.6)	*ND(9.6)* [c]	ND(4.8)	ND(3.9)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.24)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(7.5)	ND(5.6)	ND(9.3)	ND(9.3)	*ND(9.3)* [c]	ND(4.7)	ND(3.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.39)	ND(0.3)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.25)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.39)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.24)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.39)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
[a] 2019 Industrial NMED SSL		2,750	18,300	1,830	82.3	17.2	104,000	6,490
[b] 2019 Construction Worker NMED SSL		807	5,380	538	600	165	28,300	1,770
[c] 2019 Residential NMED SSL		185	1,230	123	17.1	3.56	6,260	391

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Methyl-4,6-dinitrophenol (mg/kg)	2-Methyl-naphthalene (mg/kg)	2-Methylphenol (mg/kg)	2-Nitroaniline (mg/kg)	2-Nitrophenol (mg/kg)	3,3'-Dichloro-benzidine (mg/kg)	3,4-Methyl phenol (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(3.8)	6.7	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(4)	6.6	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(3.9)	3.5	ND(3.9)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(3.8)	12	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.3)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(4)	14	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(3.9)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.24)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(7.7)	ND(3.9)	ND(7.7)	ND(3.9)	ND(3.9)	ND(4.8)	ND(3.9)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.24)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(7.5)	ND(3.7)	ND(7.5)	ND(3.7)	ND(3.7)	ND(4.7)	ND(3.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
[a] 2019 Industrial NMED SSL		NA	3,370	NA	NA	NA	57	NA
[b] 2019 Construction Worker NMED SSL		NA	1,000	NA	NA	NA	410	NA
[c] 2019 Residential NMED SSL		NA	232	NA	NA	NA	11.8	NA

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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	3-Nitroaniline (mg/kg)	4-Bromophenyl-phenylether (mg/kg)	4-Chloro-3-Methylphenol (mg/kg)	4-Chloroaniline (mg/kg)	4-Chlorophenyl-phenylether (mg/kg)	4-Nitroaniline (mg/kg)	4-Nitrophenol (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(4.7)	ND(4.7)	ND(1.9)	ND(3.8)	ND(2.4)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.24)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(3.9)	ND(2.5)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.25)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(4.7)	ND(4.7)	ND(1.9)	ND(3.8)	ND(2.3)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(3.9)	ND(2.5)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.24)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.25)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(3.9)	ND(3.9)	ND(9.6)	ND(9.6)	ND(3.9)	ND(7.7)	ND(4.8)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.24)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(3.7)	ND(3.7)	ND(9.3)	ND(9.3)	ND(3.7)	ND(7.5)	ND(4.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.25)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.24)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.49)	ND(0.49)	ND(0.19)	ND(0.39)	ND(0.24)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.24)
[a] 2019 Industrial NMED SSL		NA	NA	NA	NA	NA	NA	NA
[b] 2019 Construction Worker NMED SSL		NA	NA	NA	NA	NA	NA	NA
[c] 2019 Residential NMED SSL		NA	NA	NA	NA	NA	NA	NA

Notes:
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ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Acenaphthene (mg/kg)	Acenaph-thylene (mg/kg)	Aniline (mg/kg)	Anthracene (mg/kg)	Azobenzene (mg/kg)	Benzo(a)-anthracene (mg/kg)	Benzo(a)-pyrene (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	*ND(3.9)* [c]
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)	*ND(3.7)* [c]	*ND(3.7)* [c]
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		50,500	NA	NA	253,000	NA	32.3	23.6
[b] 2019 Construction Worker NMED SSL		15,100	NA	NA	75,300	NA	240	173
[c] 2019 Residential NMED SSL		3,480	NA	NA	17,400	NA	1.53	1.12

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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzo(b)fluor-anthene (mg/kg)	Benzo(ghi)-perylene (mg/kg)	Benzo(k)fluor-anthene (mg/kg)	Benzoic Acid (mg/kg)	Benzyl Alcohol (mg/kg)	Bis(2-chloro ethoxy)methane (mg/kg)	Bis(2-chloro ethyl)ether (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.4)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(9.9)	ND(2)	ND(2)	*ND(2)* [b]
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.96)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(9.8)	ND(2)	ND(2)	*ND(2)* [b]
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.4)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	*ND(2)* [b]
NDD-SB-5 (0-0.5 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(9.8)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	*ND(2)* [b]
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(1)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(1)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	*ND(3.9)* [c]	ND(3.9)	ND(3.9)	ND(19)	ND(3.9)	ND(3.9)	*ND(3.9)* [b,c]
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(1)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	*ND(3.7)* [c]	ND(3.7)	ND(3.7)	ND(19)	ND(3.7)	ND(3.7)	*ND(3.7)* [c]
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		32.3	NA	323	NA	NA	NA	15.7
[b] 2019 Construction Worker NMED SSL		240	NA	2,310	NA	NA	NA	1.95
[c] 2019 Residential NMED SSL		1.53	NA	15.3	NA	NA	NA	3.11

Notes:
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Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bis(2-chloro isopropyl)ether (mg/kg)	Bis(2-ethyl hexyl)phthalate (mg/kg)	Benzyl Butyl Phthalate (mg/kg)	Carbazole (mg/kg)	Chrysene (mg/kg)	Dibenz(a,h) anthracene (mg/kg)	Dibenzofuran (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(1.9)	ND(4.7)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(1.9)	ND(4.7)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(3.9)	ND(9.6)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	ND(3.9)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(3.7)	ND(9.3)	ND(3.7)	ND(3.7)	ND(3.7)	*ND(3.7)* [a,c]	ND(3.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.49)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
[a] 2019 Industrial NMED SSL		NA	1,830	NA	NA	3,230	3.23	NA
[b] 2019 Construction Worker NMED SSL		NA	13,400	NA	NA	23,100	24	NA
[c] 2019 Residential NMED SSL		NA	380	NA	NA	153	0.153	NA

Notes:
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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Diethyl-phthalate (mg/kg)	Dimethyl Phthalate (mg/kg)	Di-n-butyl-phthalate (mg/kg)	Di-n-octyl-phthalate (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Hexachloro Benzene (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(4.7)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(4.9)	ND(2)	ND(3.9)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(4.7)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(4.9)	ND(2)	ND(3.9)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.49)	ND(0.2)	0.29 J	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(9.6)	ND(3.9)	ND(7.7)	ND(7.7)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.49)	ND(0.2)	0.4	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(9.3)	ND(3.7)	ND(7.5)	ND(7.5)	ND(3.7)	ND(3.7)	*ND(3.7)* [c]
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.49)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		733,000	NA	91,600	NA	33,700	33,700	16
[b] 2019 Construction Worker NMED SSL		215,000	NA	26,900	NA	10,000	10,000	117
[c] 2019 Residential NMED SSL		49,300	NA	6,160	NA	2,320	2,320	3.33

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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Hexachloro-butadiene (mg/kg)	Hexachloro-cyclopentadiene (mg/kg)	Hexachloro-ethane (mg/kg)	Indeno(1,2,3-cd) pyrene (mg/kg)	Isophorone (mg/kg)	Naphthalene (mg/kg)	Nitrobenzene (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	2.7	ND(3.8)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	2.6	ND(4)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(3.9)	2.1	ND(3.9)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	5.2	ND(3.8)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	5	ND(4)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(3.9)	ND(2)	ND(3.9)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(3.9)	*ND(3.9)* [c]	ND(3.9)	*ND(3.9)* [c]	ND(7.7)	ND(3.9)	ND(7.7)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(3.7)	*ND(3.7)* [c]	ND(3.7)	*ND(3.7)* [c]	ND(7.5)	ND(3.7)	ND(7.5)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
[a] 2019 Industrial NMED SSL		52.1	5,490	641	32.3	27,000	241	293
[b] 2019 Construction Worker NMED SSL		2,400	867	4,670	240	198,000	1,110	1,350
[c] 2019 Residential NMED SSL		68.3	2.3	133	1.53	5,610	49.7	60.4

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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	N-Nitroso-dimethylamine (mg/kg)	N-Nitrosodi-n-propylamine (mg/kg)	N-Nitroso-diphenylamine (mg/kg)	Pentachloro-phenol (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	*ND(2)* [a,c]	ND(2)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	*ND(3.9)* [b,c]	ND(3.9)	ND(3.9)	ND(7.7)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-SB-6 (15-15.5 ft)	08/23/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	*ND(3.7)* [a,c]	ND(3.7)	ND(3.7)	ND(7.5)	ND(3.7)	ND(3.7)	ND(3.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		0.503	NA	5,240	44.5	25,300	275,000	25,300
[b] 2019 Construction Worker NMED SSL		3.66	NA	37,900	346	7,530	77,400	7,530
[c] 2019 Residential NMED SSL		0.0234	NA	1,090	9.85	1,740	18,500	1,740

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Pyridine (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(3.8)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(4)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.39)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(3.9)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.39)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(3.8)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(4)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(3.9)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(4)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.4)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.39)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.39)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.4)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(7.7)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.39)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(3.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.4)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(3.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(7.5)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.39)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.39)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.39)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.39)
[a] 2019 Industrial NMED SSL		NA
[b] 2019 Construction Worker NMED SSL		NA
[c] 2019 Residential NMED SSL		NA

Notes:
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J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
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NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,4-Trichloro-benzene (mg/kg)	1,2-Dichloro-benzene (mg/kg)	1,3-Dichloro-benzene (mg/kg)	1,4-Dichloro-benzene (mg/kg)	1-Methyl-naphthalene (mg/kg)	2,4,5-Trichloro-phenol (mg/kg)	2,4,6-Trichloro-phenol (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	0.17 J	ND(0.19)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		1,250	13,000	NA	6,730	813	91,600	2,330
[b] 2019 Construction Worker NMED SSL		8,540	2,500	NA	45,900	6,060	26,900	17,000
[c] 2019 Residential NMED SSL		240	2,150	NA	1,290	172	6,160	484

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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2,4-Dichloro-phenol (mg/kg)	2,4-Dimethyl-phenol (mg/kg)	2,4-Dinitro-phenol (mg/kg)	2,4-Dinitro Toluene (mg/kg)	2,6-Dinitro Toluene (mg/kg)	2-Chloro-naphthalene (mg/kg)	2-Chloro-phenol (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.24)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.38)	ND(0.28)	ND(0.47)	ND(0.47)	ND(0.47)	ND(0.24)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.38)	ND(0.28)	ND(0.47)	ND(0.47)	ND(0.47)	ND(0.24)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.38)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.25)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(3.9)	ND(3)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.3)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.25)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.37)	ND(0.28)	ND(0.46)	ND(0.46)	ND(0.46)	ND(0.23)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.39)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.24)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.38)	0.068 J	ND(0.47)	ND(0.47)	ND(0.47)	ND(0.23)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.39)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
[a] 2019 Industrial NMED SSL		2,750	18,300	1,830	82.3	17.2	104,000	6,490
[b] 2019 Construction Worker NMED SSL		807	5,380	538	600	165	28,300	1,770
[c] 2019 Residential NMED SSL		185	1,230	123	17.1	3.56	6,260	391

Notes:
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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Methyl-4,6-dinitrophenol (mg/kg)	2-Methyl-naphthalene (mg/kg)	2-Methylphenol (mg/kg)	2-Nitroaniline (mg/kg)	2-Nitrophenol (mg/kg)	3,3'-Dichloro-benzidine (mg/kg)	3,4-Methyl phenol (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.24)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.38)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.38)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.38)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(3.9)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.37)	ND(0.19)	ND(0.37)	ND(0.19)	ND(0.19)	ND(0.23)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.38)	0.31	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.23)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
[a] 2019 Industrial NMED SSL		NA	3,370	NA	NA	NA	57	NA
[b] 2019 Construction Worker NMED SSL		NA	1,000	NA	NA	NA	410	NA
[c] 2019 Residential NMED SSL		NA	232	NA	NA	NA	11.8	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	3-Nitroaniline (mg/kg)	4-Bromophenyl-phenylether (mg/kg)	4-Chloro-3-Methylphenol (mg/kg)	4-Chloroaniline (mg/kg)	4-Chlorophenyl-phenylether (mg/kg)	4-Nitroaniline (mg/kg)	4-Nitrophenol (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.24)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.47)	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.24)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.47)	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.24)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.38)	ND(0.24)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.25)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(3.9)	ND(2.5)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.25)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.46)	ND(0.46)	ND(0.19)	ND(0.37)	ND(0.23)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.24)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.49)	ND(0.49)	ND(0.19)	ND(0.39)	ND(0.24)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.47)	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.23)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.24)
[a] 2019 Industrial NMED SSL		NA	NA	NA	NA	NA	NA	NA
[b] 2019 Construction Worker NMED SSL		NA	NA	NA	NA	NA	NA	NA
[c] 2019 Residential NMED SSL		NA	NA	NA	NA	NA	NA	NA

Notes:
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Acenaphthene (mg/kg)	Acenaph-thylene (mg/kg)	Aniline (mg/kg)	Anthracene (mg/kg)	Azobenzene (mg/kg)	Benzo(a)-anthracene (mg/kg)	Benzo(a)-pyrene (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		50,500	NA	NA	253,000	NA	32.3	23.6
[b] 2019 Construction Worker NMED SSL		15,100	NA	NA	75,300	NA	240	173
[c] 2019 Residential NMED SSL		3,480	NA	NA	17,400	NA	1.53	1.12

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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzo(b)fluor-anthene (mg/kg)	Benzo(ghi)-perylene (mg/kg)	Benzo(k)fluor-anthene (mg/kg)	Benzoic Acid (mg/kg)	Benzyl Alcohol (mg/kg)	Bis(2-chloro ethoxy)methane (mg/kg)	Bis(2-chloro ethyl)ether (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(1)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.95)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.94)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.95)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	*ND(2)* [c]	ND(2)	ND(2)	ND(9.8)	ND(2)	ND(2)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.99)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.93)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	*ND(2)* [c]	ND(2)	ND(2)	ND(9.9)	ND(2)	ND(2)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.94)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.99)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(1)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		32.3	NA	323	NA	NA	NA	15.7
[b] 2019 Construction Worker NMED SSL		240	NA	2,310	NA	NA	NA	1.95
[c] 2019 Residential NMED SSL		1.53	NA	15.3	NA	NA	NA	3.11

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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bis(2-chloro isopropyl)ether (mg/kg)	Bis(2-ethyl hexyl)phthalate (mg/kg)	Benzyl Butyl Phthalate (mg/kg)	Carbazole (mg/kg)	Chrysene (mg/kg)	Dibenz(a,h) anthracene (mg/kg)	Dibenzofuran (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.47)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.47)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.46)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.49)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.47)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
[a] 2019 Industrial NMED SSL		NA	1,830	NA	NA	3,230	3.23	NA
[b] 2019 Construction Worker NMED SSL		NA	13,400	NA	NA	23,100	24	NA
[c] 2019 Residential NMED SSL		NA	380	NA	NA	153	0.153	NA

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NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Diethyl-phthalate (mg/kg)	Dimethyl Phthalate (mg/kg)	Di-n-butyl-phthalate (mg/kg)	Di-n-octyl-phthalate (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Hexachloro Benzene (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.48)	ND(0.19)	ND(0.38)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(4.9)	ND(2)	ND(3.9)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.49)	ND(0.2)	0.47	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.46)	ND(0.19)	0.33 J	ND(0.37)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.49)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		733,000	NA	91,600	NA	33,700	33,700	16
[b] 2019 Construction Worker NMED SSL		215,000	NA	26,900	NA	10,000	10,000	117
[c] 2019 Residential NMED SSL		49,300	NA	6,160	NA	2,320	2,320	3.33

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Hexachloro-butadiene (mg/kg)	Hexachloro-cyclopentadiene (mg/kg)	Hexachloro-ethane (mg/kg)	Indeno(1,2,3-cd) pyrene (mg/kg)	Isophorone (mg/kg)	Naphthalene (mg/kg)	Nitrobenzene (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.38)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.38)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.38)	0.1 J	ND(0.38)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(3.9)	ND(2)	ND(3.9)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.37)	ND(0.19)	ND(0.37)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.38)	0.3	ND(0.38)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
[a] 2019 Industrial NMED SSL		52.1	5,490	641	32.3	27,000	241	293
[b] 2019 Construction Worker NMED SSL		2,400	867	4,670	240	198,000	1,110	1,350
[c] 2019 Residential NMED SSL		68.3	2.3	133	1.53	5,610	49.7	60.4

Notes:
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Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	N-Nitroso-dimethylamine (mg/kg)	N-Nitrosodi-n-propylamine (mg/kg)	N-Nitroso-diphenylamine (mg/kg)	Pentachloro-phenol (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	*ND(1.9)* [a,c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	*ND(2)* [a,c]	ND(2)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.37)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	*ND(2)* [a,c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	0.16 J	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		0.503	NA	5,240	44.5	25,300	275,000	25,300
[b] 2019 Construction Worker NMED SSL		3.66	NA	37,900	346	7,530	77,400	7,530
[c] 2019 Residential NMED SSL		0.0234	NA	1,090	9.85	1,740	18,500	1,740

Notes:
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mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Pyridine (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.39)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.4)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.38)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.38)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.38)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(3.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.39)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(3.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(3.9)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.39)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.37)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.39)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(4)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.39)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.38)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.4)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.4)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.39)

[a]	2019 Industrial NMED SSL	NA
[b]	2019 Construction Worker NMED SSL	NA
[c]	2019 Residential NMED SSL	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)	Iron, Total (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(2.5)	1.6 J	380	0.93	ND(0.099)	12	4.6	16000
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(4.9)	ND(4.9)	710	0.83	ND(0.2)	22	5.3	14000
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(4.8)	ND(4.8)	730	0.83	ND(0.19)	22	4.9	13000
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(5)	ND(5)	310	0.96	ND(0.2)	8.4	4.3	13000
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(4.9)	ND(4.9)	700	0.62	ND(0.19)	5.4	3	9400
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(4.9)	ND(4.9)	610	1.3	ND(0.2)	10	5.3	22000
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(4.9)	6.2	760	0.77	ND(0.2)	21	3.7	13000
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(5)	ND(5)	470	0.57	ND(0.2)	86	3.6	14000
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(5.1)	4.7 J	640	0.59	ND(0.2)	20	3.4	16000
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(12)	*ND(12)* [c]	250	0.95	ND(0.48)	6.4	3.9	11000
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(4.9)	ND(4.9)	3000	1.4	ND(0.19)	17	6.2	24000
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(4.8)	ND(4.8)	160	1.6	ND(0.19)	19	7	28000
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(4.8) UJ	ND(4.8)	410	0.93	ND(0.19)	10	4.3	14000
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(5) UJ	ND(5)	300	1.1	ND(0.2)	9.7	5.1	15000
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(5.1) UJ	ND(5.1)	350	1.3	ND(0.21)	13	5.5	20000
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(4.8) UJ	ND(4.8)	260	0.78	ND(0.19)	7.3	4	11000
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(5) UJ	ND(5)	300	0.78	ND(0.2)	6.7	3.7	11000
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(5) UJ	ND(5)	430	0.97	ND(0.2)	9.8	4.7	13000
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(5) UJ	ND(5)	300	0.91	ND(0.2)	8.6	4.4	13000
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(5.1) UJ	ND(5.1)	300	1	ND(0.2)	13	6.9	19000
[a] 2019 Industrial NMED SSL		519	35.9	255,000	313,000	417,000	505	83,400	908,000
[b] 2019 Construction Worker NMED SSL		142	216	4,390	2,710	3,610	468	722	248,000
[c] 2019 Residential NMED SSL		31.3	7.07	15,600	64,400	85,900	96.6	17,200	54,800

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
J+ - Estimated concentration, possibly biased high
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
R - Rejected, Data not usable
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Lead, Total (mg/kg)	Manganese, Total (mg/kg)	Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	5.3	380	0.089 J	11	ND(2.5)	ND(0.25)	19	23
NDD-MW-1 (1.5-2 ft)	08/16/21	16	450	0.26 J	16	ND(4.9)	ND(0.49)	24	54
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	16	**480** [b]	0.52 J	17	ND(4.8)	ND(0.48)	24	53
NDD-MW-1 (27.5-28 ft)	08/17/21	4	320	ND(0.033) UJ	8	ND(5)	ND(0.5)	17	13
NDD-MW-1 (35-35.5 ft)	08/17/21	1.4	**1500** [b]	ND(0.033) UJ	5.3	ND(4.9)	ND(0.49)	14	10
NDD-MW-1 (45.5-46 ft)	08/17/21	4.2	190	ND(0.033) UJ	12	ND(4.9)	ND(0.49)	18	23
NDD-MW-1 (7.5-8 ft)	08/17/21	15	400	0.21 J	23	ND(4.9)	ND(0.49)	29	93
NDD-MW-2 (0-0.5 ft)	08/17/21	3.9	710	0.019 J	76	ND(5)	0.64	17	32
NDD-MW-2 (1.5-2 ft)	08/17/21	13	**720** [b]	0.037 J	48	ND(5.1)	ND(0.51)	19	61
NDD-MW-2 (28.2-28.7 ft)	08/17/21	4.1	**1900** [b]	0.004 J	6.3	ND(12)	1.1 J	17	13
NDD-MW-2 (42.5-43 ft)	08/18/21	2	**1200** [b]	ND(0.033) UJ	17	ND(4.9)	ND(0.49)	27	25
NDD-MW-2 (47.5-48 ft)	08/18/21	2.2	320	ND(0.035) UJ	19	ND(4.8)	ND(0.48)	21	29
NDD-SB-1 (0-0.5 ft)	08/18/21	4.1	330	0.013 J	9	ND(4.8)	ND(0.48) UJ	23	16
NDD-SB-1 (1.5-2 ft)	08/18/21	4.2	410	0.0034 J	10	ND(5)	ND(0.5) UJ	23	14
NDD-SB-1 (13.5-14 ft)	08/19/21	1.8	**830** [b]	ND(0.031)	13	ND(5.1)	ND(0.51) UJ	13	18
NDD-SB-1 (5-5.5 ft)	08/18/21	5.9	300	0.0043 J	7.1	ND(4.8)	ND(0.48) UJ	16	11
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	6.3	190	0.0035 J	6.6	ND(5)	ND(0.5) UJ	15	11
NDD-SB-2 (0-0.5 ft)	08/20/21	5.4	410	0.02 J	22	ND(5)	ND(0.5) UJ	22	27
NDD-SB-2 (1.5-2 ft)	08/20/21	5.5	270	0.0042 J	8.8	ND(5)	ND(0.5) UJ	21	14
NDD-SB-2 (19-19.5 ft)	08/20/21	3.5	440	ND(0.032)	14	ND(5.1)	ND(0.51) UJ	14	25
[a] 2019 Industrial NMED SSL		800	160,000	NA	2,890,000	6,490	6,490	6,530	389,000
[b] 2019 Construction Worker NMED SSL		800	464	NA	25,000	1,750	1,770	614	106,000
[c] 2019 Residential NMED SSL		400	10,500	NA	595,000	391	391	394	23,500

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
J+ - Estimated concentration, possibly biased high
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
R - Rejected, Data not usable
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)	Iron, Total (mg/kg)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(4.8) UJ	ND(4.8)	200	0.85	ND(0.19)	8.3	4.1	12000
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(4.9) UJ	ND(4.9)	410	0.96	ND(0.2)	12	4.9	15000
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(5) UJ	ND(5)	580	0.95	ND(0.2)	10	4.6	14000
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(4.9) UJ	ND(4.9)	620	0.98	ND(0.2)	6.7	5.4	12000
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(4.9) UJ	ND(4.9)	980	1	ND(0.2)	10	4.5	16000
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(5) UJ	ND(5)	340	1.2	ND(0.2)	10	5.6	14000
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2.4) UJ	ND(4.9)	390	1.1	ND(0.098)	20	5.9	18000
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(2.4) UJ	ND(4.9)	130	1.1	ND(0.098)	12	4.5	18000
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(2.5) UJ	ND(5)	400	0.72	ND(0.1)	9.3	3.6	13000
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(4.9) UJ	ND(4.9)	390	1	ND(0.2)	14	5	16000
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(5) UJ	ND(5)	330	1.4	ND(0.2)	16	7	20000
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(5) UJ	ND(5)	280	1.3	ND(0.2)	15	6.5	19000
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(2.5) UJ	ND(5)	320	0.83	ND(0.099)	9.1	4.3	13000
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(2.5) UJ	ND(5)	58	1	ND(0.1)	18	11	18000
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(4.9) UJ	ND(4.9)	350	0.85	ND(0.19)	9.1	4.6	13000
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(5) UJ	ND(5)	280	0.92	ND(0.2)	9.7	4.7	13000
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(5) UJ	ND(5)	430	1.2	ND(0.2)	18	5.7	18000
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(4.9) UJ	ND(4.9)	140	0.95	ND(0.2)	8.1	4.2	12000
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(5) UJ	ND(5)	470	0.46	ND(0.2)	4	7.9	8200
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(12) R	*ND(12)* [c]	780	0.76	ND(0.49)	9.1	5.4	12000
[a] 2019 Industrial NMED SSL		519	35.9	255,000	313,000	417,000	505	83,400	908,000
[b] 2019 Construction Worker NMED SSL		142	216	4,390	2,710	3,610	468	722	248,000
[c] 2019 Residential NMED SSL		31.3	7.07	15,600	64,400	85,900	96.6	17,200	54,800

Notes:
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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Lead, Total (mg/kg)	Manganese, Total (mg/kg)		Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
NDD-SB-2 (3.5-4 ft)	08/20/21	5.3	220		0.0025 J	7.7	ND(4.8)	ND(0.48) UJ	19	13
NDD-SB-3 (0-0.5 ft)	08/23/21	3	460		0.023 J	10	ND(4.9)	ND(0.49) UJ	25 J+	21 J+
NDD-SB-3 (1.5-2 ft)	08/23/21	1.9	**710**	[b]	0.011 J	9.3	ND(5)	ND(0.5) UJ	22 J+	18 J+
NDD-SB-3 (6-6.5 ft)	08/23/21	1.8 J	380 J		0.0064 J	9.5	ND(4.9)	ND(0.49) UJ	11 J+	17 J+
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	3.2 J	**660 J**	[b]	0.0077 J	9.2	ND(4.9)	ND(0.49) UJ	19 J+	16 J+
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.6)	460		ND(0.034)	11	ND(5)	ND(0.5) UJ	13 J+	20 J+
NDD-SB-4 (1-1.5 ft)	08/23/21	11	440		0.055	20	ND(2.4)	ND(0.24) UJ	32 J+	56 J+
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.29)	**790**	[b]	ND(0.033)	11	ND(2.4)	ND(0.24) UJ	15 J+	24 J+
NDD-SB-4 (2.5-3 ft)	08/23/21	2.4	**470**	[b]	0.018 J	7.5	ND(2.5)	ND(0.25) UJ	21 J+	15 J+
NDD-SB-4 (2-2.5 ft)	08/23/21	5.5	420		0.0068 J	11	ND(4.9)	ND(0.49) UJ	24 J+	26 J+
NDD-SB-5 (0-0.5 ft)	08/23/21	4	420		0.0078 J	20	ND(5)	ND(0.5) UJ	37 J+	40 J+
NDD-SB-5 (1.5-2 ft)	08/23/21	3	400		0.0067 J	14	ND(5)	ND(0.5) UJ	27 J+	24 J+
NDD-SB-5 (12-12.5 ft)	08/24/21	0.99	450		0.0042 J	7.8	ND(2.5)	ND(0.25) UJ	20 J+	17 J+
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.3)	290		ND(0.034)	15	ND(2.5)	ND(0.25) UJ	38 J+	36 J+
NDD-SB-5 (9.5-10 ft)	08/24/21	2.2	420		ND(0.031)	7.9	ND(4.9)	ND(0.49) UJ	19 J+	15 J+
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	2.2	**470**	[b]	0.0042 J	8.8	ND(5)	ND(0.5) UJ	21 J+	16 J+
NDD-SB-6 (1.5-2 ft)	08/23/21	5.1	440		0.035	17	ND(5)	ND(0.5) UJ	34 J+	42 J+
NDD-SB-6 (15-15.5 ft)	08/23/21	1.6	350		0.0029 J	7.9	ND(4.9)	ND(0.49) UJ	17 J+	13 J+
NDD-SB-6 (21-21.5 ft)	08/23/21	2.2	430		0.0038 J	4.9	ND(5)	ND(0.5) UJ	15 J+	9.8 J+
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(1.5)	**1000**	[b]	ND(0.031)	8.1	ND(12)	ND(1.2) UJ	17 J+	19 J+
[a] 2019 Industrial NMED SSL		800	160,000		NA	2,890,000	6,490	6,490	6,530	389,000
[b] 2019 Construction Worker NMED SSL		800	464		NA	25,000	1,750	1,770	614	106,000
[c] 2019 Residential NMED SSL		400	10,500		NA	595,000	391	391	394	23,500

Notes:
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NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)	Iron, Total (mg/kg)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(4.9) UJ	ND(4.9)	330	1.1	ND(0.19)	12	5.4	16000
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(4.8)	ND(4.8)	220	1.5	ND(0.19)	15	6.6	21000
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(5)	ND(5)	230	1.4	ND(0.2)	14	6.4	20000
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(2.5)	ND(2.5)	500	0.74	ND(0.1)	6.8	3.5	12000
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(2.5)	1.8 J	130	1.2	ND(0.099)	13	6.1	21000
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(4.9)	ND(4.9)	120	1.5	ND(0.19)	17	7.5	26000
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(4.9)	ND(4.9)	330	1.3	ND(0.2)	12	5.8	18000
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(5.2)	ND(5.2)	310	1.5	ND(0.21)	15	6.9	21000
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(2.5)	ND(2.5)	220	1.2	ND(0.098)	14	6.1	21000
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(2.6)	ND(2.6)	110	1.2	ND(0.1)	11	5.7	20000
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(2.5)	ND(2.5)	490	0.65	ND(0.098)	6.8	3.2	11000
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(4.9) UJ	ND(4.9)	270	1.4	ND(0.2)	15	6.4	20000
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(5.1) UJ	ND(5.1)	370	1	ND(0.2)	11	4.9	15000
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(4.8) UJ	ND(4.8)	60	1.7	ND(0.19)	17	5.9	25000
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(5.2) UJ	ND(5.2)	390	1.5	ND(0.21)	15	6.8	21000
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(4.9) UJ	ND(4.9)	300	1.2	ND(0.2)	11	5.5	17000
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(4.8)	ND(4.8)	640	1	ND(0.19)	11	4.6	15000
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(5)	ND(5)	45	1.6	ND(0.2)	16	9.2	18000
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(5) R	ND(5)	300	1.2	ND(0.2)	12	5.7	17000
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(4.8) UJ	ND(4.8)	240	1.5	ND(0.19)	16	6.5	21000
[a] 2019 Industrial NMED SSL		519	35.9	255,000	313,000	417,000	505	83,400	908,000
[b] 2019 Construction Worker NMED SSL		142	216	4,390	2,710	3,610	468	722	248,000
[c] 2019 Residential NMED SSL		31.3	7.07	15,600	64,400	85,900	96.6	17,200	54,800

Notes:
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Lead, Total (mg/kg)	Manganese, Total (mg/kg)	Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
NDD-SB-6 (3-3.5 ft)	08/23/21	1.6	370	0.012 J	11	ND(4.9)	ND(0.49) UJ	23 J+	18 J+
NDD-TW-1 (0-0.5 ft)	08/12/21	4	360	0.0049 J-	14	ND(4.8)	ND(0.48)	25	21
NDD-TW-1 (1.5-2 ft)	08/12/21	5	360	ND(0.036) UJ	13	ND(5)	ND(0.5)	24	19
NDD-TW-1 (26.5-27 ft)	08/12/21	2.5	340	ND(0.031) UJ	6.4	ND(2.5)	ND(0.25)	16	10
NDD-TW-1 (34-34.5 ft)	08/12/21	4.7	350	ND(0.034) UJ	15	ND(2.5)	ND(0.25)	16	21
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	3.4	400	ND(0.033) UJ	18	ND(4.9)	ND(0.49)	24	28
NDD-TW-2 (0-0.5 ft)	08/12/21	6.3	760	0.0051 J-	12	ND(4.9)	ND(0.49)	22	17
NDD-TW-2 (1.5-2 ft)	08/12/21	5.3	380	ND(0.033) UJ	14	ND(5.2)	ND(0.52)	26	21
NDD-TW-2 (30.5-31 ft)	08/13/21	2.9	440	ND(0.034) UJ	15	ND(2.5)	ND(0.25)	16	23
NDD-TW-2 (33.5-34 ft)	08/13/21	3.9	170	ND(0.036) UJ	14	ND(2.6)	ND(0.26)	14	22
NDD-TW-2 (5.5-6 ft)	08/13/21	1.6	**650** [b]	0.022 J-	5.6	ND(2.5)	ND(0.25)	17	11
NDD-TW-3 (0-0.5 ft)	08/19/21	5.2	400	0.0061 J	14	ND(4.9)	ND(0.49) UJ	24	23
NDD-TW-3 (1.5-2 ft)	08/19/21	3.2	460	0.0032 J	10	ND(5.1)	ND(0.51) UJ	20	16
NDD-TW-3 (33.5-34 ft)	08/19/21	2.4	200	ND(0.033)	15	ND(4.8)	ND(0.48) UJ	47	24
NDD-TW-4 (0-0.5 ft)	08/19/21	6.1	390	0.0056 J	14	ND(5.2)	ND(0.52) UJ	24	21
NDD-TW-4 (1.5-2 ft)	08/19/21	6.6	390	ND(0.034)	11	ND(4.9)	ND(0.49) UJ	19	16
NDD-TW-4 (15-15.5 ft)	08/19/21	4.2	**660** [b]	0.0027 J	9.5	ND(4.8)	ND(0.48)	20	15
NDD-TW-4 (31.5-32 ft)	08/19/21	8.1	130	ND(0.033)	21	ND(5)	ND(0.5)	36	32
NDD-TW-5 (0-0.5 ft)	08/19/21	5.7	370	0.0068 J	12	ND(5)	ND(0.5) UJ	21	19
NDD-TW-5 (1.5-2 ft)	08/19/21	3.5	340	0.0038 J	14	ND(4.8)	ND(0.48) UJ	25	19
[a] 2019 Industrial NMED SSL		800	160,000	NA	2,890,000	6,490	6,490	6,530	389,000
[b] 2019 Construction Worker NMED SSL		800	464	NA	25,000	1,750	1,770	614	106,000
[c] 2019 Residential NMED SSL		400	10,500	NA	595,000	391	391	394	23,500

Notes:
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TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)	Iron, Total (mg/kg)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(4.9) UJ	ND(4.9)	270	1.4	ND(0.2)	13	5.6	18000
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(4.9) UJ	ND(4.9)	360	0.95	ND(0.19)	8.8	4.5	14000
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(5.2) UJ	ND(5.2)	290	0.97	ND(0.21)	8.1	4.2	12000
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(4.9) UJ	ND(4.9)	730	0.51	ND(0.19)	9.3	3.5	7700
[a] 2019 Industrial NMED SSL		519	35.9	255,000	313,000	417,000	505	83,400	908,000
[b] 2019 Construction Worker NMED SSL		142	216	4,390	2,710	3,610	468	722	248,000
[c] 2019 Residential NMED SSL		31.3	7.07	15,600	64,400	85,900	96.6	17,200	54,800

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mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
R - Rejected, Data not usable
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Lead, Total (mg/kg)	Manganese, Total (mg/kg)	Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
NDD-TW-5 (18.5-19 ft)	08/19/21	4.4	300	0.0038 J	11	ND(4.9)	ND(0.49) UJ	23	17
NDD-TW-5 (23-23.5 ft)	08/19/21	4	**490 J** [b]	ND(0.032)	8.3	ND(4.9)	ND(0.49) UJ	19	12
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	3.7	**840 J** [b]	ND(0.035)	7.7	ND(5.2)	ND(0.52) UJ	17	12
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.58)	150	0.0049 J	5.8	ND(4.9)	ND(0.49) UJ	33	15

[a] 2019 Industrial NMED SSL	800	160,000	NA	2,890,000	6,490	6,490	6,530	389,000
[b] 2019 Construction Worker NMED SSL	800	464	NA	25,000	1,750	1,770	614	106,000
[c] 2019 Residential NMED SSL	400	10,500	NA	595,000	391	391	394	23,500

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
J+ - Estimated concentration, possibly biased high
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
R - Rejected, Data not usable
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-4. SOIL SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Cyanide, Total (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Oil Range Organics (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.25) UJ	ND(9.3)	1.1J/ND(3.5)U*	130
NDD-MW-1 (1.5-2 ft)	08/16/21	0.884 J+	27	1.4J/ND(3.6)U*	200
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	0.69 J+	35	1.3J/ND(3.9)U*	140
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(0.25)	27 J+	**230** [c]	ND(49)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.25)	ND(9.7)	0.94J/ND(2.7)U*	ND(48)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.25)	ND(9.5)	1.1J/ND(3.3)U*	ND(47)
NDD-MW-1 (7.5-8 ft)	08/17/21	0.258 J+	**5400** [b,c]	1.2J/ND(2.6)U*	**12000** [b,c]
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.25)	4.9 J	0.97J/ND(3)U*	ND(47)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.25)	9.5 J	5.2 JB	ND(48)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.25)	ND(9.3)	0.9J/ND(2.8)U*	ND(47)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.25)	89 JB	34	ND(47)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(0.25)	45 JB	**150** [c]	ND(48)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.25)	ND(9.4)	ND(3.3)	ND(47)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.25)	12	ND(2.7)	ND(45)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.25)	10	ND(2.7)	ND(49)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(0.25)	**2500** [c]	**1100** [b,c]	ND(450)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(0.25)	**1500** [c]	**940** [b,c]	ND(490)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(0.25)	200	**810** [a,c]	ND(47)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(0.25)	**6100** [b,c]	**14000** [b,c]	ND(2400)
[a] 2019 Industrial NMED SSL		63.3	3,000	500	5,000
[b] 2019 Construction Worker NMED SSL		12.1	3,000	500	5,000
[c] 2019 Residential NMED SSL		11.2	1,000	100	3,000

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J+ - Estimated concentration, possibly biased high
JB - Estimated concentration due to blank contamination
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-4. SOIL SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Cyanide, Total (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Oil Range Organics (mg/kg)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.25)	5.2 J+	1.8 J	ND(46)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(0.25)	**8500** b,c	**8300** b,c	ND(2400)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.25)	ND(10)	ND(2.9)	ND(50)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.25)	ND(9.2)	ND(3)	ND(46)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(0.25)	**1500** c	**210 J** c	ND(470)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(0.25)	**1600** c	**440 J** c	ND(500)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.25)	ND(9.9)	ND(3.3)	ND(50)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(0.25)	240	**1100** b,c	ND(49)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.25)	6.3 J+	ND(3.1)	ND(46)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(0.25)	**1700** c	**1100** b,c	ND(470)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(0.25)	**3000** c	**180** c	ND(490)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.25)	23	ND(3.6)	ND(48)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.25)	5.3 J+	ND(3.4)	ND(48)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.25)	ND(9.7)	2.1 J	ND(48)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.25)	ND(9.9)	ND(4.1)	ND(49)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.25)	ND(9.3)	ND(2.4)	ND(46)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.25)	ND(9.6)	0.76 J	ND(48)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.25)	ND(9.4)	ND(2.7)	ND(47)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.25)	ND(9.3)	ND(3.3)	ND(46)
[a] 2019 Industrial NMED SSL		63.3	3,000	500	5,000
[b] 2019 Construction Worker NMED SSL		12.1	3,000	500	5,000
[c] 2019 Residential NMED SSL		11.2	1,000	100	3,000

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J+ - Estimated concentration, possibly biased high
JB - Estimated concentration due to blank contamination
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-4. SOIL SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Cyanide, Total (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Oil Range Organics (mg/kg)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(0.25)	180	**310** [c]	ND(44)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.25)	12	18	ND(48)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.25)	ND(9.9)	ND(3.3)	ND(50)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.295)	ND(9.8)	ND(3.1)	ND(49)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.294)	ND(9.2)	ND(3.1)	ND(46)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.102)	ND(9.9)	ND(2.5)	ND(50)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.226)	4.8 J	ND(3.6)	ND(48)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.316)	ND(9.4)	1.1 J	ND(47)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.293)	ND(9.9)	ND(4)	ND(50)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.485)	ND(9.9)	1 J	ND(50)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.131)	4.9 J	0.99 J	ND(48)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.463)	ND(9.8)	1.1 J	ND(49)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.153)	ND(9.6)	5.5	ND(48)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.25)	35	ND(2.7)	ND(49)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.25)	ND(9.7)	ND(3.8)	ND(49)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.25)	ND(9.2)	ND(3.1)	ND(46)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.25)	8.4 J	ND(3.6)	ND(46)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.25)	8.3 J+	ND(4.7)	ND(47)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.25)	ND(9.7)	ND(2.8)	ND(48)
[a] 2019 Industrial NMED SSL		63.3	3,000	500	5,000
[b] 2019 Construction Worker NMED SSL		12.1	3,000	500	5,000
[c] 2019 Residential NMED SSL		11.2	1,000	100	3,000

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J+ - Estimated concentration, possibly biased high
JB - Estimated concentration due to blank contamination
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-4. SOIL SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Cyanide, Total (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Oil Range Organics (mg/kg)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.25)	ND(9.3)	ND(3.3)	ND(46)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.25)	ND(9.6)	ND(2.8)	ND(48)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.25)	ND(9.8)	ND(2.6)	ND(49)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.25)	57	**370** [c]	ND(47)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.25)	ND(9.5)	8.1	ND(47)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.25)	ND(9.3)	5.1	ND(46)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.25)	5.5 J+	ND(3.1)	ND(46)

[a]	2019 Industrial NMED SSL	63.3	3,000	500	5,000
[b]	2019 Construction Worker NMED SSL	12.1	3,000	500	5,000
[c]	2019 Residential NMED SSL	11.2	1,000	100	3,000

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J+ - Estimated concentration, possibly biased high
JB - Estimated concentration due to blank contamination
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,1,1,2-Tetrachloro-ethane (ug/L)	1,1,1-Trichloro-ethane (ug/L)	1,1,2,2-Tetrachloro-ethane (ug/L)	1,1,2-Trichloro-ethane (ug/L)	1,1-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	1,1-Dichloro-propene (ug/L)	1,2,3-Trichloro-benzene (ug/L)	1,2,3-Trichloro-propane (ug/L)	1,2,4-Trichloro-benzene (ug/L)
NDD-MW-1	09/17/21	ND(1)	ND(1)	ND(2)	ND(1)	0.7 J	ND(1)	ND(1)	ND(1)	ND(2)	ND(1)
	12/22/21	--	--	--	--	0.85 J	--	--	--	--	--
NDD-MW-2	12/22/21	--	--	--	--	ND(1)	--	--	--	--	--
NDD-TW-2	09/09/21	ND(1)	ND(1)	ND(2)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(2)	ND(1)
NDD-TW-5	09/09/21	ND(50)	ND(50)	ND(100)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(100)	ND(50)
NDD-TW-5 Dup	09/09/21	ND(50)	ND(50)	ND(100)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(100)	ND(50)
[a] NMED Groundwater Cleanup Levels		NA	200	10	5	25	7	NA	NA	NA	70
[b] USEPA MCL HQ 1.0		NA	200	NA	5	NA	7	NA	NA	NA	70

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

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TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,4-Trimethyl-benzene (ug/L)	1,2-Dibromo 3-chloropropane (ug/L)	1,2-Dibromoethane (ug/L)	1,2-Dichloro-benzene (ug/L)	1,2-Dichloroethane (ug/L)	1,2-Dichloro-propane (ug/L)	1,3,5-Trimethyl-benzene (ug/L)	1,3-Dichloro-benzene (ug/L)	1,3-Dichloro-propane (ug/L)	1,4-Dichloro-benzene (ug/L)
NDD-MW-1	09/17/21	0.19 J	ND(2)	ND(1)	ND(1)	**13** [a,b]	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
	12/22/21	0.9J/ND(1)U*	--	ND(1)	--	**15** [a,b]	--	0.39J/ND(1)U*	--	--	--
NDD-MW-2	12/22/21	130	--	ND(1)	--	0.48 J	--	99	--	--	--
NDD-TW-2	09/09/21	ND(1)	ND(2)	ND(1)	ND(1)	0.39 J	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
NDD-TW-5	09/09/21	350	ND(100)	ND(50)	ND(50)	ND(50)	ND(50)	78	ND(50)	ND(50)	ND(50)
NDD-TW-5 Dup	09/09/21	320	ND(100)	ND(50)	ND(50)	ND(50)	ND(50)	71	ND(50)	ND(50)	ND(50)

[a] NMED Groundwater Cleanup Levels	NA	NA	0.05	600	5	5	NA	NA	NA	75
[b] USEPA MCL HQ 1.0	NA	0.2	0.05	600	5	5	NA	NA	NA	75

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

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TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1-Methyl-naphthalene (ug/L)	2,2-Dichloro-propane (ug/L)	2-Butanone (ug/L)	2-Chlorotoluene (ug/L)	2-Hexanone (ug/L)	2-Methyl-naphthalene (ug/L)	4-Chlorotoluene (ug/L)	4-Methyl-2-Pentanone (ug/L)	Acetone (ug/L)	Benzene (ug/L)	
NDD-MW-1	09/17/21	ND(4)	ND(2)	3.3 J	ND(1)	ND(10)	ND(4)	ND(1)	ND(10)	12	1.6	
	12/22/21	ND(4)	--	ND(10)	--	--	ND(4)	--	--	5J/ND(10)U*	**10**	a,b
NDD-MW-2	12/22/21	3.5 J	--	ND(10)	--	--	2.7 J	--	--	5.5J/ND(10)U*	**120**	a,b
NDD-TW-2	09/09/21	ND(4)	ND(2)	ND(10)	ND(1)	ND(10)	ND(4)	ND(1)	ND(10)	ND(10)	ND(1)	
NDD-TW-5	09/09/21	ND(200)	ND(100)	ND(500)	ND(50)	ND(500)	ND(200)	ND(50)	ND(500)	ND(500)	**4800**	a,b
NDD-TW-5 Dup	09/09/21	ND(200)	ND(100)	ND(500)	ND(50)	ND(500)	ND(200)	ND(50)	ND(500)	ND(500)	**4600**	a,b
[a] NMED Groundwater Cleanup Levels		NA	NA	NA	NA	NA	NA	NA	NA	NA	5	
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	NA	NA	NA	5	

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bromobenzene (ug/L)	Bromodichloro-methane (ug/L)	Bromoform (ug/L)	Bromomethane (ug/L)	Carbon Disulfide (ug/L)	Carbon Tetrachloride (ug/L)	Chlorobenzene (ug/L)	Chloroethane (ug/L)	Chloroform (ug/L)	Chloromethane (ug/L)
NDD-MW-1	09/17/21	ND(1)	ND(1)	ND(1)	ND(3)	ND(10)	ND(1)	ND(1)	ND(2)	ND(1)	1.3J/ND(3)U*
	12/22/21	--	--	--	--	--	--	--	ND(2)	--	--
NDD-MW-2	12/22/21	--	--	--	--	--	--	--	ND(2)	--	--
NDD-TW-2	09/09/21	ND(1)	ND(1)	ND(1)	ND(3)	ND(10)	ND(1)	ND(1)	ND(2)	ND(1)	ND(3)
NDD-TW-5	09/09/21	ND(50)	ND(50)	ND(50)	ND(150)	ND(500)	ND(50)	ND(50)	ND(100)	ND(50)	53J/ND(150)U*
NDD-TW-5 Dup	09/09/21	ND(50)	ND(50)	ND(50)	ND(150)	ND(500)	ND(50)	ND(50)	ND(100)	ND(50)	45J/ND(150)U*
[a] NMED Groundwater Cleanup Levels		NA	NA	NA	NA	NA	5	NA	NA	100	NA
[b] USEPA MCL HQ 1.0		NA	80	80	NA	NA	5	100	NA	80	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	cis-1,2-Dichloro-ethene (ug/L)	cis-1,3-Dichloro-propene (ug/L)	Dibromo-chloromethane (ug/L)	Dibromomethane (ug/L)	Dichlorodifluoro-methane (ug/L)	Ethylbenzene (ug/L)	Hexachloro-butadiene (ug/L)	Isopropylbenzene (ug/L)	Methylene Chloride (ug/L)	MTBE (ug/L)
NDD-MW-1	09/17/21	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	7.3	ND(3)	68
	12/22/21	--	--	--	--	--	0.29 J	--	25	ND(3)	63
NDD-MW-2	12/22/21	--	--	--	--	--	6.1	--	2.6	ND(3)	ND(1)
NDD-TW-2	09/09/21	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(3)	ND(1)
NDD-TW-5	09/09/21	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	**760** [a,b]	ND(50)	ND(50)	ND(150)	730
NDD-TW-5 Dup	09/09/21	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	**710** [a,b]	ND(50)	ND(50)	ND(150)	720

[a]	NMED Groundwater Cleanup Levels	70	NA	NA	NA	NA	700	NA	NA	5	NA
[b]	USEPA MCL HQ 1.0	70	NA	80	NA	NA	700	NA	NA	5	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Naphthalene (ug/L)	n-Butylbenzene (ug/L)	n-Propylbenzene (ug/L)	p-Isopropyltoluene (ug/L)	sec-Butylbenzene (ug/L)	Styrene (ug/L)	tert-Butylbenzene (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	trans-1,2-Dichloro-ethene (ug/L)
NDD-MW-1	09/17/21	ND(2)	ND(3)	0.46 J	ND(1)	1.6	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
	12/22/21	0.64 J	1 J	1.6	0.22 J	5.2	--	ND(1)	--	0.33J/ND(1)U*	--
NDD-MW-2	12/22/21	6.5	1.9 J	0.79 J	15	0.72 J	--	ND(1)	--	67	--
NDD-TW-2	09/09/21	ND(2)	ND(3)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
NDD-TW-5	09/09/21	**64 J** [a]	ND(150)	45 J	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	**3500** [a,b]	ND(50)
NDD-TW-5 Dup	09/09/21	**65 J** [a]	ND(150)	41 J	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	**3400** [a,b]	ND(50)
[a] NMED Groundwater Cleanup Levels		30	NA	NA	NA	NA	100	NA	5	1,000	100
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	100	NA	5	1,000	100

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	trans-1,3-Dichloro-propene (ug/L)	Trichloroethene (ug/L)	Trichloro-fluoromethane (ug/L)	Vinyl Chloride (ug/L)	Xylenes, Total (ug/L)	
NDD-MW-1	09/17/21	ND(1)	ND(1)	ND(1)	ND(1)	2.4	
	12/22/21	--	--	--	--	2.8	
NDD-MW-2	12/22/21	--	--	--	--	**980**	a
NDD-TW-2	09/09/21	ND(1)	ND(1)	ND(1)	ND(1)	ND(1.5)	
NDD-TW-5	09/09/21	ND(50)	ND(50)	ND(50)	ND(50)	**3500**	a
NDD-TW-5 Dup	09/09/21	ND(50)	ND(50)	ND(50)	ND(50)	**3300**	a

a	NMED Groundwater Cleanup Levels	NA	5	NA	2	620
b	USEPA MCL HQ 1.0	NA	5	NA	2	10,000

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

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TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,4-Trichloro-benzene (ug/L)	1,2-Dichloro-benzene (ug/L)	1,3-Dichloro-benzene (ug/L)	1,4-Dichloro-benzene (ug/L)	1-Methyl-naphthalene (ug/L)	2,4,5-Trichloro-phenol (ug/L)	2,4,6-Trichloro-phenol (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(0.1)	ND(5)	ND(5)
	12/22/21	--	--	--	--	ND(0.1) UJ	--	--
NDD-MW-2	12/22/21	--	--	--	--	ND(0.1) UJ	--	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	6.4	ND(5)	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	7.4	ND(5)	ND(5)
[a] NMED GW Cleanup Levels		70	600	NA	75	NA	NA	NA
[b] USEPA MCL HQ 1.0		70	600	NA	75	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2,4-Dichloro-phenol (ug/L)	2,4-Dimethyl-phenol (ug/L)	2,4-Dinitro-phenol (ug/L)	2,4-Dinitro Toluene (ug/L)	2,6-Dinitro Toluene (ug/L)	2-Chloro-naphthalene (ug/L)	2-Chlorophenol (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
	12/22/21	--	ND(5)	--	--	--	--	--
NDD-MW-2	12/22/21	--	15	--	--	--	--	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
NDD-TW-5	09/09/21	ND(5)	7.5	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
NDD-TW-5 Dup	09/09/21	ND(5)	8.9	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Methyl-4,6-dinitrophenol (ug/L)	2-Methyl-naphthalene (ug/L)	2-Methylphenol (ug/L)	2-Nitroaniline (ug/L)	2-Nitrophenol (ug/L)	3,3'-Dichloro-benzidine (ug/L)	3,4-Methyl phenol (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(0.1)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
	12/22/21	--	ND(0.1) UJ	ND(5)	--	--	--	ND(5)
NDD-MW-2	12/22/21	--	ND(0.1) UJ	ND(5)	--	--	--	ND(5)
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	10	9	ND(5)	ND(5)	ND(5)	13
NDD-TW-5 Dup	09/09/21	ND(5)	11	12	ND(5)	ND(5)	ND(5)	16
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	3-Nitroaniline (ug/L)	4-Bromophenyl-phenylether (ug/L)	4-Chloro-3-Methylphenol (ug/L)	4-Chloroaniline (ug/L)	4-Chlorophenyl-phenylether (ug/L)	4-Nitroaniline (ug/L)	4-Nitrophenol (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
	12/22/21	--	--	--	--	--	--	--
NDD-MW-2	12/22/21	--	--	--	--	--	--	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Acenaphthene (ug/L)	Acenaphthylene (ug/L)	Aniline (ug/L)	Anthracene (ug/L)	Azobenzene (ug/L)	Benzo(a)-anthracene (ug/L)	Benzo(a)pyrene (ug/L)
NDD-MW-1	09/17/21	ND(0.1)	ND(0.1)	ND(5)	ND(0.1)	ND(5)	ND(0.1)	ND(0.07)
	12/22/21	0.24 J	--	--	--	--	--	--
NDD-MW-2	12/22/21	ND(0.1) UJ	--	--	--	--	--	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	0.2
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	0.2

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzo(b)fluor-anthene (ug/L)	Benzo(ghi)-perylene (ug/L)	Benzo(k)fluor-anthene (ug/L)	Benzoic Acid (ug/L)	Benzyl Alcohol (ug/L)	Bis(2-chloro ethoxy)methane (ug/L)	Bis(2-chloro ethyl)ether (ug/L)
NDD-MW-1	09/17/21	ND(0.1)	ND(0.1)	ND(0.1)	ND(20)	ND(5)	ND(5)	ND(5)
	12/22/21	--	--	--	ND(20)	--	--	--
NDD-MW-2	12/22/21	--	--	--	ND(20)	--	--	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(20)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(20)	ND(5)	ND(5)	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(20)	ND(5)	ND(5)	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bis(2-chloro isopropyl)ether (ug/L)	Bis(2-ethyl hexyl) phthalate (ug/L)	Benzyl Butyl Phthalate (ug/L)	Carbazole (ug/L)	Chrysene (ug/L)	Dibenz(a,h) anthracene (ug/L)	Dibenzofuran (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(10)	ND(5)	3.7 J	ND(0.1)	ND(0.1)	ND(5)
	12/22/21	--	ND(10)	--	0.76 J	--	--	ND(5)
NDD-MW-2	12/22/21	--	ND(10)	--	ND(5)	--	--	ND(5)
NDD-TW-2	09/09/21	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(10)	ND(5)	3.8 J	ND(5)	ND(5)	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(10)	ND(5)	3.9 J	ND(5)	ND(5)	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	6	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Diethylphthalate (ug/L)	Dimethyl Phthalate (ug/L)	Di-n-butyl-phthalate (ug/L)	Di-n-octyl-phthalate (ug/L)	Fluoranthene (ug/L)	Fluorene (ug/L)	Hexachloro Benzene (ug/L)
NDD-MW-1	09/17/21	ND(10)	ND(10)	ND(10)	ND(20)	ND(0.2)	ND(0.1)	ND(5)
	12/22/21	--	ND(10)	--	ND(20)	ND(0.2)	ND(0.1) UJ	--
NDD-MW-2	12/22/21	--	ND(10)	--	ND(20)	ND(0.2) UJ	ND(0.1) UJ	--
NDD-TW-2	09/09/21	ND(10)	ND(10)	ND(10)	ND(20)	ND(10)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(10)	ND(10)	ND(10)	ND(20)	ND(10)	1.2 J	ND(5)
NDD-TW-5 Dup	09/09/21	ND(10)	ND(10)	ND(10)	ND(20)	ND(10)	1.1 J	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	1

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Hexachloro-butadiene (ug/L)	Hexachloro-cyclopentadiene (ug/L)	Hexachloro-ethane (ug/L)	Indeno(1,2,3-cd) pyrene (ug/L)	Isophorone (ug/L)	Naphthalene (ug/L)	Nitrobenzene (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(5)	ND(5)	ND(0.3)	ND(5)	ND(0.1)	ND(5)
	12/22/21	--	--	--	--	--	0.28 J	--
NDD-MW-2	12/22/21	--	--	--	--	--	ND(0.1) UJ	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	**38** [a]	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	**45** [a]	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	30	NA
[b] USEPA MCL HQ 1.0		NA	50	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	N-Nitroso-dimethylamine (ug/L)	N-Nitrosodi-n-propylamine (ug/L)	N-Nitroso-diphenylamine (ug/L)	Pentachloro-phenol (ug/L)	Phenanthrene (ug/L)	Phenol (ug/L)	Pyrene (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(5)	ND(5)	ND(20)	ND(0.1)	ND(5)	ND(0.2)
	12/22/21	--	--	--	--	0.9 J	ND(5)	--
NDD-MW-2	12/22/21	--	--	--	--	ND(0.1) UJ	15	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(20) UJ	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(20) UJ	ND(5)	21	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(20) UJ	1.8 J	25	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	1	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	1	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Pyridine (ug/L)
NDD-MW-1	09/17/21	ND(5)
	12/22/21	--
NDD-MW-2	12/22/21	--
NDD-TW-2	09/09/21	ND(5)
NDD-TW-5	09/09/21	3.1 J
NDD-TW-5 Dup	09/09/21	2.8 J

[a]	NMED GW Cleanup Levels	NA
[b]	USEPA MCL HQ 1.0	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-7. GROUNDWATER SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Antimony, Dissolved (mg/L)	Antimony, Total (mg/L)	Arsenic, Dissolved (mg/L)	Arsenic, Total (mg/L)	Barium, Dissolved (mg/L)	Barium, Total (mg/L)	Beryllium, Dissolved (mg/L)	Beryllium, Total (mg/L)	Cadmium, Dissolved (mg/L)
NDD-MW-1	09/17/21	ND(0.001)	ND(0.001)	0.0024	0.003	0.48	0.56	ND(0.002)	ND(0.002)	ND(0.002)
	12/22/21	--	--	0.0025	0.0032	0.62	0.61	--	--	ND(0.002)
NDD-MW-2	12/22/21	--	--	0.0022	0.0028	0.12	0.15	--	--	ND(0.002)
NDD-TW-2	09/09/21	--	ND(0.02)	--	0.0026 J	--	0.47	--	ND(0.005)	--
NDD-TW-5	09/09/21	--	ND(0.02)	--	**0.018** [a,b]	--	**7.8** [a,b]	--	**0.01** [a,b]	--
NDD-TW-5 Dup	09/09/21	--	ND(0.02)	--	**0.016** [a,b]	--	**6.9** [a,b]	--	**0.0088** [a,b]	--
[a] NMED Groundwater Cleanup Levels		NA	0.006	0.01	0.01	2	2	NA	0.004	0.005
[b] USEPA MCL HQ 1.0		NA	0.006	NA	0.01	NA	2	NA	0.004	NA

Notes:
-- - Not measured
Dup - Field duplicate
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-7. GROUNDWATER SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Cadmium, Total (mg/L)	Calcium, Dissolved (mg/L)	Calcium, Total (mg/L)	Chromium, Dissolved (mg/L)	Chromium, Total (mg/L)	Cobalt, Dissolved (mg/L)	Cobalt, Total (mg/L)	Iron, Dissolved (mg/L)	Iron, Total (mg/L)
NDD-MW-1	09/17/21	ND(0.002)	22	24	ND(0.006)	ND(0.006)	0.0066	0.0084	0.013 J	0.78
	12/22/21	ND(0.002)	--	--	ND(0.006)	ND(0.006)	--	--	0.073	0.37
NDD-MW-2	12/22/21	ND(0.002)	--	--	ND(0.006)	ND(0.006)	--	--	0.068	0.59
NDD-TW-2	09/09/21	ND(0.005)	--	--	--	0.024	--	0.0062	--	16
NDD-TW-5	09/09/21	ND(0.005)	--	--	--	**0.24** [a,b]	--	0.1	--	120
NDD-TW-5 Dup	09/09/21	ND(0.005)	--	--	--	**0.21** [a,b]	--	0.09	--	120
[a] NMED Groundwater Cleanup Levels		0.005	NA	NA	0.05	0.05	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		0.005	NA	NA	NA	0.1	NA	NA	NA	NA

Notes:
-- - Not measured
Dup - Field duplicate
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-7. GROUNDWATER SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Lead, Dissolved (mg/L)	Lead, Total (mg/L)	Magnesium, Dissolved (mg/L)	Magnesium, Total (mg/L)	Manganese, Dissolved (mg/L)	Manganese, Total (mg/L)	Mercury, Total (mg/L)	Nickel, Dissolved (mg/L)	Nickel, Total (mg/L)
NDD-MW-1	09/17/21	0.00022 J	0.00057	3.9	4.7	0.19	0.23	ND(0.0002)	0.042	0.047
	12/22/21	0.00013 J	0.00031 J	--	--	0.32	0.31	ND(0.0002)	--	--
NDD-MW-2	12/22/21	ND(0.0005)	0.00052	--	--	0.76	0.77	ND(0.0002)	--	--
NDD-TW-2	09/09/21	--	0.0081	--	--	--	0.28	0.00066	--	0.014
NDD-TW-5	09/09/21	--	**0.071** [a,b]	--	--	--	4.7	ND(0.0008)	--	0.32
NDD-TW-5 Dup	09/09/21	--	**0.07** [a,b]	--	--	--	4.6	0.00089	--	0.31
[a] NMED Groundwater Cleanup Levels		0.015	0.015	NA	NA	NA	NA	0.002	NA	NA
[b] USEPA MCL HQ 1.0		NA	0.015	NA	NA	NA	NA	0.002	NA	NA

Notes:
-- - Not measured
Dup - Field duplicate
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-7. GROUNDWATER SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Potassium, Dissolved (mg/L)	Potassium, Total (mg/L)	Selenium, Dissolved (mg/L)	Selenium, Total (mg/L)	Silver, Dissolved (mg/L)	Silver, Total (mg/L)	Sodium, Dissolved (mg/L)	Sodium, Total (mg/L)	Vanadium, Total (mg/L)
NDD-MW-1	09/17/21	2.3	2.7	ND(0.001)	0.00053 J	ND(0.005)	ND(0.005)	270	300	--
	12/22/21	--	--	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)	--	--	--
NDD-MW-2	12/22/21	--	--	0.0015	0.0014	ND(0.005)	ND(0.005)	--	--	--
NDD-TW-2	09/09/21	--	--	--	0.0078	--	ND(0.005)	--	--	0.03
NDD-TW-5	09/09/21	--	--	--	0.0077	--	ND(0.005)	--	--	0.26
NDD-TW-5 Dup	09/09/21	--	--	--	0.0075	--	ND(0.005)	--	--	0.24
[a] NMED Groundwater Cleanup Levels		NA	NA	0.05	0.05	0.05	0.05	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	0.05	NA	NA	NA	NA	NA

Notes:
-- - Not measured
Dup - Field duplicate
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-7. GROUNDWATER SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Zinc, Dissolved (mg/L)	Zinc, Total (mg/L)
NDD-MW-1	09/17/21	0.011	0.0098 J
	12/22/21	0.016 JB	ND(0.01) UJ
NDD-MW-2	12/22/21	0.16 J	0.014 J
NDD-TW-2	09/09/21	--	0.051
NDD-TW-5	09/09/21	--	0.26
NDD-TW-5 Dup	09/09/21	--	0.23
[a] NMED Groundwater Cleanup Levels		NA	NA
[b] USEPA MCL HQ 1.0		NA	NA

Notes:
-- - Not measured
Dup - Field duplicate
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-8. GROUNDWATER SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Alkalinity (mg/L CaCO3)	Bicarbonate as CaCO3 (mg/L CaCO3)	Carbonate (mg/L CaCO3)	Chloride (mg/L)	Cyanide, Total (mg/L)	Fluoride, Total (mg/L)
NDD-MW-1	09/17/21	409.1	409.1	ND(2)	210	ND(0.01)	0.39 J
	12/22/21	--	--	--	230	--	ND(0.5)
NDD-MW-2	12/22/21	--	--	--	**770** [a]	--	ND(0.5)
NDD-TW-2	09/09/21	--	--	--	**1100** [a]	ND(0.005)	ND(0.5)
NDD-TW-5	09/09/21	--	--	--	220	0.00917	0.22 J
NDD-TW-5 Dup	09/09/21	--	--	--	220	0.00681	0.24 J
[a] NMED Groundwater Cleanup Levels		NA	NA	NA	250	0.2	1.6
[b] NMED TPH Levels		NA	NA	NA	NA	NA	NA
[c] USEPA MCL HQ 1.0		NA	NA	NA	NA	0.2	4

Notes:
-- - Not measured
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Groundwater Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
NMED TPH Levels - New Mexico Environment Department, Total Petroleum Hydrocarbons Screening Levels, Risk Assessment Guidance for Investigations and Remediation, Table 6-4, March 2017
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the NMED TPH Levels
c. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be

TABLE 4-8. GROUNDWATER SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Nitrogen, Nitrate (mg/L)	Nitrogen, Nitrite (mg/L)	Sulfate (mg/L)	Diesel Range Organics (mg/L)	Gasoline Range Organics (mg/L)	Oil Range Organics (mg/L)
NDD-MW-1	09/17/21	0.1 J	ND(0.5)	11	**0.91** [b]	**0.36** [b]	**0.09** [b]
	12/22/21	0.098J/ND(0.5)U*	ND(0.5)	8.4	**1.2** [b]	**0.65** [b]	0.061 J
NDD-MW-2	12/22/21	ND(0.5)	ND(0.5)	120	**1.9** [b]	**8.5** [b]	ND(0.08)
NDD-TW-2	09/09/21	--	--	100	ND(1)	ND(0.05)	ND(5)
NDD-TW-5	09/09/21	--	--	29	**1.4** [b]	**37** [b]	ND(5)
NDD-TW-5 Dup	09/09/21	--	--	31	**1.5** [b]	**37** [b]	ND(5)
[a] NMED Groundwater Cleanup Levels		10	1	600	NA	NA	NA
[b] NMED TPH Levels		NA	NA	NA	0.0167	0.0101	0.0858
[c] USEPA MCL HQ 1.0		10	1	NA	NA	NA	NA

Notes:
-- - Not measured
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Groundwater Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
NMED TPH Levels - New Mexico Environment Department, Total Petroleum Hydrocarbons Screening Levels, Risk Assessment Guidance for Investigations and Remediation, Table 6-4, March 2017
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the NMED TPH Levels
c. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be

Appendix F – Groundwater Gauging Data and Sampling Forms

APPENDIX F. FLUID LEVEL DATA
NORTH DRAINAGE DITCH
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NM

Well ID	Date Measured	DTW (ft)	DTB (ft)
NDD-MW-1	9/8/2021	3.41	35
NDD-MW-2	9/8/2021	Dry	35
NDD-TW-1	9/8/2021	Dry	35
NDD-TW-2	9/8/2021	23.15	35
NDD-TW-4	9/8/2021	Dry	35
NDD-TW-5	9/8/2021	19.33	35

DTB - depth to bottom
DTW - depth to water
ft - feet
ID - identification

ATTACHMENT C

WESTERN REFINING SOUTHWEST LLC

D/B/A MARATHON GALLUP REFINERY

NORTH DRAINAGE DITCH AREA INVESTIGATION REPORT

DECEMBER 17, 2021

REVISED AUGUST 31, 2022

Executive Summary

Western Refining Southwest LLC (dba Marathon Gallup Refinery) (Refinery) is submitting this investigation report regarding the sampling of soils and collection of groundwater samples in an area on the north side of the refinery identified as the North Drainage Ditch. The objectives of the investigation were to:

1. Further characterize soils observed in and near the ditch.
2. Assess the area up-gradient of the ditch to help identify potential sources of hydrocarbons and metals in groundwater.
3. Determine the down-gradient extent of hydrocarbons and metals in groundwater.

Initial investigative field activities took place during August 2021. Groundwater samples from the temporary and permanent monitoring wells were collected in September 2021. Field work included the completion of six soil borings and installation of five temporary monitoring wells and two permanent monitoring wells.

Hydrocarbons in the soil were observed during the field activities and confirmed by laboratory analyses. Hydrocarbon staining and odors were noted during the soil boring activities. Detections of total petroleum hydrocarbons were above applicable soil screening levels.

Of the five temporary monitoring wells installed, two contained enough water for sampling, NDD-TW-2 and NDD-TW-5. Of the two permanent monitoring wells, one had enough water for sampling, NDD-MW-1. Groundwater quality was similar to those observed in preexisting up-gradient wells, including elevated concentrations of petroleum related compounds, and metals. At this time, no further investigative activities are currently planned or recommended for groundwater in the North Drainage Ditch area. The groundwater will be addressed with the underlying plume in the area.

Based on the detection of hydrocarbon constituents in soils (i.e., above applicable screening levels), the Refinery recommends completing additional soil delineation sampling to the south of NDD-SB-1 and NDD-SB-2, and to the northeast of NDD-SB-3.

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List of Acronyms and Abbreviations

bgs	below ground surface
BTEX	benzene, ethylbenzene, toluene, and total xylenes
cm/sec	centimeters per second
DAF	dilution-attenuation factor
DRO	diesel range organics
ft	feet
GRO	gasoline range organics
mg/kg	milligrams per kilogram
MPC	Marathon Petroleum Company
MTBE	methyl tert butyl ether
NMED	New Mexico Environment Department
ORO	oil range organics
QA/QC	quality assurance/quality control
PID	photoionization detector
ppm	parts per million
SPH	separate phase hydrocarbon
SSL	soil screening level
SVOC	semi-volatile organic compounds
TPH	total petroleum hydrocarbons
USEPA	United States Environmental Protection Agency
VOC	volatile organic compounds



1.0 Introduction

This report summarizes the activities associated with a follow-on investigation of the North Drainage Ditch area conducted at the Western Refining Southwest LLC Refinery (dba Marathon Gallup Refinery) (Refinery), located 17 miles east of Gallup, New Mexico (Figure 1-1). The physical address of the Refinery is I-40, Exit #39 Jamestown, New Mexico, 87347. The investigation purpose was to characterize potential hydrocarbons and metals in the soil and groundwater to the north/northwest of the refinery tank farm, in the area identified as the North Drainage Ditch (Figure 1-2). Sampling was conducted in accordance with the investigation work plan that was approved, with modifications, by the New Mexico Environment Department (NMED) on March 4, 2021 (NMED 2021). The revised work plan was submitted to NMED on March 29, 2021 (Marathon Petroleum Company [MPC] 2021). At the time of the field investigation, and this report, a response to the revised work plan had not been received from NMED.

1.1 Background

The Refinery property covers approximately 810 acres. Refinery operations were indefinitely idled in August 2020. While operating, the Refinery processed crude oil transported by pipeline or tanker truck from the Four Corners region. Various process units operated at the Refinery included crude distillation, reformer, fluidized catalytic cracker, alkylation, sulfur recovery, merox treater, and hydrotreater. Past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

First indications of potential impacts in the North Drainage Ditch area were documented in an October 2009 site inspection; during a routine inspection of the site drainage features, the ditch was discovered to have “non-moving water” with possible hydrocarbon staining and a diesel-like odor. A C-141 Release Form was submitted to the New Mexico Oil Conservation Division and NMED on October 20, 2009. The potentially affected portion of the ditch was estimated to be 40 feet (ft) long.

1.1.1 Submittal History

The following work plans and reports have been submitted and received for the North Drainage Ditch area.

- C-141 Release Form, submitted October 20, 2009
- Notification of Potential Hydrocarbon Discovery, submitted April 22, 2015
- Requirement, Submittal of Work Plan, received May 12, 2015
- Investigation Work Plan, submitted August 13, 2015
- Investigation Report, submitted August 20, 2018
- Disapproval, Investigation Report, received February 8, 2019

- Investigation Work Plan, submitted April 26, 2019
- Response to Disapproval, Investigation Report, submitted May 13, 2019
- Approval with Modifications, Revised Investigation Report, received June 24, 2019
- Disapproval, Investigation Work Plan, received June 24, 2019
- Response to Approval with Modifications, Investigation Report, submitted July 30, 2019
- Response to Disapproval, Investigation Work Plan, submitted September 20, 2019
- Response to Approval with Modifications, Investigation Report, submitted December 2, 2019
- Approval, Response to Approval with Modifications, Investigation Report, received January 16, 2020
- Approval with Modifications, Investigation Report, received March 4, 2021
- Response to Approval with Modifications, Investigation Report, March 29, 2021

1.1.2 Historical Sampling and Results

After standing water was found in the area in 2009, soil and water samples were collected and analyzed following the submittal of the C-141 Form (Western 2015). The water samples were analyzed for total petroleum hydrocarbon (TPH) by method 418.1. The soil samples were analyzed for semi-volatile organic compounds (SVOCs) by method 8270, metals using the toxicity characteristic leaching procedure, and TPH by method 418.1. The water samples indicated the presence of TPH, however, at the time of sampling, no applicable screening levels had been established. The soil results were mostly non-detect. With analytical results below applicable screening levels, and due to the ephemeral nature of the water, no further action was taken. There is no record of waste or other contaminants being handled in the area of investigation.

Water potentially containing hydrocarbons was again observed in the ditch in 2015. Surface water samples were collected and sampled for volatile organic compounds (VOC), TPH, and metals; benzene, xylenes, methyl tert butyl ether (MTBE), 1,2,4-trimethlybenzene, 1,3,5-trimethylbenzene, arsenic, naphthalene, and barium were detected at concentrations above applicable screening levels. To further investigate the surface water analytical results, three soil borings (NDD-1, NDD-2, and NDD-3) were completed in the area. One boring (NDD-3) encountered saturation and a groundwater sample was collected and analyzed for VOCs, SVOCs, and TPH; MTBE and 1,2-dichloroethane were detected at concentrations above applicable screening levels (Western 2018).

Because petroleum fuel hydrocarbons and metals were detected in samples collected in 2015, continued investigative work was planned and conducted in 2016. Temporary wells were completed in

four boreholes (NDD-4, NDD-6, NDD-11, AND NDD-16) and four permanent monitoring wells (OW-53, OW-54, OW-55, and OW-56) were installed. During initial sampling efforts, both groundwater and soil samples from the well installations indicated exceedances of applicable screening levels for multiple constituents. The permanent monitoring wells have continued to be sampled quarterly, with the exception of OW-53 which has remained dry since its installation. Analytical results for the permanent monitoring wells have continued to exceed the applicable screening levels for multiple constituents and are discussed in the Annual Groundwater Reports.

Additional sampling, conducted in 2019, centered around elevated manganese concentrations observed in historical soil sample results (MPC 2019b). Samples were collected to assess if the crude oils processed at the facility resulted in the elevated manganese concentrations observed in the North Drainage Ditch. The results of the sampling effort indicated that the crude oils did not contribute to the elevated manganese concentrations (NMED 2020).

Results from investigation efforts from 2015 through 2017 were detailed in the North Drainage investigation report submitted to NMED in 2018 (Western 2018). Following the submittal of the 2018 investigation report, NMED requested an additional investigation work plan to further characterize the area (NMED 2019a). In 2019, an investigation work plan was submitted to further characterize soil and groundwater in and around the ditch, assess the area up-gradient, and determine the down-gradient extent of petroleum fuel hydrocarbons and metals in groundwater (MPC 2019a). This work plan was revised and approved with modifications by NMED on March 4, 2021 for the August 2021 investigation.

1.2 Scope of Activities

The revised Investigation Work Plan (MPC 2021) was submitted to NMED in March 2021. The objectives of the investigation were to:

1. Further characterize soils observed in and near the ditch.
2. Assess the area up-gradient of the ditch to help identify potential sources of hydrocarbons and metals in groundwater.
3. Determine the down-gradient extent of hydrocarbons and metals in groundwater.

Field activities took place from August 12 through August 24, 2021, and consisted of the following:

- Six soil borings
- Five temporary monitoring wells
- Two permanent monitoring wells

2.0 Site Conditions

This section provides a summary of the surface and subsurface conditions at the refinery in the area of the North Drainage Ditch. A discussion of the installation of soil borings, field screening of soils, and collection of soil and groundwater samples for analysis are provided in Section 3.0.

2.1 Surface Conditions

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 7,040 ft to 6,860 ft. The area of the site near the North Drainage Ditch is at an approximate elevation of 6,920 ft above mean sea level. The North Drainage Ditch is part of a larger drainage feature that begins on the north side of the tank farm, extending north approximately 200 ft and passes beneath a dirt road after which it bifurcates into two smaller segments (one to the northeast and the other to the west). The western segment extends westward approximately 400 ft and then turns northwest through a low-lying area (i.e., an area of periodic standing water) that is the focus of this investigation (Figure 1-2).

The North Drainage Ditch essentially ends (i.e., there is no clearly defined channel) approximately 90 feet north of the access road. Thereafter, surface water appears to flow north, along the east side of a dirt road, before crossing over the road.

Surface soils within most of the area of investigation are primarily Rehobeth silty clay loam. Rehobeth soil properties include a pH ranging from 8 to 9 standard units and salinity (naturally occurring and typically measuring up to approximately 8 millimhos per centimeter.

2.2 Subsurface Conditions

Based on existing boring logs, shallow subsurface fluvial and alluvial soils are comprised of primarily clays and silts with minor inter-bedded sand layers. Very low permeability bedrock (e.g., claystones and siltstones) underlie the surface soils and effectively form an aquitard. The Chinle Group, from the Upper Triassic period, crops out over a large area on the southern margin of the San Juan Basin. The uppermost recognized local Formation is the Petrified Forest Formation. The Sonsela Sandstone Bed is the uppermost recognized regional aquifer. Aquifer tests of the Sonsela Bed northeast of Prewitt indicated a transmissivity of greater than 100 square feet per day (Stone et al., 1983). The Sonsela Sandstone's highest point occurs southeast of the site and slopes downward to the northwest as it passes under the Refinery. Due to the confinement of the Chinle Formation aquitard, the Sonsela Sandstone bed acts as a water-bearing reservoir and is artesian at its lower extremis. Artesian conditions exist through much of the central and western portions of the Refinery property.

Surface soils generally consist of fluvial and alluvial deposits, primarily clay and silt with minor inter-bedded sand layers. Below the surface layer is the Chinle Formation, which consists of very low permeability clay stones and siltstones that comprise the shale of this formation. As such, the Chinle Formation effectively serves as an aquitard. Interbedded within the Chinle Formation is the Sonsela

Sandstone bed, which represents the uppermost potential aquifer in the region. The Sonsela Sandstone bed lies within and parallels the dip of the Chinle Formation. As such, its high point is located southeast of the Refinery and it slopes downward to the northwest as it passes under the Refinery.

Groundwater flow within the Chinle Formation is extremely slow and typically averages less than 10^{-10} centimeters per second (cm/sec) (i.e., less than 0.01 ft per year). Groundwater flow within the surface soil layer, above the Chinle Formation, is highly variable due to the presence of complex and irregular stratigraphy including sand stringers, cobble beds, and dense clay layers. As such, hydraulic conductivity may range from 10^{-8} cm/sec (approximately 0.01 ft per year) in the clay soil layers located near the surface and up to 10^{-2} cm/sec (approximately 10,000 ft per year) in the gravelly sands immediately overlying the Chinle Formation.

Shallow groundwater located under Refinery property generally flows along the upper contact of the Chinle Formation. Although the prevailing regional flow direction is from the southeast and toward the northwest, in the tank farm area flow is in a northeasterly direction, and in the southern marketing area flow is generally in a westerly direction.

The diverse properties, and complex irregular stratigraphy of the surface soils across the Refinery cause a wide range of hydraulic conductivity ranging from less than 10^{-2} cm/sec (approximately 10,000 ft per year) for gravel-like sands immediately overlying the Petrified Forest Formation to 10^{-8} cm/sec (approximately 0.01 ft per year) in the clay soils located near the surface. Generally, shallow groundwater at the Refinery follows the upper contact of the Petrified Forest Formation (Chinle Group) with prevailing flow from the southeast to the northwest, although localized areas may have varying flow directions based on the subsurface geology.

Groundwater in the area of the North Drainage Ditch flows from the east to the west (Figure 2-1). The new temporary and permanent monitoring wells are shown on the potentiometric surface figure (Figure 2-1) but are not included in the groundwater depths as surveying data for the elevations were not completed prior to the original submittal of this report. Surveying for the permanent monitoring wells was completed in January 2022. The survey data will be included in the 2022 Annual Groundwater Report and incorporated into the site-wide potentionmetric surface map. Up-gradient of the North Drainage Ditch includes the eastern boundary of the refinery and the tank farm.

3.0 Field Investigation

The following sections summarize the events completed during the 2021 North Drainage Ditch investigation, activities were conducted August 12, 2021 through August 24, 2021, September 9, 2021, and September 17, 2021. Seven monitoring wells (two permanent and five temporary) and six soil boring locations were completed (Figure 3-1). Fifty eight soil samples and three groundwater samples were collected. A summary of samples submitted for laboratory analyses are presented in Table 3-1. The locations are presented on Figure 3-1 and the field notes are provided in Appendix A.

3.1 Sampling Locations

Soil boring locations were chosen based on historical sample results and locations. Previously completed borings NDD-5, NDD-8, and NDD-9 detected hydrocarbons; most borings for this investigation were chosen to further delineate the subsurface surrounding these locations. All historical sample locations are provided on Figure 3-2. New soil investigation locations were completed in the following places (MPC 2021):

- South of NDD-9 (NDD-SB-1)
- South side of the ditch, between NDD-9 and NDD-5 (NDD-SB-2)
- West (down gradient) of NDD-8 (NDD-SB-3)
- East of NDD-8 and NDD-9 (NDD-SB-4)
- Near boring NDD-5 (NDD-SB-5)
- Up-gradient within the drainage feature (NDD-SB-6)

The five temporary monitoring well locations were chosen to further define the down gradient extent of petroleum fuel hydrocarbons and metals in groundwater (NDD-TW-1 through NDD-TW-5). The two permanent monitoring well locations were installed up-gradient of the North Drainage Ditch to evaluate potential up-gradient sources (NDD-MW-1 and NDD-MW-2). These monitoring wells are presented on Figure 3-1.

3.2 Sampling Methods

Soil boring locations were drilled by Terracon Consultants, Inc. using a hollow-stem auger. Soil borings were advanced to the alluvium/Chinle subsurface group (local aquitard). Monitoring wells were completed with a 0.01-inch slotted polyvinyl chloride well screen, placed at the bottom of each well and extending 10-15 ft to ensure a complete screen across the shallow water table. A 10/20 sand filter pack was installed to 2 ft over the top of the well screen. Well completion details for each location are provided in Appendix B.

Soil borings were screened at 2-ft intervals to analyze for evidence of petroleum hydrocarbons and help select sample intervals for laboratory analysis. Screening methods included visual examination, olfactory examination, and headspace vapor screening for VOCs. Headspace vapor screening was performed by placing a soil aliquot into a sealed plastic bag and letting the sample to rest for a minimum of 5 minutes to allow vapors to equilibrate. Vapors present were measured by inserting a photoionization detector (PID) probe into a small opening in the bag and recording this result (Table 3-2). Lithology, physical characteristics, and PID values were recorded on the boring logs and are included as Appendix C.

Depth to water, if present, and total depth were measured at the seven monitoring wells prior to development. Note that seven monitoring well locations were drilled however casing material was not installed at NDD-TW-3 as presented below in Section 3.3. Water was not present in wells NDD-TW-1, NDD-TW-4, or NDD-MW-2. Separate phase hydrocarbon (SPH) was not detected at any location. For temporary monitoring well NDD-TW-5, 10 casing volumes were bailed during development and additional groundwater was removed during sampling until the field parameters equilibrated. A YSI multiprobe meter was used to collect measurements of conductivity, pH, temperature, dissolved oxygen, and salinity. The remaining monitoring wells, NDD-TW-2 and NDD-MW-1, went dry during development and groundwater measurements were collected during purging and sampling (Appendix D). Construction details of the temporary and permanent monitoring wells are provided in Table 3-2.

3.3 Field Observations

The depths, method of sample collection, and physical characteristics of each soil sample (i.e., mineralogy, soil classification, moisture content, texture, color, and the presence of stains and odors), were recorded in the field by a qualified geologist and are presented in the soil boring logs (Appendix A).

Boring depths ranged from 10 ft below ground surface (bgs) (NDD-SB-3) to 48 ft bgs (NDD-MW-2). Boring depths were determined based on field observations and PID readings.

General findings during the field investigation are noted below:

- Hydrocarbon odors and staining were observed in all the soil borings and permanent monitoring wells, at various depths and degrees. Hydrocarbons were also observed in two of the temporary monitoring wells, NDD-TW-2 and NDD-TW-5 (Appendix A).

- PID readings were completed approximately every 2 ft. Readings ranged from 0 parts per million (ppm) to 1,529 ppm (6 ft bgs in NDD-SB-3). Samples were collected at the highest PID reading in each boring (Table 3-3).

- Soil borings NDD-SB-1 and NDD-SB-2 had indications of hydrocarbons throughout the entire boring. These indications included strong hydrocarbon odors and visible staining in the soil. The

borings were plugged with bentonite chips after samples were collected and the soil was disposed in on-site drums.

- NDD-TW-3 was drilled to 34 ft bgs; however, water was not encountered. Per the revised work plan (MPC 2021) a temporary monitoring well was not completed, the dry boring was filled and plugged. The lithology log for NDD-TW-3 is included in Appendix C. The soil boring for NDD-TW-3 was analyzed at three depths, 0-0.5 ft bgs, 1.5-2 ft bgs, and 33.5-34 ft bgs. Analyses were reported as non-detect with the exception of several analytes, however, no results exceeded the screening levels.

3.4 Deviations from Approved Work Plan

Deviations from the revised investigation work plan (MPC 2021) included the following:

- The work plan states that a total of 65 soil samples (5 from each soil boring and recovery well locations) were to be collected. A total of 58 soil samples (with varying numbers at each investigation location) were collected during field activities. This deviation was based on field observations and field screening results recorded by the on-site geologist.
- Monitoring wells NDD-TW-1, NDD-TW-4, and NDD-MW-2 were dry when sampling activities were conducted. Well development logs are provided in Appendix D.
- Some reporting limits were above their respective cleanup levels and are noted in Tables 4-1 through 4-8 with italics.

4.0 Analytical Results

Analytical results for the various parameters are summarized below, with the analytical laboratory reports included in Appendix C. Analytical results were compared against the following screening levels:

Soil

- NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level (SSL) (NMED 2019b) for all samples
- NMED Risk Assessment Guidance for Site Investigations, Industrial SSL (NMED 2019b) for samples collected from 0-1 ft bgs
- NMED Risk Assessment Guidance for Site Investigations, Construction Work SSL (NMED 2019b) for samples collected at depths greater than 1 ft bgs
- Analytical results were not compared to soil-leachate (dilution-attenuation factor [DAF]) SSLs. In the investigation area, the presence of LNAPL and associated smear zone effects are the primary sources of benzene, ethylbenzene, toluene, and total xylenes (BTEX) and TPH to groundwater. These sources are expected to persist longer than any vadose zone sources and, as such, a comparison to DAF SSLs is not applicable

Groundwater

- NMED Risk Assessment Guidance for Site Investigations, Tap Water (NMED 2019b)
- United States Environmental Protection Agency (USEPA) Maximum Contaminant Level, Hazardous Quotient 1.0, May 2021 (USEPA 2021)
- NMED TPH Screening Levels, Risk Assessment Guidance for Investigations and Remediation (NMED 2017)

Analytical results that exceeded the relevant applicable SSLs are discussed below and presented in the noted tables. Detected analytical results that exceeded the relevant SSLs are noted in Tables 4-1 through 4-4 as bolded values. Non-detected analytical results with reporting limits greater than the relevant SSLs are noted by italics in Tables 4-1 through 4-8 and on Figures 4-1 through 4-4.

All analytical results where the reporting limit exceeded the respective SSLs are considered data quality exceptions and will not be used to demonstrate compliance. Furthermore, all data quality exceptions are identified in the tables and figures.

4.1 Soil Sample Results

Soil samples were collected from August 12, 2021, through August 24, 2021. Soil samples were analyzed for VOCs, SVOCs, metals, and general chemistry. Soil samples were collected from soil borings (NDD-SB-1 through NDD-SB-6), and the monitoring well borings (NDD-TW-1 through NDD-TW-5,

NDD-MW-1, and NDD-MW-2). Analytical results are provided in Tables 4-1 through 4-4. TPH results are also shown on Figure 4-1.

PID readings were completed on samples collected approximately every 2 ft. Readings ranged from 0 ppm to 1,529 ppm (6 ft bgs in NDD-SB-3) (Table 3-3). Samples were generally collected at 0 to 0.5 ft bgs, 1.5 to 2.0 ft bgs, and additional intervals based on field observations and screenings, including the highest PID reading for each soil boring.

Eight of the thirteen boring locations had TPH results that exceeded their respective SSLs (Figure 4-1). The highest detections of TPH were found in NDD-SB-2; TPH-gasoline range organics (GRO) was detected at 14,000 milligrams per kilogram (mg/kg) from 1.5 to 2.0 ft bgs and TPH-diesel range organics (DRO) was detected at 8,500 mg/kg from 3.5 to 4 ft bgs. TPH-oil range organics (ORO) was only detected in NDD-MW-1 and exceeded the applicable SSL from depth 7.5 to 8 ft bgs. In addition, total manganese exceeded its respective SSL in six of the thirteen boring locations. The greatest detection of total manganese was in NDD-MW-2 (28.2 to 28.7 ft bgs). No other analytical results for soil samples exceeded their respective Industrial and Construction Worker SSLs.

4.2 Groundwater Sample Results

Groundwater samples were collected on September 9, 2021, from the temporary monitoring wells, and on September 17, 2021, from the permanent monitoring wells. Groundwater samples were collected from locations NDD-TW-2, NDD-TW-5, and NDD-MW-1; the monitoring well locations, NDD-TW-1, NDD-TW-4, and NDD-MW-2, were dry during sampling activities. Depth to groundwater was measured as 23.15 ft bgs, 19.33 ft bgs, and 3.41 ft bgs, in NDD-TW-2, NDD-TW-5, and NDD-MW-1, respectively. It is Western's belief that the measurement for NDD-MW-1 is inaccurate. Subsequent measurements have reflected a depth to groundwater similar to other monitoring wells in the vicinity. The depth to groundwater of temporary monitoring wells NDD-TW-5was consistent with permanent wells in the area; NDD-TW-2 and NDD-MW-1 are not near any preexisting monitoring wells. Groundwater sampling field forms are available in Appendix F.

Groundwater samples were analyzed for VOCs, SVOCs, metals, and general chemistry. Several of the analytical results exceeded their respective SSLs. Most exceedances were observed in temporary monitoring well NDD-TW-5, including BTEX, as well as naphthalene, arsenic, barium, chromium, lead, beryllium, TPH-DRO, and TPH-GRO. Exceedances in NDD-MW-1 were 1,2-dichloroethane, TPH-DRO, TPH-GRO, and TPH-ORO. Chloride was the only exceedance in NDD-TW-2.

BTEX and naphthalene results are presented on Figure 4-2. Metal results are presented on Figure 4-3. TPH results are presented on Figure 4-4. The analytical results are provided in Tables 4-5 through 4-8.

NDD-MW-1 and NDD-MW-2 will be included in the annual groundwater monitoring program and results will be included in future groundwater reports.

4.3 Quality Assurance/Quality Control

Quality Assurance/Quality Control (QA/QC) soil and groundwater analytical samples were collected during the investigation. QA/QC samples are included in the laboratory reports provided in Appendix E. The analytical data reported from the receiving laboratory underwent Tier I and Tier II data validation by Trihydro's chemical data validation services group. Data qualifiers are included in the analytical tables. The Tier II data validation reports are provided in Appendix G.

Nine equipment blanks, five methanol blanks, two trip blanks, and one field blank were collected during the soil and groundwater sampling activities. Reported detections in the blank samples included acetone, 2-butanone, chloromethane, 2-hexanone, methylene chloride, and toluene. However, none of the detections were reported above screening levels.

In addition to the blanks that were collected during the field event, field duplicates were also collected from the following locations NDD-SB-1 (5 – 5.5 ft bgs), NDD-SB-3 (6 – 6.5 ft bgs), NDD-SB-5 (9.5 – 10 ft bgs), NDD-TW-1 (34 – 34.5 ft bgs), and NDD-TW-5 (23 – 23.5 ft bgs) for the soil borings; a field duplicate groundwater sample was collected from NDD-TW-5. These field duplicates were compared to their parent samples and flagged, if necessary, as described in the Appendix D data validation reports.

5.0 Conclusions

Findings regarding the soil and groundwater in and around the North Drainage Ditch include:

- Soil and groundwater analytical results indicate that petroleum fuel hydrocarbons are present within the North Drainage Ditch area.
- Hydrocarbon staining and odors were observed in the soil borings. However, no SPH was observed in groundwater during the groundwater sampling events.
- NDD-MW-2 was dry for the September 2021 sampling event. NDD-MW-2 was installed in the area of OW-12 (deep well). OW-12 groundwater results have historically been below screening levels. Although NDD-MW-2 was dry for the September 2021 sampling event, the lack of hydrocarbons and metals in the soil boring at NDD-MW-2, and the lack of hydrocarbon detections in the groundwater of OW-12, suggest that hydrocarbons are not in NDD-MW-2 or OW-12.

Based on the detections of hydrocarbons in soils above the screening levels, the Refinery recommends to complete additional soil delineation sampling to the south of NDD-SB-1 and NDD-SB-2, and to the northeast of NDD-SB-3.

The observed groundwater conditions at NDD-TW-5 are generally similar to the petroleum hydrocarbon and metal concentrations observed in the surrounding observation wells. At this time, no further investigative activities are currently planned or recommended for groundwater in the North Drainage Ditch area. The groundwater quality will be addressed with the underlying plume in the area.

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Figures

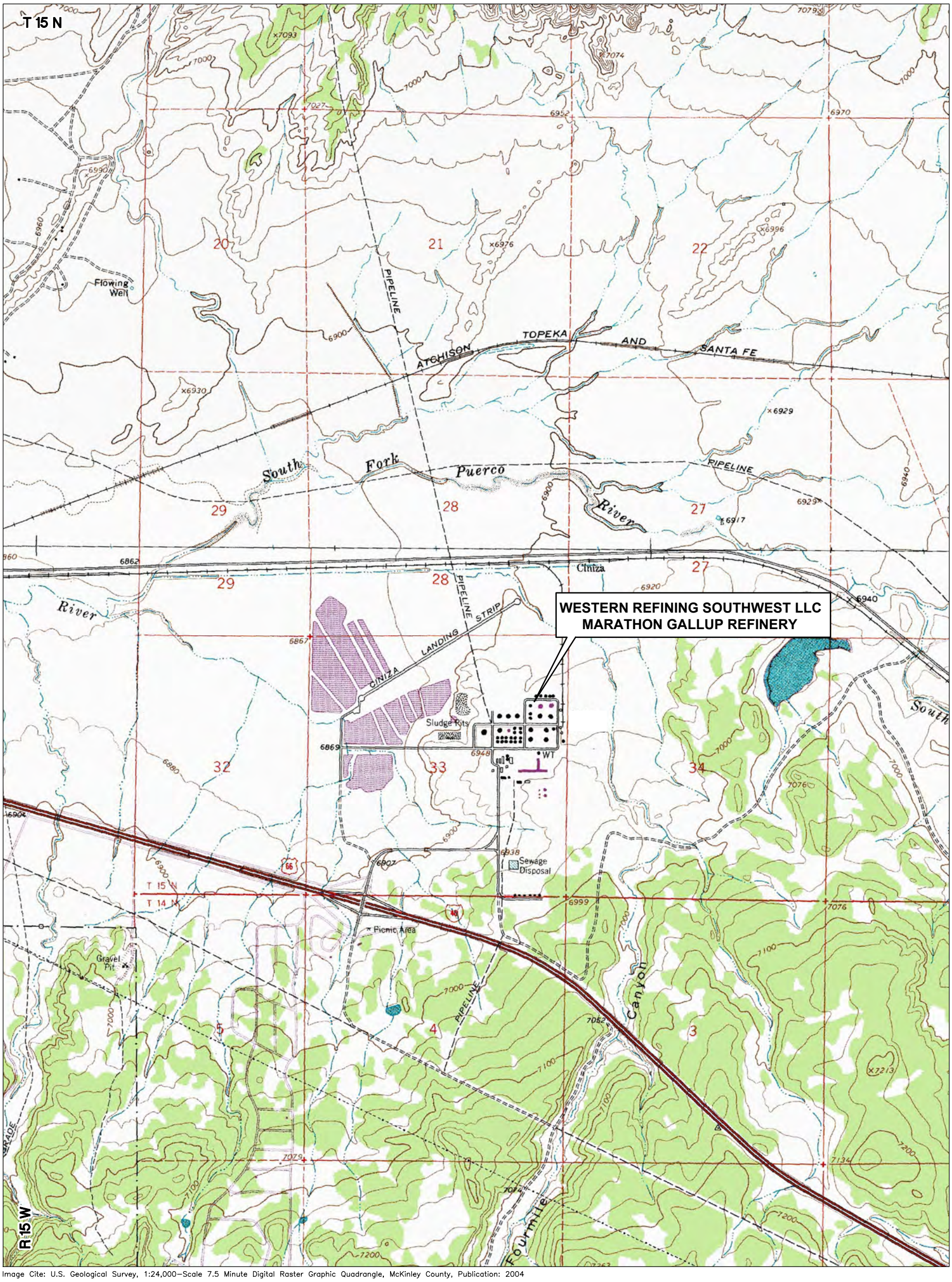


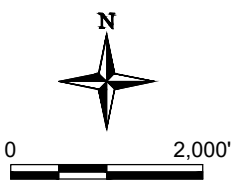
Image Cite: U.S. Geological Survey, 1:24,000–Scale 7.5 Minute Digital Raster Graphic Quadrangle, McKinley County, Publication: 2004

NOTE:

SITE LEGAL DESCRIPTION - TOWNSHIP 15 NORTH, RANGE 15 WEST, SECTION 33, LOWER QUARTER SECTION 28, AND NORTHEAST QUARTER SECTION 4.



QUADRANGLE LOCATION



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FIGURE 1-1

TOPOGRAPHIC MAP

WESTERN REFINING SOUTHWEST LLC
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

Drawn By: REP	Checked By: MS	Scale: 1" = 2,000'	Date: 3/8/21	File: 697-GAOCD-TOPOMAP

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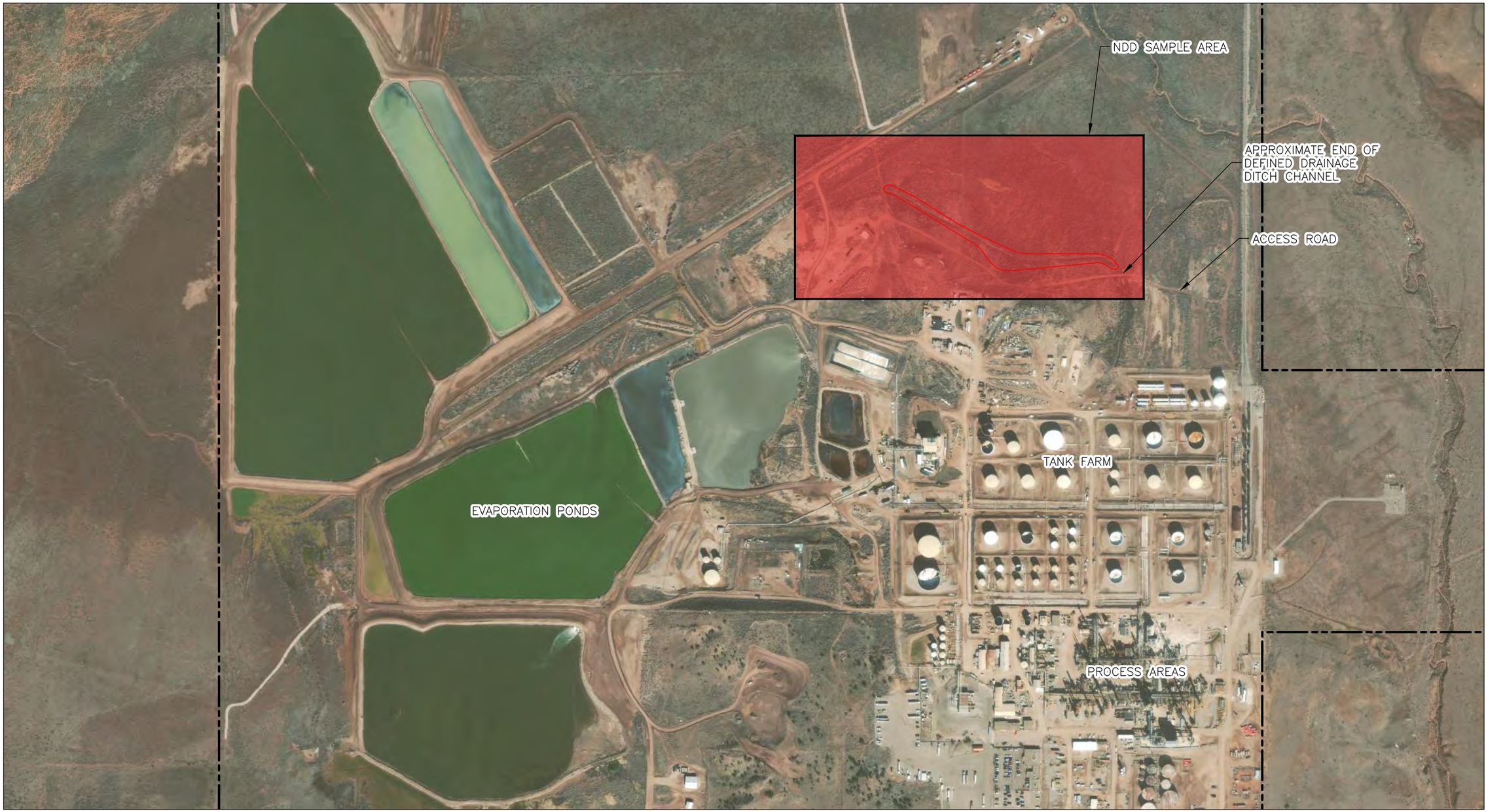


Image Cite: DigitalGlobe © CNES (2021) Distribution Airbus DS © Microsoft Corporation, BING Imagery

EXPLANATION

NDD	NORTH DRAINAGE DITCH
	NORTH DRAINAGE DITCH BOUNDARY
	APPROXIMATE PROPERTY BOUNDARY

N

0 500'

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FIGURE 1-2

NORTH DRAINAGE DITCH INVESTIGATION AREA

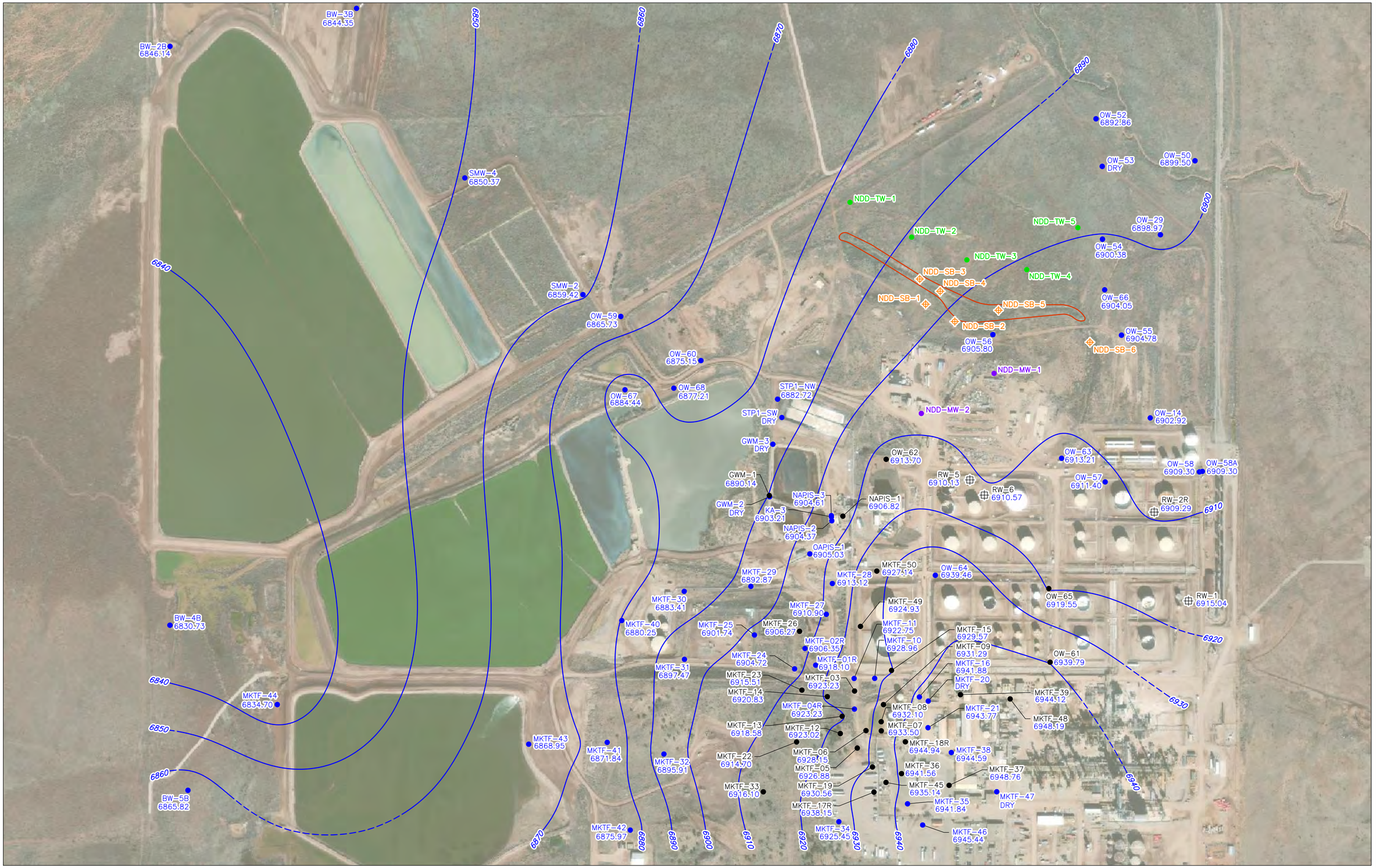
WESTERN REFINING SOUTHWEST LLC
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

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EXPLANATION

NDD-SB-2	SOIL BORING LOCATION AND DESIGNATION
NDD-MW-2	NEW PERMANENT MONITORING WELL LOCATION AND DESIGNATION
NDD-TW-2	NEW TEMPORARY MONITORING WELL LOCATION AND DESIGNATION
BW-5B 6865.82	CHINLE / ALLUVIUM INTERFACE WELL AND DESIGNATION (ELEVATION IN FEET ABOVE MEAN SEA LEVEL)
MKTF-06	SPH MONITORING WELL AND DESIGNATION
RW-1	RECOVERY WELL
6860	LINE OF EQUAL ELEVATION OF POTENTIOMETRIC SURFACE (FEET ABOVE MEAN SEA LEVEL, DASHED WHERE INFERRED)
SPH	SEPARATE-PHASE HYDROCARBON
	NORTH DRAINAGE DITCH BOUNDARY

N

0 300' 600'

NOTE:

POTENTIOMETRIC SURFACE GENERATED USING 3RD QUARTER ANNUAL MONITORING EVENT.

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FIGURE 2-1

CHINLE/ALLUVIUM INTERFACE AQUIFER POTENTIOMETRIC SURFACE MAP (2021)

WESTERN REFINING SOUTHWEST LLC MARATHON GALLUP REFINERY GALLUP, NEW MEXICO

Drawn By: SB	Checked By: CF	Scale: 1" = 300'	Date: 11/22/2021	File:697-NDD-GW_PS-MAPCHINLE-202111

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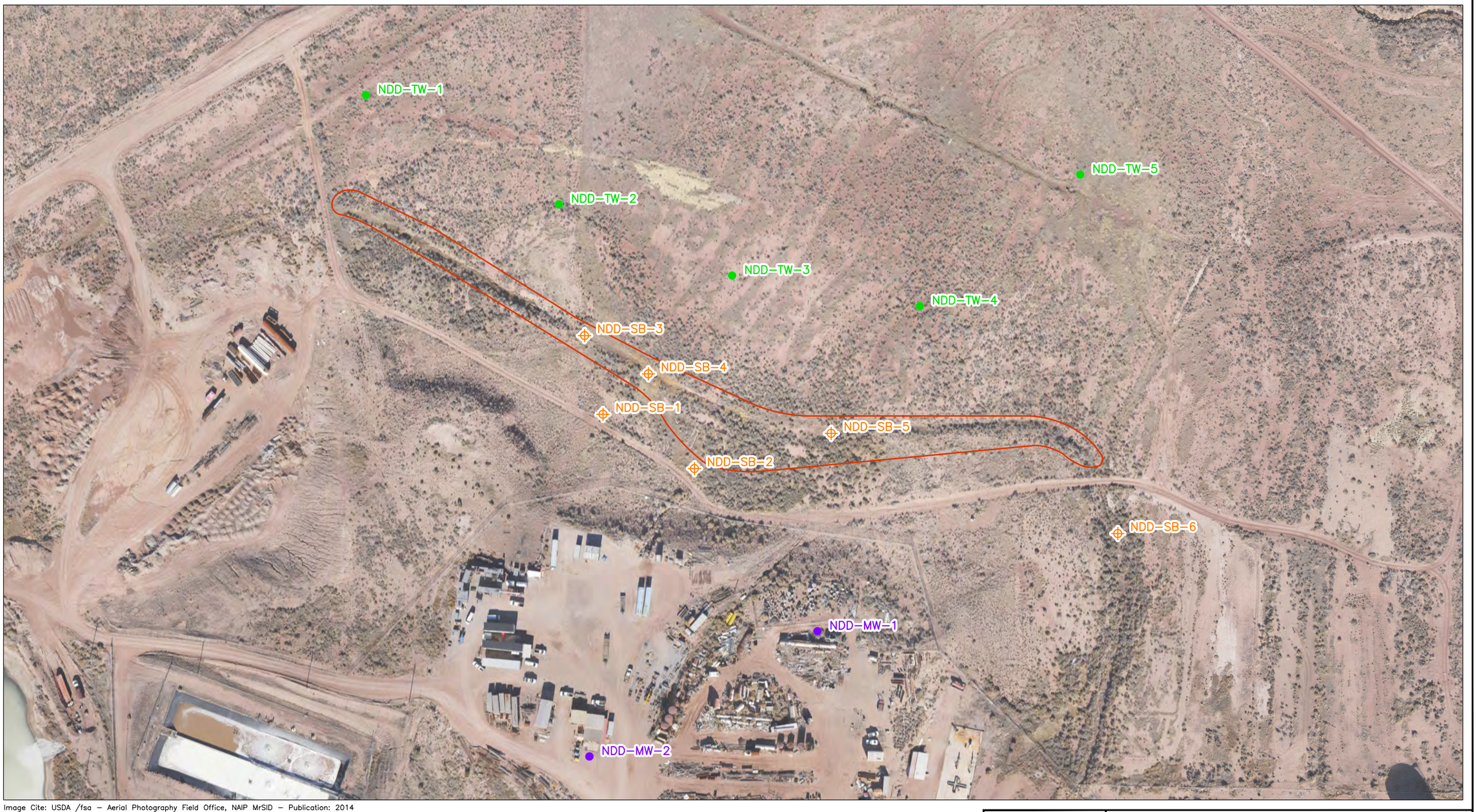


Image Cite: USDA /fsa – Aerial Photography Field Office, NAIP MrSID – Publication: 2014

NOTES:

1. SOIL INVESTIGATION ACTIVITIES OCCURRED FROM AUGUST 12-24, 2021.
2. TEMPORARY MONITORING WELL SAMPLES WERE COLLECTED ON SEPTEMBER 9, 2021.
3. PERMANENT MONITORING WELL SAMPLES WERE COLLECTED ON SEPTEMBER 17, 2021.
4. NDD-TW-3 WAS NOT COMPLETED AS A TEMPORARY MONITORING WELL DUE TO LACK OF WATER.

N

0 150'

EXPLANATION

NDD–MW–2	NEW PERMANENT MONITORING WELL LOCATION AND DESIGNATION
NDD–TW–2	NEW TEMPORARY MONITORING WELL LOCATION AND DESIGNATION
NDD–SB–2	SOIL BORING LOCATION AND DESIGNATION
	NORTH DRAINAGE DITCH BOUNDARY

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FIGURE 3-1

INVESTIGATION AREA AND SAMPLE LOCATIONS

WESTERN REFINING SOUTHWEST LLC
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

Drawn By: EAD	Checked By: CF	Scale:1" = 150'	Date: 11/3/2021	File: 697-NDD-SAMPLELOC-202110

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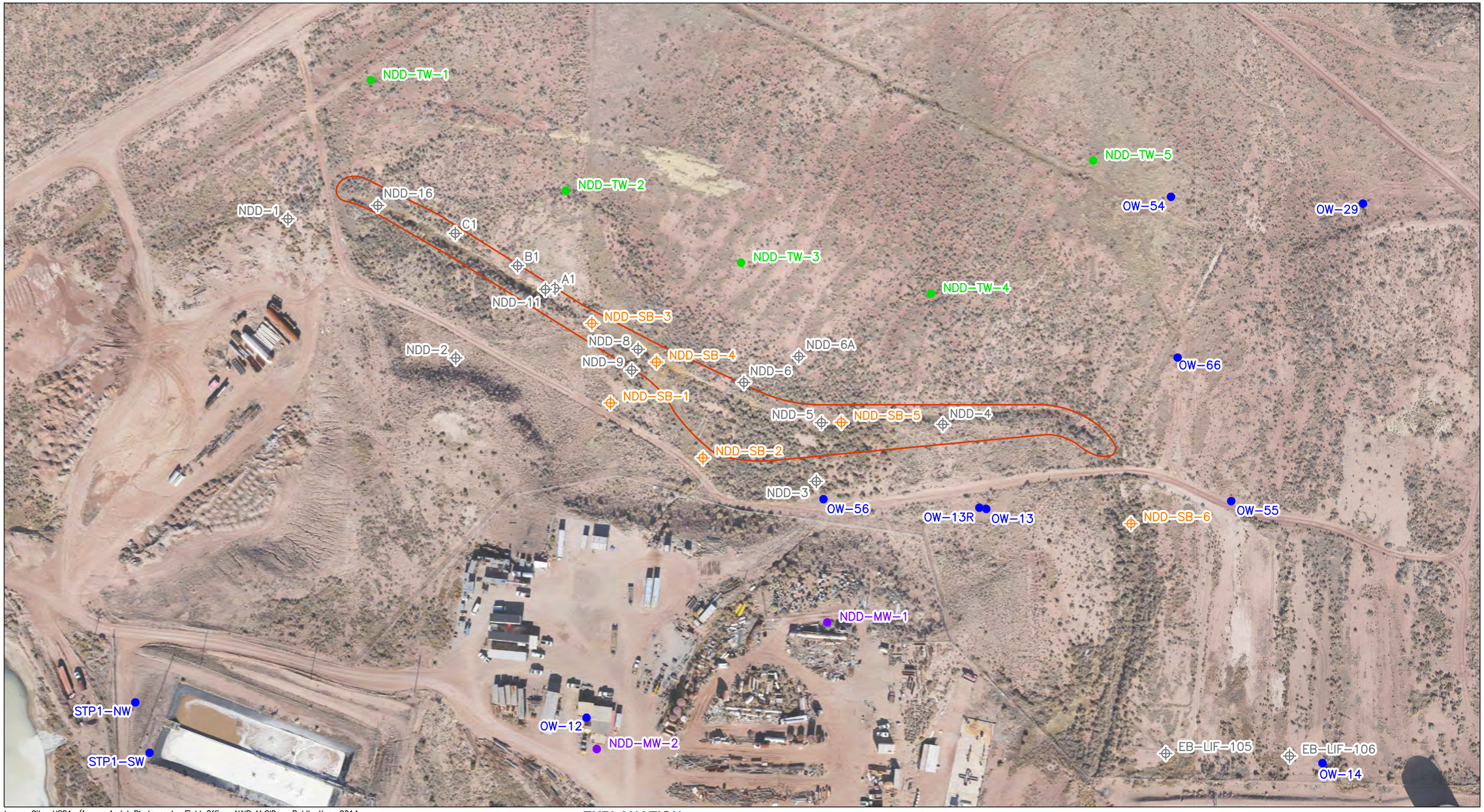


Image Cite: USDA /fsa – Aerial Photography Field Office, NAIP MrSID – Publication: 2014

NOTES:

1. SOIL INVESTIGATION ACTIVITIES OCCURRED FROM AUGUST 12-24, 2021.
2. TEMPORARY MONITORING WELL SAMPLES WERE COLLECTED ON SEPTEMBER 9, 2021.
3. PERMANENT MONITORING WELL SAMPLES WERE COLLECTED ON SEPTEMBER 17, 2021.
4. NDD-TW-3 WAS NOT COMPLETED AS A TEMPORARY MONITORING WELL DUE TO LACK OF WATER.

N

0 150'

EXPLANATION

NDD-MW-2	NEW PERMANENT MONITORING WELL LOCATION AND DESIGNATION
NDD-TW-2	NEW TEMPORARY MONITORING WELL LOCATION AND DESIGNATION
NDD-SB-2	SOIL BORING LOCATION AND DESIGNATION
OW-12	EXISTING MONITORING WELL LOCATION AND DESIGNATION
EB-LIF-105	HISTORICAL SAMPLING LOCATION AND DESIGNATION
	NORTH DRAINAGE DITCH BOUNDARY

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FIGURE 3-2

HISTORIC AND NEW SAMPLE LOCATIONS

WESTERN REFINING SOUTHWEST LLC
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

Drawn By: EAD	Checked By: CF	Scale:1" = 150'	Date: 11/4/2021	File: 697-NDD-SAMPLELOC-202110

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NDD–TW–1				8/12/21
FT BGS	0–0.5	1.5–2	26.5–27	34–34.5
TPH–DRO	ND(9.8)	ND(9.2)	ND(9.9)	4.8J
TPH–GRO	ND(3.1)	ND(3.1)	ND(2.5)	ND(3.6)
TPH–ORO	ND(49)	ND(46)	ND(50)	ND(48)

NDD–TW–1
DRY

NDD–TW–2					8/12/21–8/13/21
FT BGS	0–0.5	1.5–2	5.5–6	30.5–31	33.5–34
TPH–DRO	ND(9.9)	ND(9.9)	ND(9.6)	4.9J	ND(9.8)
TPH–GRO	ND(4)	1J	5.5	0.99J	1.1J
TPH–ORO	ND(50)	ND(50)	ND(48)	ND(48)	ND(49)

NDD–TW–2

NDD–TW–3				8/19/21
FT BGS	0–0.5	1.5–2	33.5–34	
TPH–DRO	35	ND(9.7)	ND(9.2)	
TPH–GRO	ND(2.7)	ND(3.8)	ND(3.1)	
TPH–ORO	ND(49)	ND(49)	ND(46)	

NDD–TW–3
NC

NDD–TW–5					8/19/21–8/20/21
FT BGS	0–0.5	1.5–2	18.5–19	23–23.5	30.5–31
TPH–DRO	ND(9.6)	ND(9.8)	57	ND(9.5)	5.5J+
TPH–GRO	ND(2.8)	ND(2.6)	**370**	8.1	ND(3.1)
TPH–ORO	ND(48)	ND(49)	ND(47)	ND(47)	ND(46)

NDD–TW–5

NDD–TW–4				8/19/21
FT BGS	0–0.5	1.5–2	15–15.5	31.5–32
TPH–DRO	8.4J	8.3J+	ND(9.7)	ND(9.3)
TPH–GRO	ND(3.6)	ND(4.7)	ND(2.8)	ND(3.3)
TPH–ORO	ND(46)	ND(47)	ND(48)	ND(46)

NDD–TW–4
DRY

NDD–SB–3					8/23/21
FT BGS	0–0.5	1.5–2	6–6.5	9.5–10	
TPH–DRO	ND(10)	ND(9.2)	**1500**	ND(9.9)	
TPH–GRO	ND(2.9)	ND(3)	**210J**	ND(3.3)	
TPH–ORO	ND(50)	ND(46)	ND(470)	ND(50)	

NDD–SB–3

NDD–SB–5					8/23/21–8/24/21
FT BGS	0–0.5	1.5–2	9.5–10	12–12.5	17.5–18
TPH–DRO	23	5.3J+	ND(9.3)	ND(9.7)	ND(9.9)
TPH–GRO	ND(3.6)	ND(3.4)	ND(2.4)	2.1J	ND(4.1)
TPH–ORO	ND(48)	ND(48)	ND(46)	ND(48)	ND(49)

NDD–SB–4

NDD–SB–1

NDD–SB–5

NDD–SB–2

NDD–SB–4					8/23/21
FT BGS	1–1.5	2–2.5	2.5–3	19.5–20	
TPH–DRO	240	**3000**	**1700**	6.3J+	
TPH–GRO	**1100**	**180**	**1100**	ND(3.1)	
TPH–ORO	ND(49)	ND(490)	ND(470)	ND(46)	

NDD–SB–1					8/18/21–8/19/21
FT BGS	0–0.5	1.5–2	5–5.5	13.5–14	
TPH–DRO	ND(9.4)	12	**2500**	10	
TPH–GRO	ND(3.3)	ND(2.7)	**1100**	ND(2.7)	
TPH–ORO	ND(47)	ND(45)	ND(450)	ND(49)	

NDD–SB–2					8/20/21
FT BGS	0–0.5	1.5–2	3.5–4	19–19.5	
TPH–DRO	200	**6100**	**8500**	5.2J+	
TPH–GRO	**810**	**14000**	**8300**	1.8J	
TPH–ORO	ND(47)	ND(2400)	ND(2400)	ND(46)	

NDD–SB–6

NDD–SB–6					8/23/21
FT BGS	1.5–2	3–3.5	15–15.5	21–21.5	23.5–24
TPH–DRO	ND(9.4)	ND(9.9)	ND(9.3)	180	12
TPH–GRO	ND(2.7)	ND(3.3)	ND(3.3)	**310**	18
TPH–ORO	ND(47)	ND(50)	ND(46)	ND(44)	ND(48)

NDD–MW–1						8/16/21–8/17/21
FT BGS	0–0.5	1.5–2	7.5–8	27.5–28	35–35.5	45.5–46
TPH–DRO	ND(9.3)	27	**5400**	27J+	ND(9.7)	ND(9.5)
TPH–GRO	1.1U	1.4U	1.2U	**230**	0.94U	1.1U
TPH–ORO	130	200	**12000**	ND(49)	ND(48)	ND(47)

NDD–MW–1

NDD–MW–2						8/17/21–8/18/21
FT BGS	0–0.5	1.5–2	28.2–28.7	42.5–43	47.5–48	
TPH–DRO	4.9J	9.5J	ND(9.3)	89JB	45JB	
TPH–GRO	0.97U	5.2JB	0.9U	34	**150**	
TPH–ORO	ND(47)	ND(48)	ND(47)	ND(47)	ND(48)	

NDD–MW–2
DRY

NOTES:
1. VALUES SHOWN IN BOLD AND BLACK COLOR EXCEED NMED INDUSTRIAL SSL
2. ND(X) = NOT DETECTED AT THE REPORTING LIMIT, WHERE (X) DENOTES THE REPORTING LIMIT CONCENTRATION
3. NMED = NEW MEXICO ENVIRONMENT DEPARTMENT
4. mg/kg = MILLIGRAMS PER KILOGRAM
5. SSL = SOIL SCREENING LEVEL
6. J = ESTIMATED CONCENTRATION
7. J+ = ESTIMATED CONCENTRATION, POSSIBLY BIASED HIGH
8. JB = ESTIMATED CONCENTRATION DUE TO BLANK CONTAMINATION
9. U = EVALUATED TO BE UNDETECTED AT REPORTING LIMIT

N

0 150'

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EXPLANATION

- NDD–MW–2 — NEW PERMANENT MONITORING WELL LOCATION AND DESIGNATION
- NDD–TW–2 — NEW TEMPORARY MONITORING WELL LOCATION AND DESIGNATION
- NDD–SB–2 — SOIL BORING LOCATION AND DESIGNATION
- NORTH DRAINAGE DITCH BOUNDARY

CONSTITUENT TABLE EXPLANATION

SAMPLE LOCATION → NDD–MW–1	8/16/21–8/17/21 ← SAMPLE DATE
FEET BELOW GROUND SURFACE → FT BGS	1
TOTAL PETROLEUM HYDROCARBON DIESEL RANGE ORGANICS → TPH–DRO	1000 3000
TOTAL PETROLEUM HYDROCARBON GASOLINE RANGE ORGANICS → TPH–GRO	100 500
TOTAL PETROLEUM HYDROCARBON OIL RANGE ORGANICS → TPH–ORO	1000 3000
	NMED RESIDENTIAL SSL (mg/kg) NMED INDUSTRIAL SSL (mg/kg)

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FIGURE 4-1

TOTAL PETROLEUM HYDROCARBON SOIL ANALYTICAL RESULTS

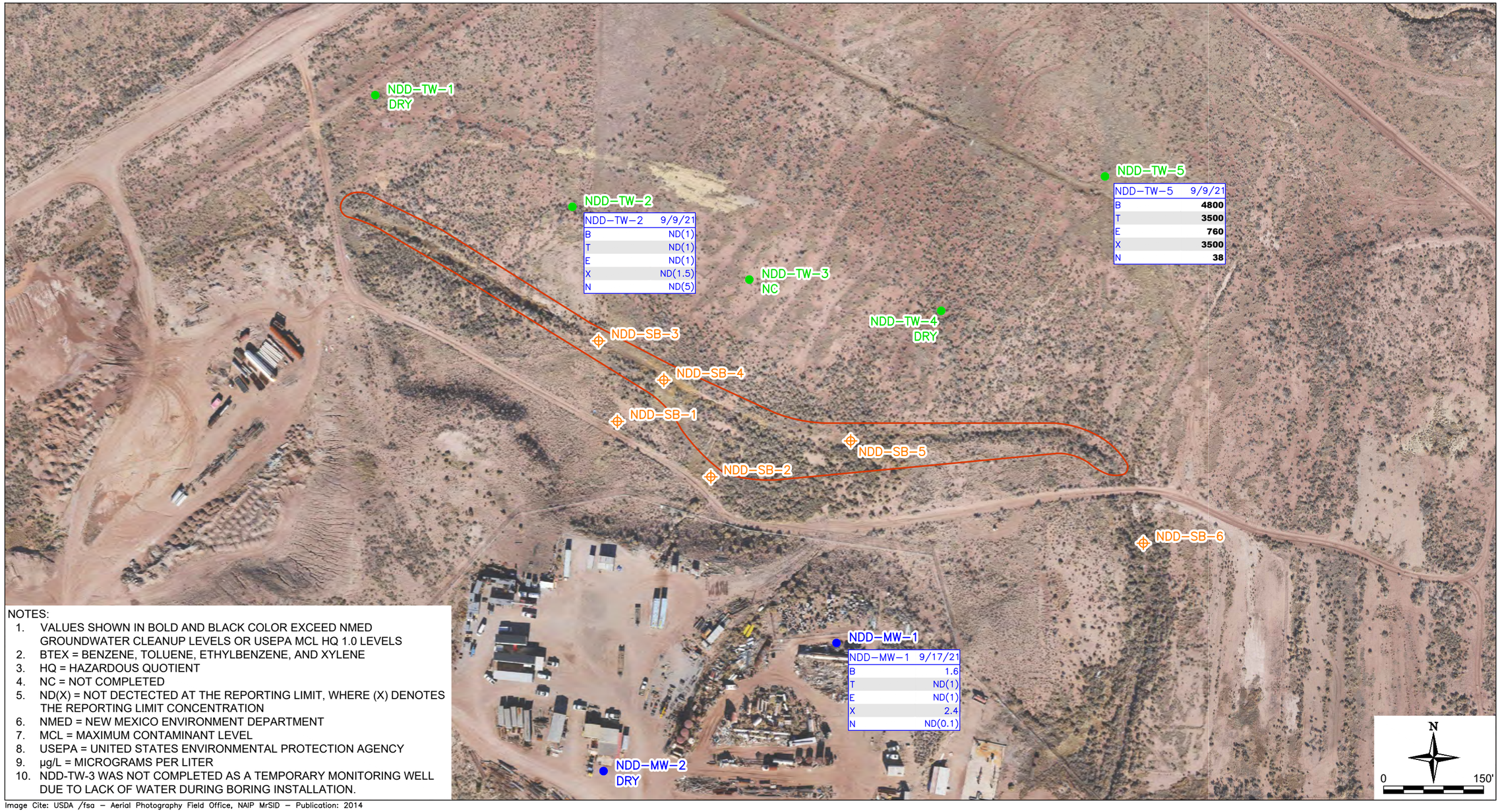
WESTERN REFINING SOUTHWEST LLC MARATHON GALLUP REFINERY GALLUP, NEW MEXICO

Drawn By: EAD	Checked By: CF	Scale:1" = 150'	Date: 11/4/2021	File: 697-NDD-SAMPLEDATA-202110

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NOTES:

1. VALUES SHOWN IN BOLD AND BLACK COLOR EXCEED NMED GROUNDWATER CLEANUP LEVELS OR USEPA MCL HQ 1.0 LEVELS
2. BTEX = BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENE
3. HQ = HAZARDOUS QUOTIENT
4. NC = NOT COMPLETED
5. ND(X) = NOT DECTECTED AT THE REPORTING LIMIT, WHERE (X) DENOTES THE REPORTING LIMIT CONCENTRATION
6. NMED = NEW MEXICO ENVIRONMENT DEPARTMENT
7. MCL = MAXIMUM CONTAMINANT LEVEL
8. USEPA = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
9. µg/L = MICROGRAMS PER LITER
10. NDD-TW-3 WAS NOT COMPLETED AS A TEMPORARY MONITORING WELL DUE TO LACK OF WATER DURING BORING INSTALLATION.

Image Cite: USDA /fsa – Aerial Photography Field Office, NAIP MrSID – Publication: 2014

EXPLANATION

- NDD–MW–2 — NEW PERMANENT MONITORING WELL LOCATION AND DESIGNATION
- NDD–TW–2 — NEW TEMPORARY MONITORING WELL LOCATION AND DESIGNATION
- NDD–SB–2 — SOIL BORING LOCATION AND DESIGNATION
- NORTH DRAINAGE DITCH BOUNDARY

CONSTITUENT TABLE EXPLANATION

SAMPLE LOCATION	NDD–MW–1	9/17/21 ← SAMPLE DATE
BENZENE	B	5	5
TOLUENE	T	1000	1000
ETHYLBENZENE	E	700	700
XYLENE	X	620	10000
NAPHTHALENE	N	30	NA
NMED GROUNDWATER CLEANUP LEVELS (ug/L)			
USEPA MCL HQ 1.0 (µg/L)			

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FIGURE 4-2

BTEX AND NAPHTHALENE GROUNDWATER ANALYTICAL RESULTS

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MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO**

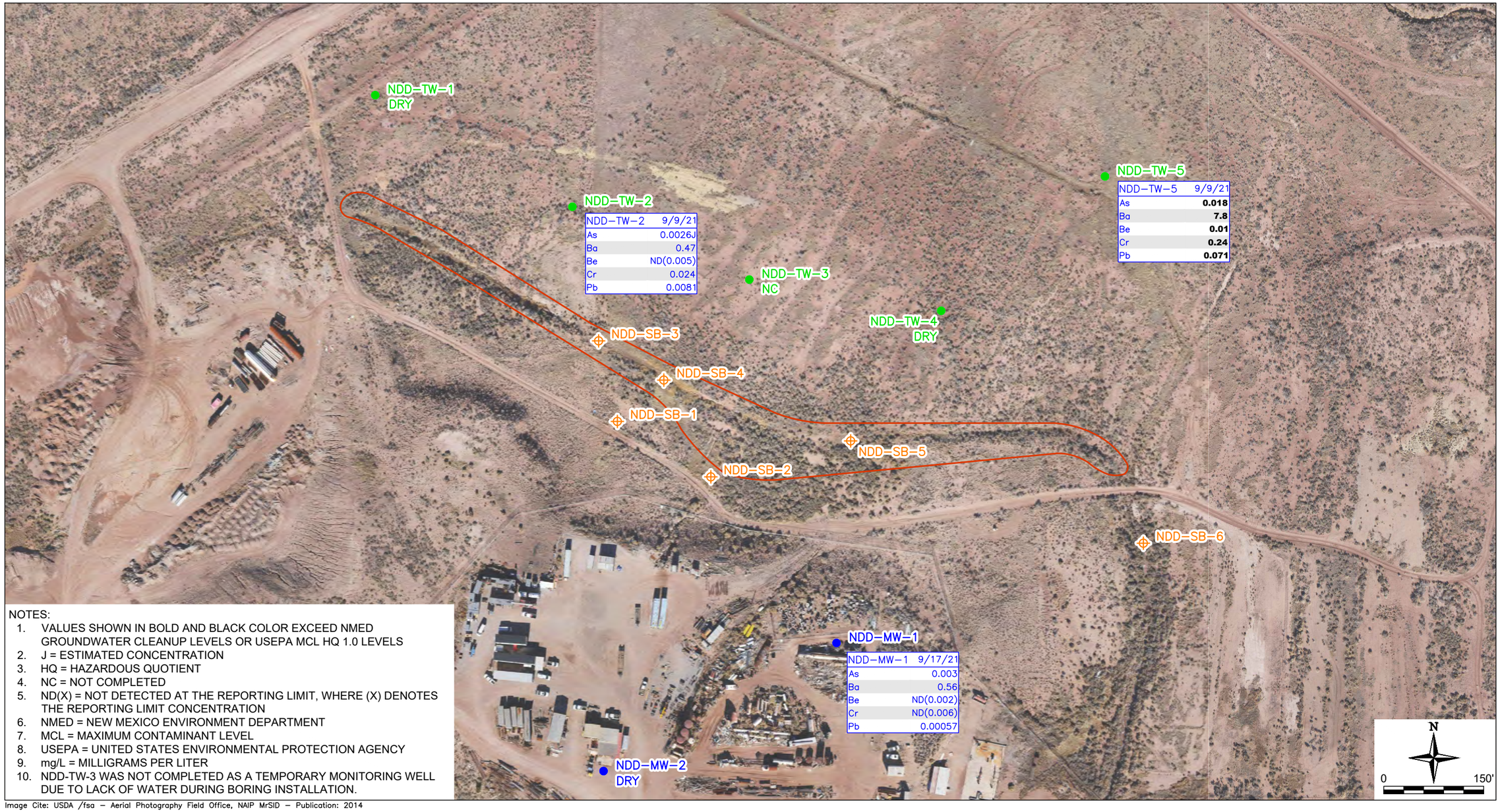
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NOTES:

1. VALUES SHOWN IN BOLD AND BLACK COLOR EXCEED NMED GROUNDWATER CLEANUP LEVELS OR USEPA MCL HQ 1.0 LEVELS
2. J = ESTIMATED CONCENTRATION
3. HQ = HAZARDOUS QUOTIENT
4. NC = NOT COMPLETED
5. ND(X) = NOT DETECTED AT THE REPORTING LIMIT, WHERE (X) DENOTES THE REPORTING LIMIT CONCENTRATION
6. NMED = NEW MEXICO ENVIRONMENT DEPARTMENT
7. MCL = MAXIMUM CONTAMINANT LEVEL
8. USEPA = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
9. mg/L = MILLIGRAMS PER LITER
10. NDD-TW-3 WAS NOT COMPLETED AS A TEMPORARY MONITORING WELL DUE TO LACK OF WATER DURING BORING INSTALLATION.

Image Cite: USDA /fsa – Aerial Photography Field Office, NAIP MrSID – Publication: 2014

EXPLANATION

- NDD-MW-2 — NEW PERMANENT MONITORING WELL LOCATION AND DESIGNATION
- NDD-TW-2 — NEW TEMPORARY MONITORING WELL LOCATION AND DESIGNATION
- NDD-SB-2 — SOIL BORING LOCATION AND DESIGNATION
- NORTH DRAINAGE DITCH BOUNDARY

CONSTITUENT TABLE EXPLANATION

SAMPLE LOCATION	NDD-MW-1	9/17/21 ← SAMPLE DATE
ARSENIC	As	0.01	0.01
BARIUM	Ba	2	2
BERYLLIUM	Be	0.004	0.004
CHROMIUM	Cr	0.05	0.1
LEAD	Pb	0.015	0.015
NMED GROUNDWATER CLEANUP LEVELS (mg/L)			
USEPA MCL HQ 1.0 (mg/L)			

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FIGURE 4-3

TOTAL METALS GROUNDWATER ANALYTICAL RESULTS

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MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO**

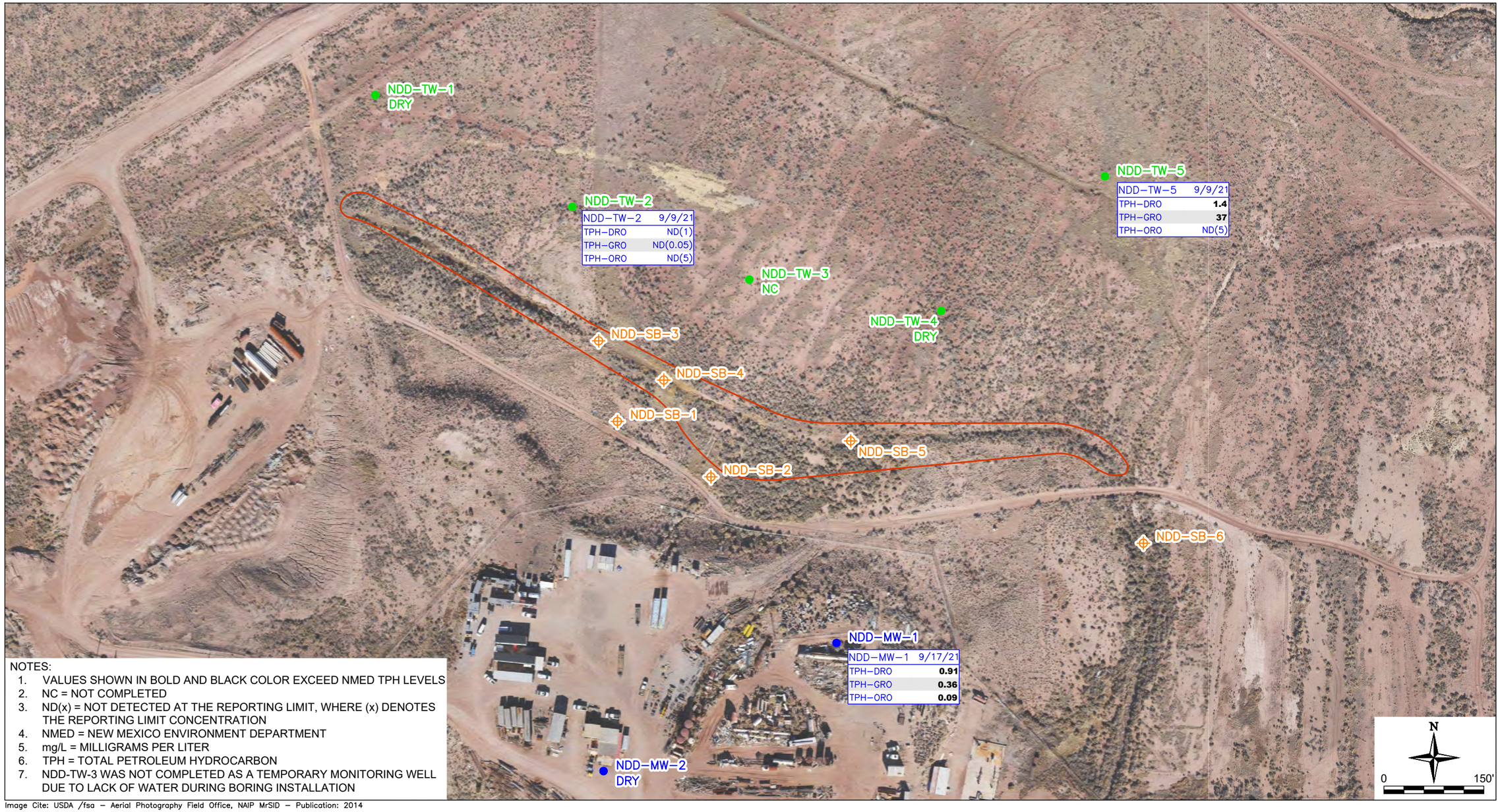
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NOTES:

1. VALUES SHOWN IN BOLD AND BLACK COLOR EXCEED NMED TPH LEVELS
2. NC = NOT COMPLETED
3. ND(x) = NOT DETECTED AT THE REPORTING LIMIT, WHERE (x) DENOTES THE REPORTING LIMIT CONCENTRATION
4. NMED = NEW MEXICO ENVIRONMENT DEPARTMENT
5. mg/L = MILLIGRAMS PER LITER
6. TPH = TOTAL PETROLEUM HYDROCARBON
7. NDD-TW-3 WAS NOT COMPLETED AS A TEMPORARY MONITORING WELL DUE TO LACK OF WATER DURING BORING INSTALLATION

Image Cite: USDA /fsa – Aerial Photography Field Office, NAIP MrSID – Publication: 2014

EXPLANATION

- NDD–MW–2 — NEW PERMANENT MONITORING WELL LOCATION AND DESIGNATION
- NDD–TW–2 — NEW TEMPORARY MONITORING WELL LOCATION AND DESIGNATION
- NDD–SB–2 — SOIL BORING LOCATION AND DESIGNATION
- NORTH DRAINAGE DITCH BOUNDARY

CONSTITUENT TABLE EXPLANATION

SAMPLE LOCATION →	NDD–MW–1	9/17/21 ← SAMPLE DATE
TOTAL PETROLEUM HYDROCARBON DIESEL RANGE ORGANICS →	TPH–DRO	0.0167
TOTAL PETROLEUM HYDROCARBON GASOLINE RANGE ORGANICS →	TPH–GRO	0.0101
TOTAL PETROLEUM HYDROCARBON OIL RANGE ORGANICS →	TPH–ORO	0.0858
NMED TPH LEVELS (mg/L) ←		

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FIGURE 4-4

TOTAL PETROLEUM HYDROCARBON GROUNDWATER ANALYTICAL RESULTS

WESTERN REFINING SOUTHWEST LLC MARATHON GALLUP REFINERY GALLUP, NEW MEXICO

Drawn By: EAD	Checked By: CF	Scale:1" = 150'	Date: 11/4/2021	File: 697-NDD-SAMPLEDATA-202110

\\TRIHYDRO.COM\CLIENTS\TON MARATHON\CADD\GALLUP_REPORTS\SWMU\SWMU9_NORTHDRAINAGEDITCH\697-NDD-SAMPLEDATA-202110

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Tables

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TABLE 3-1. SUMMARY OF ANALYTICAL SAMPLES
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Soil Borings			Temporary Wells			New Monitoring Wells			Temporary Monitoring Wells			Permanent Monitoring Wells		
Locations	Depth ft bgs	Sample Date	Locations	Depth ft bgs	Sample Date	Locations	Depth ft bgs	Sample Date	Locations	Status	Sample Date	Locations	Status	Sample Date
NDD-SB-1	0-0.5	8/18/2021	NDD-TW-1	0-0.5	8/12/2021	NDD-MW-1	0-0.5	8/16/2021	NDD-TW-1	Dry	9/8/2021	NDD-MW-1	Sampled	9/17/2021
	1.5-2	8/18/2021		1.5-2	8/12/2021		1.5-2	8/16/2021	NDD-TW-2	Sampled	9/9/2021	NDD-MW-2	Dry	9/17/2021
	5-5.5*	8/19/2021		26.5-27	8/12/2021		7.5-8	8/17/2021	NDD-TW-3	Dry	8/19/2021			
	13.5-14	8/19/2021		34-34.5	8/12/2021		27.5-28*	8/17/2021	NDD-TW-4	Dry	9/8/2021			
NDD-SB-2	0-0.5	8/20/2021	NDD-TW-2	0-0.5	8/12/2021		35-35.5	8/17/2021	NDD-TW-5	Sampled	9/9/2021			
	1.5-2	8/20/2021		1.5-2	8/12/2021		45.5-46	8/17/2021						
	3.5-4*	8/20/2021		5.5-6*	8/13/2021	NDD-MW-2	0-0.5	8/17/2021						
	19-19.5	8/20/2021		30.5-31	8/13/2021		1.5-2	8/17/2021						
NDD-SB-3	0-0.5	8/23/2021		33.5-34	8/13/2021		28.2-28.7	8/17/2021						
	1.5-2	8/23/2021	NDD-TW-3	0-0.5*	8/19/2021		42.5-43*	8/18/2021						
	6-6.5*	8/23/2021		1.5-2	8/19/2021		47.5-48	8/18/2021						
	9.5-10	8/23/2021		33.5-34	8/19/2021									
NDD-SB-4	1-1.5	8/23/2021	NDD-TW-4	0-0.5	8/19/2021									
	2-2.5*	8/23/2021		1.5-2	8/19/2021									
	2.5-3	8/23/2021		15-15.5	8/19/2021									
	19.5-20	8/23/2021		31.5-32	8/19/2021									
NDD-SB-5	0-0.5	8/23/2021	NDD-TW-5	0-0.5	8/19/2021									
	1.5-2	8/23/2021		1.5-2	8/19/2021									
	9.5-10*	8/24/2021		18.5-19*	8/19/2021									
	12-12.5	8/24/2021		23-23.5	8/19/2021									
	17.5-18	8/24/2021		30.5-31	8/20/2021									
NDD-SB-6	1.5-2	8/23/2021												
	3-3.5	8/23/2021												
	15-15.5	8/23/2021												
	21-21.5*	8/23/2021												
	23.5-24	8/23/2021												

Notes:
*Highest photoionization detection reading in boring
ft bgs = feet below ground surface

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TABLE 3-2. WELL CONSTRUCTION DATA
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Sample Date	Date of Installation	Casing Diameter (in)	Surface Elevation (ft)	Well Casing Rim Elevation (ft)	Stick-up length (ft)	Total Well Depth (ft)	DTW (ft)	Well Casing Bottom Elevation (ft)	Screened Interval Depth Top to Bottom (ft)
NDD-TW-1	9/8/2021	8/12/2021	2	NM*	NM*	NM*	34.5	26.5	34.5	18-32.8
NDD-TW-2	9/8/2021	8/13/2021	2	NM*	NM*	NM*	34	30.5	34	18-32.7
NDD-TW-4	9/8/2021	8/19/2021	2	NM*	NM*	NM*	32	15	26	10-24.7
NDD-TW-5	9/8/2021	8/20/2021	2	NM*	NM*	NM*	31	23	31	13-27.7
NDD-MW-1	9/8/2021	8/17/2021	2	6943.65	6943.06	0.59	46	35	46	25-44.7
NDD-MW-2	9/8/2021	8/18/2021	2	6943.07	6945.95	-2.88	48	28.2	34	13-32.7

Notes:
*Temporary monitoring wells were plugged and abandoned following sampling.
NDD-MW-1 and NDD-MW-2 renamed OW-70 and OW-12A, respectively, to match site well nomenclature.
NDD-TW-3 not completed in the field due to lack of water in boring.
NM = not measured
ft = feet
msl = relative mean sea level
bgs = below ground surface

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TABLE 3-3. SAMPLE PID READING LOCATION AND DEPTHS
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Sample ID	Sample depth (ft bgs)	PID reading (ppm)
NDD-TW-1	0' (Surface) - 34.5'	0.0
NDD-TW-2	0' (Surface) - 4'	0.0
	6'	36.3
	8'	14.0
	10'	3.4
	12'	1.8
	14'-34'	0.0
NDD-MW-1	0' (Surface) - 22'	0.0
	24'	7.6
	26'	44.3
	28'	830.9
	30'	470.7
	32'	0.1
	34'	0.7
	35' - 35.5'	1.5
	37'	6.0
	39'	2.8
	41'	0.8
	43'	1.9
	45'	0.4
	46'	0.6

TABLE 3-3. SAMPLE PID READING LOCATION AND DEPTHS
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Sample ID	Sample depth (ft bgs)	PID reading (ppm)
NDD-MW-2	0' (Surface) - 0.5'	0.1
	1.5' - 2'	0.2
	4'	0.0
	6'	0.0
	8'	0.0
	10'	0.1
	12'	0.1
	14'	0.1
	16'	0.1
	18'	0.0
	20'	0.0
	22'	0.1
	24'	0.6
	25'	668
	26'	14.9
	28'	103.2
	28.2' - 28.7'	4.2
	30'	0.2
	32'	0.1
	34'	0.3
	35'	0.1
	37'	0.1
	39'	0.1
	41'	727
	43'	1434
	45'	1136
	47'	1042
	48'	598
NDD-SB-1	0' (Surface) - 0.5'	0.7
	1.5' - 2'	49.2
	4'	587
	5' - 5.5'	1442
	6'	803
	8'	1340
	10'	1335
	12'	18.2
	14'	2.1

TABLE 3-3. SAMPLE PID READING LOCATION AND DEPTHS
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Sample ID	Sample depth (ft bgs)	PID reading (ppm)
NDD-TW-3	0' (Surface) - 0.5'	20.2
	1.5' - 2'	0.0
	4'	0.7
	6'	5.2
	8'-34'	0.0
NDD-TW-4	0' (Surface) - 32'	0.0
NDD-TW-5	0' (Surface) - 0.5'	0.0
	1.5' - 2'	0.0
	4'	2.5
	6'	0.0
	8'	0.0
	10'	0.0
	12'	0.0
	14'	0.0
	16'	0.0
	18'	20.7
	18.5' - 19'	805.3
	20'	578.4
	22'	97.4
	23' - 23.5'	86.0
	24'	133.1
	26'	84.5
	28'	96.0
	31'	13.1
NDD-SB-2	0' (Surface) - 0.5'	760.1
	1.5' - 2'	1145.0
	3.5' - 4'	1447.0
	6'	999.3
	8'	1122.0
	10'	323.3
	12'	110.3
	14'	153.3
	16'	119.1
	18'	95.9
	19.5'	48.1

TABLE 3-3. SAMPLE PID READING LOCATION AND DEPTHS
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Sample ID	Sample depth (ft bgs)	PID reading (ppm)
NDD-SB-3	0' (Surface) - 0.5'	1.0
	1.5' - 2'	3.8
	4'	1433.0
	6'	1529.0
	8'	608.0
	10'	25.5
NDD-SB-4	1' - 1.5'	1334.0
	2' - 2.5'	1213.0
	2.5' - 3'	1190.0
	5'	703.3
	7'	203.7
	9'	51.0
	11'	130.7
	13'	19.6
	15'	19.3
	17'	7.6
	19	13.4
	19.5' - 20'	10.9
NDD-SB-5	0-0.5'	0.1
	1.5-2'	0.3
	4'	0.1
	6'	0.0
	8'	0.0
	10'	14.2
	12'	4.8
	12-12.5'	4.2
	14'	2.8
	16'	1.6
	18'	0.0

TABLE 3-3. SAMPLE PID READING LOCATION AND DEPTHS
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Sample ID	Sample depth (ft bgs)	PID reading (ppm)
NDD-SB-6	1.5' - 2'	0.2
	3' - 3.5'	0.1
	5'	0.1
	7'	0.0
	9'	0.1
	11'	1.0
	13'	0.7
	15'	1.1
	17'	50.6
	19'	939.0
	21'	1423.0
	23.5' - 24'	196.3

Notes:
ft bgs - Foot/feet below ground surface
PID - Photoionization detector
ppm - Parts per million

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,1,1,2-Tetrachloroethane (mg/kg)	1,1,1-Trichloroethane (mg/kg)	1,1,2,2-Tetrachloroethane (mg/kg)	1,1,2-Trichloroethane (mg/kg)	1,1-Dichloroethane (mg/kg)	1,1-Dichloroethene (mg/kg)	1,1-Dichloropropene (mg/kg)	1,2,3-Trichlorobenzene (mg/kg)	1,2,3-Trichloropropane (mg/kg)		1,2,4-Trichlorobenzene (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.069)	ND(0.069)	*ND(0.069)*	[c]	ND(0.035)	ND(0.035)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.072)	*ND(0.072)*	[c]	ND(0.036)	ND(0.036)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.077)	ND(0.077)	*ND(0.077)*	[c]	ND(0.039)	ND(0.039)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.24)	ND(0.24)	*ND(0.24)*	[c]	ND(0.12)	2.1
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.055)	ND(0.055)	*ND(0.055)*	[c]	ND(0.027)	ND(0.027)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.065)	*ND(0.065)*	[c]	ND(0.033)	ND(0.033)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.053)	*ND(0.053)*	[c]	ND(0.026)	0.01 J
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.061)	*ND(0.061)*	[c]	ND(0.03)	ND(0.03)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.062)	*ND(0.062)*	[c]	ND(0.031)	0.013 J
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.057)	ND(0.057)	*ND(0.057)*	[c]	ND(0.028)	ND(0.028)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.073)	ND(0.073)	*ND(0.073)*	[c]	ND(0.037)	0.2
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.4)	*ND(0.4)*	[c]	ND(0.2)	1.7
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.065)	*ND(0.065)*	[c]	ND(0.033)	ND(0.033)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.054)	*ND(0.054)*	[c]	ND(0.027)	ND(0.027)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.054)	*ND(0.054)*	[c]	ND(0.027)	0.0087 J
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.28) UJ	ND(0.28) UJ	*ND(0.28) UJ*	[c]	ND(0.14) UJ	42 J-
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.27)	ND(0.27)	*ND(0.27)*	[c]	ND(0.14)	37
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.34)	ND(0.34)	*ND(0.34)*	[c]	ND(0.17)	3.6
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(3.8)	ND(3.8)	*ND(3.8)*	[c]	ND(1.9)	180
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.033)	ND(0.033)	0.011 J	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.067)	ND(0.067)	*ND(0.067)*	[c]	ND(0.033)	0.014 J
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	ND(2.9)	ND(2.9)	*ND(2.9)*	[c]	ND(1.4)	120
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.059)	ND(0.059)	*ND(0.059)*	[c]	ND(0.029)	ND(0.029)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.061)	*ND(0.061)*	[c]	ND(0.03)	ND(0.03)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.56)	ND(0.56)	*ND(0.56)*	[c]	ND(0.28)	2.8 J
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.57)	ND(0.57)	*ND(0.57)*	[c]	ND(0.28)	7.2 J
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.066)	*ND(0.066)*	[c]	ND(0.033)	ND(0.033)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.62)	ND(0.62)	*ND(0.62)*	[c]	ND(0.31)	15
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.062)	*ND(0.062)*	[c]	ND(0.031)	0.0065 J
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.61)	ND(0.61)	*ND(0.61)*	[c]	ND(0.31)	19
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.3)	ND(0.3)	*ND(0.3)*	[c]	ND(0.15)	1.7
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.071)	*ND(0.071)*	[c]	ND(0.036)	ND(0.036)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.068)	ND(0.068)	*ND(0.068)*	[c]	ND(0.034)	ND(0.034)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.053)	*ND(0.053)*	[c]	ND(0.026)	0.0045 J
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.082)	ND(0.082)	*ND(0.082)*	[c]	ND(0.041)	ND(0.041)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.049)	ND(0.049)	ND(0.049)		ND(0.024)	ND(0.024)
[a] 2019 Industrial NMED SSL		137	72,500	39.4	92.1	383	2,260	NA	NA	1.21		1,250	NA
[b] 2019 Construction Worker NMED SSL		659	13,600	197	4,300	1,820	424	NA	NA	8.26		8,540	NA
[c] 2019 Residential NMED SSL		28.1	14,400	7.98	18.8	78.6	440	NA	NA	0.051		240	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2-Dibromo 3-chloropropane (mg/kg)	1,2-Dibromo-ethane (mg/kg)	1,2-Dichloro-benzene (mg/kg)	1,2-Dichloro-ethane (mg/kg)	1,2-Dichloro-propane (mg/kg)	1,3,5-Trimethyl-benzene (mg/kg)	1,3-Dichloro-benzene (mg/kg)	1,3-Dichloro-propane (mg/kg)	1,4-Dichloro-benzene (mg/kg)	1-Methyl-naphthalene (mg/kg)	2,2-Dichloro-propane (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.069)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.14)	ND(0.069)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(0.072)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	0.092 J	ND(0.072)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(0.077)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.15)	ND(0.077)
NDD-MW-1 (27.5-28 ft)	08/17/21	*ND(0.24)* [c]	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	0.72	ND(0.12)	ND(0.12)	ND(0.12)	0.32 J	ND(0.24)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.055)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.055)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.065)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.065)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.053)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.066 J	ND(0.053)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.061)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.12)	ND(0.061)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.062)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.12)	ND(0.062)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.057)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.11)	ND(0.057)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.073)	0.026 J	ND(0.037)	0.02 J	ND(0.037)	0.073	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.15)	ND(0.073)
NDD-MW-2 (47.5-48 ft)	08/18/21	*ND(0.4)* [c]	ND(0.2)	ND(0.2)	0.1 J	ND(0.2)	0.61	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.8)	ND(0.4)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.065)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.065)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.054)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.054)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.054)	ND(0.027)	ND(0.027)	0.02 J	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.054)
NDD-SB-1 (5-5.5 ft)	08/18/21	*ND(0.28) UJ* [c]	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	13 J-	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	16 J-	ND(0.28) UJ
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	*ND(0.27)* [c]	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	13	ND(0.14)	ND(0.14)	ND(0.14)	14	ND(0.27)
NDD-SB-2 (0-0.5 ft)	08/20/21	*ND(0.34)* [c]	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	13	ND(0.17)	ND(0.17)	ND(0.17)	21	ND(0.34)
NDD-SB-2 (1.5-2 ft)	08/20/21	*ND(3.8)* [c]	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(1.9)	63	ND(1.9)	ND(1.9)	ND(1.9)	24	ND(3.8)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.067)	ND(0.033)	ND(0.033)	0.017 J	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.067)
NDD-SB-2 (3.5-4 ft)	08/20/21	*ND(2.9)* [c]	*ND(1.4)* [c]	ND(1.4)	1.3 J	ND(1.4)	40	ND(1.4)	ND(1.4)	ND(1.4)	17	ND(2.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.059)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.12)	ND(0.059)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.061)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.12)	ND(0.061)
NDD-SB-3 (6-6.5 ft)	08/23/21	*ND(0.56)* [c]	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	0.84 J	ND(0.28)	ND(0.28)	ND(0.28)	0.77 J	ND(0.56)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	*ND(0.57)* [c]	ND(0.28)	ND(0.28)	ND(0.14)	ND(0.28)	2.1 J	ND(0.28)	ND(0.28)	ND(0.28)	2.1	ND(0.57)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.066)	ND(0.033)	ND(0.033)	0.016 J	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.066)
NDD-SB-4 (1-1.5 ft)	08/23/21	*ND(0.62)* [c]	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	6	ND(0.31)	ND(0.31)	ND(0.31)	2.2	ND(0.62)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.062)	ND(0.031)	ND(0.031)	0.017 J	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.12)	ND(0.062)
NDD-SB-4 (2.5-3 ft)	08/23/21	*ND(0.61)* [c]	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	6.2	ND(0.31)	ND(0.31)	ND(0.31)	4.5	ND(0.61)
NDD-SB-4 (2-2.5 ft)	08/23/21	*ND(0.3)* [c]	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	0.6	ND(0.15)	ND(0.15)	ND(0.15)	0.51 J	ND(0.3)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.071)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.14)	ND(0.071)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.068)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.14)	ND(0.068)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.053)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.11)	ND(0.053)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.082)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.16)	ND(0.082)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.049)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.098)	ND(0.049)
[a] 2019 Industrial NMED SSL		1.18	3.31	13,000	40.7	86.8	NA	NA	NA	6,730	813	NA
[b] 2019 Construction Worker NMED SSL		5.53	16.3	2,500	195	415	NA	NA	NA	45,900	6,060	NA
[c] 2019 Residential NMED SSL		0.0858	0.672	2,150	8.32	17.8	NA	NA	NA	1,290	172	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

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NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Butanone (mg/kg)	2-Chlorotoluene (mg/kg)	2-Hexanone (mg/kg)	2-Methyl-naphthalene (mg/kg)	4-Chlorotoluene (mg/kg)	4-Methyl-2-Pentanone (mg/kg)	Acetone (mg/kg)	Benzene (mg/kg)	Bromobenzene (mg/kg)	Bromodichloro-methane (mg/kg)	Bromoform (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	0.18 J	ND(0.035)	0.022 J	ND(0.14)	ND(0.035)	ND(0.35)	ND(0.52)	ND(0.017)	ND(0.035)	ND(0.035)	ND(0.035)
NDD-MW-1 (1.5-2 ft)	08/16/21	0.21 J	ND(0.036)	0.044 J	0.078 J	ND(0.036)	ND(0.36)	ND(0.54)	ND(0.018)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	0.21 J	ND(0.039)	ND(0.39)	ND(0.15)	ND(0.039)	ND(0.39)	ND(0.58)	ND(0.019)	ND(0.039)	ND(0.039)	ND(0.039)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(1.2)	ND(0.12)	ND(1.2)	0.54	ND(0.12)	ND(1.2)	ND(1.8)	0.58	ND(0.12)	ND(0.12)	ND(0.12)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.27)	ND(0.027)	0.019 J	ND(0.11)	ND(0.027)	ND(0.27)	ND(0.41)	ND(0.014)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.49)	ND(0.016)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.26)	ND(0.026)	ND(0.26)	0.097 J	ND(0.026)	0.032 J	ND(0.4)	0.0051 J	ND(0.026)	ND(0.026)	ND(0.026)
NDD-MW-2 (0-0.5 ft)	08/17/21	0.14 J	ND(0.03)	0.018 J	ND(0.12)	ND(0.03)	ND(0.3)	ND(0.46)	ND(0.015)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.31)	ND(0.031)	ND(0.31)	ND(0.12)	ND(0.031)	2.2	ND(0.47)	ND(0.016)	ND(0.031)	0.0061 J	ND(0.031)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.28)	ND(0.028)	ND(0.28)	ND(0.11)	ND(0.028)	ND(0.28)	ND(0.42)	ND(0.014)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.37)	ND(0.037)	ND(0.37)	ND(0.15)	ND(0.037)	ND(0.37)	ND(0.55)	0.012 J	ND(0.037)	0.024 J	ND(0.037)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(2)	ND(0.2)	1.4 J	0.34 J	ND(0.2)	ND(2)	ND(3)	0.065 J	ND(0.2)	0.092 J	ND(0.2)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.49)	ND(0.016)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.27)	ND(0.027)	ND(0.27)	ND(0.11)	ND(0.027)	ND(0.27)	ND(0.41)	ND(0.014)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.27)	ND(0.027)	ND(0.27)	0.039 J	ND(0.027)	ND(0.27)	ND(0.41)	0.013 J	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(1.4) UJ	ND(0.14) UJ	ND(1.4) UJ	25 J-	ND(0.14) UJ	ND(1.4) UJ	ND(2.1) UJ	6.2 J-	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.4)	ND(0.14)	ND(1.4)	21	ND(0.14)	ND(1.4)	ND(2.1)	4.4	ND(0.14)	ND(0.14)	ND(0.14)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.7)	ND(0.17)	ND(1.7)	27	ND(0.17)	ND(1.7)	ND(2.5)	0.077 J	ND(0.17)	ND(0.17)	ND(0.17)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(19)	0.29 J	ND(19)	37	ND(1.9)	ND(19)	ND(28)	7.6	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	0.22 J	ND(0.033)	0.031 J	ND(0.13)	ND(0.033)	0.064 J	ND(0.5)	0.015 J	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(14)	ND(1.4)	ND(14)	25	ND(1.4)	ND(14)	ND(22)	**47** [c]	ND(1.4)	ND(1.4)	ND(1.4)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.29)	ND(0.029)	ND(0.29)	ND(0.12)	ND(0.029)	ND(0.29)	ND(0.44)	ND(0.015)	ND(0.029)	ND(0.029)	ND(0.029)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.3)	ND(0.03)	ND(0.3)	ND(0.12)	ND(0.03)	ND(0.3)	ND(0.46)	ND(0.015)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(2.8)	ND(0.28)	0.48 J	1.2 J	ND(0.28)	1.8 J	ND(4.2)	0.65	ND(0.28)	0.091 J	ND(0.28)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2.8)	ND(0.28)	ND(2.8)	3.2 J	ND(0.28)	ND(2.8)	ND(4.3)	0.95	ND(0.28)	ND(0.28)	ND(0.28)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.5)	0.059	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(3.1)	ND(0.31)	ND(3.1)	3.3	ND(0.31)	ND(3.1)	ND(4.6)	1.3	ND(0.31)	ND(0.31)	ND(0.31)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.31)	ND(0.031)	0.022 J	0.039 J	ND(0.031)	ND(0.31)	ND(0.47)	0.15	ND(0.031)	ND(0.031)	ND(0.031)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(3.1)	ND(0.31)	ND(3.1)	7.1	ND(0.31)	ND(3.1)	ND(4.6)	1.8	ND(0.31)	ND(0.31)	ND(0.31)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(1.5)	ND(0.15)	ND(1.5)	0.77	ND(0.15)	ND(1.5)	ND(2.3)	0.25	ND(0.15)	ND(0.15)	ND(0.15)
NDD-SB-5 (0-0.5 ft)	08/23/21	0.16 J	ND(0.036)	ND(0.36)	ND(0.14)	ND(0.036)	ND(0.36)	ND(0.53)	ND(0.018)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.34)	ND(0.034)	ND(0.34)	ND(0.14)	ND(0.034)	ND(0.34)	ND(0.51)	ND(0.017)	ND(0.034)	ND(0.034)	ND(0.034)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.26)	ND(0.026)	ND(0.26)	ND(0.11)	ND(0.026)	ND(0.26)	ND(0.4)	0.023	ND(0.026)	ND(0.026)	ND(0.026)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.41)	ND(0.041)	ND(0.41)	ND(0.16)	ND(0.041)	ND(0.41)	ND(0.62)	ND(0.021)	ND(0.041)	ND(0.041)	ND(0.041)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.24)	ND(0.024)	ND(0.24)	ND(0.098)	ND(0.024)	ND(0.24)	ND(0.37)	ND(0.012)	ND(0.024)	ND(0.024)	ND(0.024)
[a] 2019 Industrial NMED SSL		411,000	26,000	NA	3,370	NA	81,600	960,000	87.2	NA	30.2	1,760
[b] 2019 Construction Worker NMED SSL		91,700	7,080	NA	1,000	NA	20,200	242,000	423	NA	143	23,700
[c] 2019 Residential NMED SSL		37,400	1,560	NA	232	NA	5,810	66,300	17.8	NA	6.19	674

Notes:
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
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* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bromomethane (mg/kg)	Carbon Disulfide (mg/kg)	Carbon tetrachloride (mg/kg)	Chlorobenzene (mg/kg)	Chloroethane (mg/kg)	Chloroform (mg/kg)	Chloromethane (mg/kg)	cis-1,2-Dichloro-ethene (mg/kg)	Cis-1,3-dichloro-propene (mg/kg)	Dibromo-chloromethane (mg/kg)	Dibromomethane (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.1)	ND(0.35)	ND(0.035)	ND(0.035)	ND(0.069)	ND(0.035)	ND(0.1)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(0.11)	ND(0.36)	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(0.12)	ND(0.39)	ND(0.039)	ND(0.039)	ND(0.077)	ND(0.039)	ND(0.12)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(0.37)	ND(1.2)	ND(0.12)	0.049 J	ND(0.24)	0.11 J	ND(0.37)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.082)	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.055)	ND(0.027)	ND(0.082)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.098)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.033)	ND(0.098)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.079)	ND(0.26)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.026)	ND(0.079)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.091)	ND(0.3)	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.03)	ND(0.091)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.093)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.085)	ND(0.28)	ND(0.028)	ND(0.028)	ND(0.057)	ND(0.028)	ND(0.085)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.11)	ND(0.37)	ND(0.037)	0.01 J	ND(0.073)	0.022 J	ND(0.11)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(0.6)	ND(2)	ND(0.2)	0.078 J	ND(0.4)	0.09 J	ND(0.6)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.098)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.033)	ND(0.098)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.081)	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.081)	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(0.42) UJ	ND(1.4) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.28) UJ	ND(0.14) UJ	ND(0.42) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(0.41)	ND(1.4)	ND(0.14)	ND(0.14)	ND(0.27)	ND(0.14)	ND(0.41)	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(0.51)	ND(1.7)	ND(0.17)	ND(0.17)	ND(0.34)	ND(0.17)	ND(0.51)	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(5.7)	ND(19)	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(5.7)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	0.056 J	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.067)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(4.3)	ND(14)	ND(1.4)	0.45 J	ND(2.9)	ND(1.4)	ND(4.3)	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.088)	ND(0.29)	ND(0.029)	ND(0.029)	ND(0.059)	ND(0.029)	ND(0.088)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.091)	ND(0.3)	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.03)	ND(0.091)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(0.84)	ND(2.8)	ND(0.28)	0.051 J	ND(0.56)	ND(0.28)	ND(0.84)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(0.85)	ND(2.8)	ND(0.28)	ND(0.28)	ND(0.57)	ND(0.28)	ND(0.85)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.099)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.099)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(0.93)	ND(3.1)	ND(0.31)	0.068 J	0.16 J	ND(0.31)	ND(0.93)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.094)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.094)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(0.92)	ND(3.1)	ND(0.31)	0.097 J	ND(0.61)	ND(0.31)	ND(0.92)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(0.45)	ND(1.5)	ND(0.15)	ND(0.15)	ND(0.3)	0.12 J	ND(0.45)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.11)	ND(0.36)	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.1)	ND(0.34)	ND(0.034)	ND(0.034)	ND(0.068)	ND(0.034)	ND(0.1)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.079)	ND(0.26)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.026)	ND(0.079)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.12)	ND(0.41)	ND(0.041)	ND(0.041)	ND(0.082)	ND(0.041)	ND(0.12)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.073)	ND(0.24)	ND(0.024)	ND(0.024)	ND(0.049)	ND(0.024)	ND(0.073)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)
[a] 2019 Industrial NMED SSL		94.5	8,540	52.5	2,160	89,500	28.7	201	2,600	NA	67.4	288
[b] 2019 Construction Worker NMED SSL		17.9	1,620	252	412	16,600	134	956	708	NA	340	53.9
[c] 2019 Residential NMED SSL		17.7	1,550	10.7	378	19,000	5.9	41.1	156	NA	13.9	57.9

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Dichlorodifluoro-methane (mg/kg)	Ethylbenzene (mg/kg)	Hexachloro-butadiene (mg/kg)	Isopropylbenzene (mg/kg)	Methylene Chloride (mg/kg)	MTBE (mg/kg)	Naphthalene (mg/kg)	n-Butylbenzene (mg/kg)	n-Propylbenzene (mg/kg)	p-Isopropyl-toluene (mg/kg)	sec-Butylbenzene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.035)	ND(0.035)	ND(0.069)	ND(0.035)	ND(0.1)	ND(0.035)	ND(0.069)	ND(0.1)	ND(0.035)	ND(0.035)	ND(0.035)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.036)	ND(0.11)	ND(0.036)	0.016 J	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(0.039)	ND(0.039)	ND(0.077)	ND(0.039)	ND(0.12)	ND(0.039)	ND(0.077)	ND(0.12)	ND(0.039)	ND(0.039)	ND(0.039)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(0.12)	1.1	ND(0.24)	0.19	ND(0.37)	ND(0.12)	0.34	0.19 J	0.44	0.08 J	0.12 J
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.027)	ND(0.027)	ND(0.055)	ND(0.027)	ND(0.082)	0.016 J	ND(0.055)	ND(0.082)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.033)	ND(0.098)	ND(0.033)	ND(0.065)	ND(0.098)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.026)	0.007 J	ND(0.053)	ND(0.026)	ND(0.079)	ND(0.026)	0.024 J	ND(0.079)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.03)	ND(0.091)	ND(0.03)	ND(0.061)	ND(0.091)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.031)	0.11	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.062)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.028)	ND(0.028)	ND(0.057)	ND(0.028)	ND(0.085)	ND(0.028)	ND(0.057)	ND(0.085)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.037)	0.087	ND(0.073)	0.032 J	ND(0.11)	ND(0.037)	0.018 J	0.022 J	0.051	0.014 J	ND(0.037)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(0.2)	0.35	ND(0.4)	0.2 J	ND(0.6)	ND(0.2)	0.19 J	0.19 J	0.35	0.11 J	ND(0.2)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.033)	ND(0.033)	ND(0.065)	ND(0.033)	ND(0.098)	ND(0.033)	ND(0.065)	ND(0.098)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.054)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	0.017 J	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(0.14) UJ	12 J-	ND(0.28) UJ	1.8 J-	ND(0.42) UJ	ND(0.14) UJ	12 J-	3.3 J-	5.8 J-	1.5 J-	1.4 J-
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(0.14)	9.5	ND(0.27)	1.6	ND(0.41)	ND(0.14)	12	3.2	5.2	1.4	1.3
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(0.17)	0.39	ND(0.34)	ND(0.17)	ND(0.51)	ND(0.17)	10	ND(0.51)	0.11 J	3.3	ND(0.17)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	65	ND(3.8)	20	ND(5.7)	ND(1.9)	22	15	35	10	12
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.033)	0.0087 J	ND(0.067)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.067)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.4)	**78** [c]	ND(2.9)	16	ND(4.3)	ND(1.4)	18	8.3	28	5.6	6.9
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.029)	ND(0.029)	ND(0.059)	ND(0.029)	ND(0.088)	ND(0.029)	ND(0.059)	ND(0.088)	ND(0.029)	ND(0.029)	ND(0.029)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.03)	ND(0.03)	ND(0.061)	ND(0.03)	ND(0.091)	ND(0.03)	ND(0.061)	ND(0.091)	ND(0.03)	ND(0.03)	ND(0.03)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(0.28)	0.79 J	ND(0.56)	0.14 J	ND(0.84)	ND(0.28)	0.65 J	0.33 J	0.41 J	0.085 J	ND(0.28)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(0.28)	1.9 J	ND(0.57)	0.28 J	ND(0.85)	ND(0.28)	1.5 J	0.69 J	0.98 J	0.26 J	ND(0.28)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.099)	ND(0.033)	ND(0.066)	ND(0.099)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(0.31)	3.1	ND(0.62)	0.76	ND(0.93)	ND(0.31)	2.2	0.71 J	1.3	0.76	0.5
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.031)	0.033	ND(0.062)	ND(0.031)	ND(0.094)	ND(0.031)	0.022 J	ND(0.094)	0.0066 J	ND(0.031)	ND(0.031)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(0.31)	4.3	ND(0.61)	0.95	ND(0.92)	ND(0.31)	4	1.4	2.5	0.86	0.78
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(0.15)	0.34	ND(0.3)	0.072 J	ND(0.45)	ND(0.15)	0.43	0.13 J	0.18	0.074 J	ND(0.15)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.071)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.034)	ND(0.034)	ND(0.068)	ND(0.034)	ND(0.1)	ND(0.034)	ND(0.068)	ND(0.1)	ND(0.034)	ND(0.034)	ND(0.034)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.026)	0.035	ND(0.053)	0.012 J	ND(0.079)	ND(0.026)	ND(0.053)	0.009 J	0.012 J	ND(0.026)	ND(0.026)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.041)	ND(0.041)	ND(0.082)	ND(0.041)	ND(0.12)	ND(0.041)	ND(0.082)	ND(0.12)	ND(0.041)	ND(0.041)	ND(0.041)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.024)	ND(0.024)	ND(0.049)	ND(0.024)	ND(0.073)	ND(0.024)	ND(0.049)	ND(0.073)	ND(0.024)	ND(0.024)	ND(0.024)
[a] 2019 Industrial NMED SSL		865	368	52.1	14,200	14,400	NA	241	NA	NA	NA	NA
[b] 2019 Construction Worker NMED SSL		161	1,770	2,400	2,740	89,600	NA	1,110	NA	NA	NA	NA
[c] 2019 Residential NMED SSL		182	75.1	68.3	2,360	766	NA	49.7	NA	NA	NA	NA

Notes:
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ft - Feet
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J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
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NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
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NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Styrene (mg/kg)	tert-Butylbenzene (mg/kg)	Tetrachloroethene (mg/kg)	Toluene (mg/kg)	trans-1,2-Dichloroethene (mg/kg)	trans-1,3-Dichloropropene (mg/kg)	Trichloroethene (mg/kg)	Trichloro-fluoromethane (mg/kg)	Vinyl Chloride (mg/kg)	Xylenes, Total (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.069)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(0.036)	ND(0.036)	ND(0.036)	0.0088 J	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.072)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.077)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(0.12)	ND(0.12)	ND(0.12)	0.044 J	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	5.6
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.055)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.065)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(0.026)	ND(0.026)	ND(0.026)	0.0041 J	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.031 J
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.061)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.031)	ND(0.031)	ND(0.031)	0.25	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	0.76
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.057)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.037)	ND(0.037)	ND(0.037)	0.14	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	0.48
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(0.2)	ND(0.2)	ND(0.2)	0.24	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	2.3
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.065)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	1.1 J-	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	ND(0.14) UJ	80 J-
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(0.14)	ND(0.14)	ND(0.14)	0.7	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	69
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(0.17)	0.32	ND(0.17)	0.9	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	ND(0.17)	3.8
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	110	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	410
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.033)	ND(0.033)	ND(0.033)	0.0084J/ND(0.033) U*	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	0.031 J
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.4)	ND(1.4)	ND(1.4)	320	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	*ND(1.4)* [c]	560
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.059)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.061)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(0.28)	ND(0.28)	ND(0.28)	0.061 J	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	4.8 J
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(0.28)	ND(0.28)	ND(0.28)	0.13 J	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	ND(0.28)	12 J
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(0.31)	ND(0.31)	ND(0.31)	7.4	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	42
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	0.017 J
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(0.31)	ND(0.31)	ND(0.31)	4.9	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	ND(0.31)	35
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(0.15)	ND(0.15)	ND(0.15)	0.47	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)	3.2
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.071)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.068)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.053)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.082)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.049)
[a] 2019 Industrial NMED SSL		51,300	NA	1,650	61,300	1,610	NA	112	6,030	28.4	4,280
[b] 2019 Construction Worker NMED SSL		10,200	NA	7,910	14,000	305	NA	5,370	1,130	161	798
[c] 2019 Residential NMED SSL		7,260	NA	337	5,230	295	NA	15.5	1,230	0.742	871

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,1,1,2-Tetrachloroethane (mg/kg)	1,1,1-Trichloroethane (mg/kg)	1,1,2,2-Tetrachloroethane (mg/kg)	1,1,2-Trichloroethane (mg/kg)	1,1-Dichloroethane (mg/kg)	1,1-Dichloroethene (mg/kg)	1,1-Dichloropropene (mg/kg)	1,2,3-Trichlorobenzene (mg/kg)	1,2,3-Trichloropropane (mg/kg)		1,2,4-Trichlorobenzene (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.05)		ND(0.025)	ND(0.025)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.054)	*ND(0.054)*	c	ND(0.027)	ND(0.027)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.066)	*ND(0.066)*	c	ND(0.033)	ND(0.033)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.59)	ND(0.59)	*ND(0.59)*	c	ND(0.29)	0.54
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.054)	*ND(0.054)*	c	ND(0.027)	0.087
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.066)	*ND(0.066)*	c	ND(0.033)	ND(0.033)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.063)	*ND(0.063)*	c	ND(0.031)	ND(0.031)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.062)	*ND(0.062)*	c	ND(0.031)	ND(0.031)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.051)	ND(0.051)	*ND(0.051)*	c	ND(0.025)	ND(0.025)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.071)	*ND(0.071)*	c	ND(0.036)	ND(0.036)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.076)	ND(0.076)	*ND(0.076)*	c	ND(0.038)	ND(0.038)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.081)	ND(0.081)	*ND(0.081)*	c	ND(0.04)	ND(0.04)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.057)	ND(0.057)	*ND(0.057)*	c	ND(0.029)	ND(0.029)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.064)	ND(0.064)	*ND(0.064)*	c	ND(0.032)	ND(0.032)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.073)	ND(0.073)	*ND(0.073)*	c	ND(0.037)	ND(0.037)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.051)	ND(0.051)	*ND(0.051)*	c	ND(0.026)	0.62
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.054)	*ND(0.054)*	c	ND(0.027)	0.0067 J
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.075)	ND(0.075)	*ND(0.075)*	c	ND(0.038)	ND(0.038)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.062)	*ND(0.062)*	c	ND(0.031)	ND(0.031)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.072)	*ND(0.072)*	c	ND(0.036)	ND(0.036)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.094)	ND(0.094)	*ND(0.094)*	c	ND(0.047)	ND(0.047)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.056)	ND(0.056)	*ND(0.056)*	c	ND(0.028)	ND(0.028)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.067)	ND(0.067)	*ND(0.067)*	c	ND(0.033)	0.0076 J
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.055)	ND(0.055)	*ND(0.055)*	c	ND(0.028)	ND(0.028)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.053)	*ND(0.053)*	c	ND(0.026)	ND(0.026)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.25)	ND(0.25)	*ND(0.25)*	c	ND(0.12)	7.9
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.049)	ND(0.049)	ND(0.049)		ND(0.024)	0.16
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.051)	ND(0.051)	*ND(0.051)*	c	ND(0.026)	0.13
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.063)	*ND(0.063)*	c	ND(0.031)	0.0075 J
[a] 2019 Industrial NMED SSL		137	72,500	39.4	92.1	383	2,260	NA	NA	1.21		1,250	NA
[b] 2019 Construction Worker NMED SSL		659	13,600	197	4,300	1,820	424	NA	NA	8.26		8,540	NA
[c] 2019 Residential NMED SSL		28.1	14,400	7.98	18.8	78.6	440	NA	NA	0.051		240	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2-Dibromo 3-chloropropane (mg/kg)	1,2-Dibromo-ethane (mg/kg)	1,2-Dichloro-benzene (mg/kg)	1,2-Dichloro-ethane (mg/kg)	1,2-Dichloro-propane (mg/kg)	1,3,5-Trimethyl-benzene (mg/kg)	1,3-Dichloro-benzene (mg/kg)	1,3-Dichloro-propane (mg/kg)	1,4-Dichloro-benzene (mg/kg)	1-Methyl-naphthalene (mg/kg)	2,2-Dichloro-propane (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.05)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.1)	ND(0.05)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.054)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.054)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.066)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.066)
NDD-SB-6 (21-21.5 ft)	08/23/21	*ND(0.59)* [c]	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	0.24 J	ND(0.29)	ND(0.29)	ND(0.29)	ND(1.2)	ND(0.59)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.054)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	0.038	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.054)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.066)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.066)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.063)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.13)	ND(0.063)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.062)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.12)	ND(0.062)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.051)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.1)	ND(0.051)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.071)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.14)	ND(0.071)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.076)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.15)	ND(0.076)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.081)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.16)	ND(0.081)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.057)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.11)	ND(0.057)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.064)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.13)	ND(0.064)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.073)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.15)	ND(0.073)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.051)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.048	ND(0.026)	ND(0.026)	ND(0.026)	0.16	ND(0.051)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.054)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.11)	ND(0.054)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.075)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.15)	ND(0.075)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.062)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.12)	ND(0.062)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.072)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.14)	ND(0.072)
NDD-TW-4 (1.5-2 ft)	08/19/21	*ND(0.094)* [c]	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.19)	ND(0.094)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.056)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.11)	ND(0.056)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.067)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.13)	ND(0.067)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.055)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.11)	ND(0.055)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.053)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.11)	ND(0.053)
NDD-TW-5 (18.5-19 ft)	08/19/21	*ND(0.25)* [c]	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	3	ND(0.12)	ND(0.12)	ND(0.12)	0.7	ND(0.25)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.049)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	0.036	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.097)	ND(0.049)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.051)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.031	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.1)	ND(0.051)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.063)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.13)	ND(0.063)
[a] 2019 Industrial NMED SSL		1.18	3.31	13,000	40.7	86.8	NA	NA	NA	6,730	813	NA
[b] 2019 Construction Worker NMED SSL		5.53	16.3	2,500	195	415	NA	NA	NA	45,900	6,060	NA
[c] 2019 Residential NMED SSL		0.0858	0.672	2,150	8.32	17.8	NA	NA	NA	1,290	172	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Butanone (mg/kg)	2-Chlorotoluene (mg/kg)	2-Hexanone (mg/kg)	2-Methyl-naphthalene (mg/kg)	4-Chlorotoluene (mg/kg)	4-Methyl-2-Pentanone (mg/kg)	Acetone (mg/kg)	Benzene (mg/kg)	Bromobenzene (mg/kg)	Bromodichloro-methane (mg/kg)	Bromoform (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.25)	ND(0.025)	ND(0.25)	ND(0.1)	ND(0.025)	ND(0.25)	ND(0.38)	ND(0.013)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.27)	ND(0.027)	ND(0.27)	ND(0.11)	ND(0.027)	ND(0.27)	ND(0.4)	ND(0.013)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.5)	ND(0.017)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(2.9)	ND(0.29)	0.98 J	ND(1.2)	ND(0.29)	0.37 J	ND(4.4)	ND(0.15)	ND(0.29)	ND(0.29)	ND(0.29)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.27)	ND(0.027)	ND(0.27)	0.034 J	ND(0.027)	ND(0.27)	ND(0.41)	ND(0.014)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.5)	ND(0.017)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.31)	ND(0.031)	ND(0.31)	ND(0.13)	ND(0.031)	ND(0.31)	ND(0.47)	ND(0.016)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.31)	ND(0.031)	ND(0.31)	ND(0.12)	ND(0.031)	ND(0.31)	ND(0.46)	ND(0.015)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.25)	ND(0.025)	ND(0.25)	ND(0.1)	ND(0.025)	ND(0.25)	ND(0.38)	ND(0.013)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.36)	ND(0.036)	ND(0.36)	ND(0.14)	ND(0.036)	ND(0.36)	ND(0.53)	ND(0.018)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.38)	ND(0.038)	ND(0.38)	ND(0.15)	ND(0.038)	ND(0.38)	ND(0.57)	ND(0.019)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.4)	ND(0.04)	ND(0.4)	ND(0.16)	ND(0.04)	ND(0.4)	ND(0.61)	ND(0.02)	ND(0.04)	ND(0.04)	ND(0.04)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.29)	ND(0.029)	ND(0.29)	ND(0.11)	ND(0.029)	ND(0.29)	ND(0.43)	ND(0.014)	ND(0.029)	ND(0.029)	ND(0.029)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.32)	ND(0.032)	ND(0.32)	ND(0.13)	ND(0.032)	ND(0.32)	ND(0.48)	ND(0.016)	ND(0.032)	ND(0.032)	ND(0.032)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.37)	ND(0.037)	ND(0.37)	ND(0.15)	ND(0.037)	ND(0.37)	ND(0.55)	ND(0.018)	ND(0.037)	ND(0.037)	ND(0.037)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.26)	ND(0.026)	ND(0.26)	0.025 J	ND(0.026)	ND(0.26)	ND(0.38)	0.099	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.27)	ND(0.027)	ND(0.27)	ND(0.11)	ND(0.027)	ND(0.27)	ND(0.41)	ND(0.014)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.38)	ND(0.038)	ND(0.38)	ND(0.15)	ND(0.038)	ND(0.38)	ND(0.56)	ND(0.019)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.31)	ND(0.031)	ND(0.31)	ND(0.12)	ND(0.031)	ND(0.31)	ND(0.47)	ND(0.016)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.36)	ND(0.036)	ND(0.36)	ND(0.14)	ND(0.036)	ND(0.36)	ND(0.54)	ND(0.018)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.47)	ND(0.047)	ND(0.47)	ND(0.19)	ND(0.047)	ND(0.47)	ND(0.7)	ND(0.023)	ND(0.047)	ND(0.047)	ND(0.047)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.28)	ND(0.028)	ND(0.28)	ND(0.11)	ND(0.028)	ND(0.28)	ND(0.42)	ND(0.014)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.33)	ND(0.033)	ND(0.33)	ND(0.13)	ND(0.033)	ND(0.33)	ND(0.5)	ND(0.017)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.28)	ND(0.028)	ND(0.28)	ND(0.11)	ND(0.028)	ND(0.28)	ND(0.41)	ND(0.014)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.26)	ND(0.026)	ND(0.26)	ND(0.11)	ND(0.026)	ND(0.26)	ND(0.4)	ND(0.013)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(1.2)	ND(0.12)	ND(1.2)	1.3	ND(0.12)	ND(1.2)	ND(1.9)	4	ND(0.12)	ND(0.12)	ND(0.12)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.24)	ND(0.024)	ND(0.24)	0.039 J	ND(0.024)	ND(0.24)	ND(0.36)	0.75 J	ND(0.024)	ND(0.024)	ND(0.024)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.26)	ND(0.026)	ND(0.26)	0.044 J	ND(0.026)	ND(0.26)	ND(0.39)	0.43 J	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.31)	ND(0.031)	ND(0.31)	ND(0.13)	ND(0.031)	ND(0.31)	ND(0.47)	0.026	ND(0.031)	ND(0.031)	ND(0.031)
[a] 2019 Industrial NMED SSL		411,000	26,000	NA	3,370	NA	81,600	960,000	87.2	NA	30.2	1,760
[b] 2019 Construction Worker NMED SSL		91,700	7,080	NA	1,000	NA	20,200	242,000	423	NA	143	23,700
[c] 2019 Residential NMED SSL		37,400	1,560	NA	232	NA	5,810	66,300	17.8	NA	6.19	674

Notes:
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Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bromomethane (mg/kg)	Carbon Disulfide (mg/kg)	Carbon tetrachloride (mg/kg)	Chlorobenzene (mg/kg)	Chloroethane (mg/kg)	Chloroform (mg/kg)	Chloromethane (mg/kg)	cis-1,2-Dichloro-ethene (mg/kg)	Cis-1,3-dichloro-propene (mg/kg)	Dibromo-chloromethane (mg/kg)	Dibromomethane (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.075)	ND(0.25)	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.025)	ND(0.075)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-SB-6 (1.5-2 ft)	08/23/21	0.045 J	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.099)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.099)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(0.88)	ND(2.9)	ND(0.29)	ND(0.29)	ND(0.59)	0.15 J	ND(0.88)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.081)	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.1)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.094)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.031)	ND(0.094)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.093)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.076)	ND(0.25)	ND(0.025)	ND(0.025)	ND(0.051)	ND(0.025)	ND(0.076)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.11)	ND(0.36)	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.11)	ND(0.38)	ND(0.038)	ND(0.038)	ND(0.076)	ND(0.038)	ND(0.11)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.12)	ND(0.4)	ND(0.04)	ND(0.04)	ND(0.081)	ND(0.04)	ND(0.12)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.086)	ND(0.29)	ND(0.029)	ND(0.029)	ND(0.057)	ND(0.029)	ND(0.086)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.096)	ND(0.32)	ND(0.032)	ND(0.032)	ND(0.064)	ND(0.032)	ND(0.096)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.11)	ND(0.37)	ND(0.037)	ND(0.037)	ND(0.073)	ND(0.037)	ND(0.11)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.077)	ND(0.26)	ND(0.026)	ND(0.026)	0.019 J	0.0066 J	ND(0.077)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.081)	ND(0.27)	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.11)	ND(0.38)	ND(0.038)	ND(0.038)	ND(0.075)	ND(0.038)	ND(0.11)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.093)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.11)	ND(0.36)	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.14)	ND(0.47)	ND(0.047)	ND(0.047)	ND(0.094)	ND(0.047)	ND(0.14)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.084)	ND(0.28)	ND(0.028)	ND(0.028)	ND(0.056)	ND(0.028)	ND(0.084)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.1)	ND(0.33)	ND(0.033)	ND(0.033)	ND(0.067)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.083)	ND(0.28)	ND(0.028)	ND(0.028)	ND(0.055)	ND(0.028)	ND(0.083)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.079)	ND(0.26)	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.026)	ND(0.079)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.37)	ND(1.2)	ND(0.12)	ND(0.12)	ND(0.25)	ND(0.12)	ND(0.37)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.073)	ND(0.24)	ND(0.024)	ND(0.024)	ND(0.049)	ND(0.024)	ND(0.073)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.077)	ND(0.26)	ND(0.026)	ND(0.026)	ND(0.051)	ND(0.026)	ND(0.077)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.094)	ND(0.31)	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.031)	ND(0.094)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)
[a] 2019 Industrial NMED SSL		94.5	8,540	52.5	2,160	89,500	28.7	201	2,600	NA	67.4	288
[b] 2019 Construction Worker NMED SSL		17.9	1,620	252	412	16,600	134	956	708	NA	340	53.9
[c] 2019 Residential NMED SSL		17.7	1,550	10.7	378	19,000	5.9	41.1	156	NA	13.9	57.9

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Dichlorodifluoro-methane (mg/kg)	Ethylbenzene (mg/kg)	Hexachloro-butadiene (mg/kg)	Isopropylbenzene (mg/kg)	Methylene Chloride (mg/kg)	MTBE (mg/kg)	Naphthalene (mg/kg)	n-Butylbenzene (mg/kg)	n-Propylbenzene (mg/kg)	p-Isopropyl-toluene (mg/kg)	sec-Butylbenzene (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.025)	ND(0.075)	ND(0.025)	ND(0.05)	ND(0.075)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.054)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.099)	ND(0.033)	ND(0.066)	ND(0.099)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(0.29)	ND(0.29)	ND(0.59)	ND(0.29)	ND(0.88)	ND(0.29)	ND(0.59)	0.12 J	0.12 J	ND(0.29)	ND(0.29)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.054)	0.0074 J	0.018 J	ND(0.027)	ND(0.027)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.066)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.066)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.031)	ND(0.094)	ND(0.031)	ND(0.063)	ND(0.094)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.062)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.025)	ND(0.025)	ND(0.051)	ND(0.025)	ND(0.076)	ND(0.025)	ND(0.051)	ND(0.076)	ND(0.025)	ND(0.025)	ND(0.025)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.036)	ND(0.036)	ND(0.071)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.071)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.038)	ND(0.038)	ND(0.076)	ND(0.038)	ND(0.11)	ND(0.038)	ND(0.076)	ND(0.11)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.04)	ND(0.04)	ND(0.081)	ND(0.04)	ND(0.12)	ND(0.04)	ND(0.081)	ND(0.12)	ND(0.04)	ND(0.04)	ND(0.04)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.029)	ND(0.029)	ND(0.057)	ND(0.029)	ND(0.086)	ND(0.029)	ND(0.057)	ND(0.086)	ND(0.029)	0.012 J	ND(0.029)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.032)	ND(0.032)	ND(0.064)	ND(0.032)	ND(0.096)	ND(0.032)	0.015 J	ND(0.096)	ND(0.032)	ND(0.032)	ND(0.032)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.037)	ND(0.037)	ND(0.073)	ND(0.037)	ND(0.11)	ND(0.037)	ND(0.073)	ND(0.11)	ND(0.037)	ND(0.037)	ND(0.037)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.026)	0.083	ND(0.051)	0.034	ND(0.077)	ND(0.026)	0.33	0.06 J	0.11	0.015 J	0.026
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.054)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.038)	ND(0.038)	ND(0.075)	ND(0.038)	ND(0.11)	ND(0.038)	ND(0.075)	ND(0.11)	ND(0.038)	ND(0.038)	ND(0.038)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.031)	ND(0.031)	ND(0.062)	ND(0.031)	ND(0.093)	ND(0.031)	ND(0.062)	ND(0.093)	ND(0.031)	ND(0.031)	ND(0.031)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.036)	ND(0.036)	ND(0.072)	ND(0.036)	ND(0.11)	ND(0.036)	ND(0.072)	ND(0.11)	ND(0.036)	ND(0.036)	ND(0.036)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.047)	ND(0.047)	ND(0.094)	ND(0.047)	ND(0.14)	ND(0.047)	ND(0.094)	ND(0.14)	ND(0.047)	ND(0.047)	ND(0.047)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.056)	ND(0.028)	ND(0.084)	0.019 J	ND(0.056)	ND(0.084)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.033)	ND(0.033)	ND(0.067)	ND(0.033)	ND(0.1)	ND(0.033)	ND(0.067)	ND(0.1)	ND(0.033)	ND(0.033)	ND(0.033)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.055)	ND(0.028)	ND(0.083)	ND(0.028)	ND(0.055)	ND(0.083)	ND(0.028)	ND(0.028)	ND(0.028)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.026)	ND(0.026)	ND(0.053)	ND(0.026)	ND(0.079)	ND(0.026)	ND(0.053)	ND(0.079)	ND(0.026)	ND(0.026)	ND(0.026)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.12)	3.9	ND(0.25)	0.24	ND(0.37)	ND(0.12)	1.2	0.4	1.4	0.089 J	0.12 J
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.024)	0.15	ND(0.049)	ND(0.024)	ND(0.073)	0.065	0.059	ND(0.073)	0.017 J	ND(0.024)	ND(0.024)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.026)	0.11	ND(0.051)	ND(0.026)	ND(0.077)	0.046	0.06	ND(0.077)	0.013 J	ND(0.026)	ND(0.026)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.031)	ND(0.031)	ND(0.063)	ND(0.031)	ND(0.094)	0.031	ND(0.063)	ND(0.094)	ND(0.031)	ND(0.031)	ND(0.031)
[a] 2019 Industrial NMED SSL		865	368	52.1	14,200	14,400	NA	241	NA	NA	NA	NA
[b] 2019 Construction Worker NMED SSL		161	1,770	2,400	2,740	89,600	NA	1,110	NA	NA	NA	NA
[c] 2019 Residential NMED SSL		182	75.1	68.3	2,360	766	NA	49.7	NA	NA	NA	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-1. SOIL SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Styrene (mg/kg)	tert-Butylbenzene (mg/kg)	Tetrachloroethene (mg/kg)	Toluene (mg/kg)	trans-1,2-Dichloroethene (mg/kg)	trans-1,3-Dichloropropene (mg/kg)	Trichloroethene (mg/kg)	Trichloro-fluoromethane (mg/kg)	Vinyl Chloride (mg/kg)	Xylenes, Total (mg/kg)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.05)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.29)	ND(0.59)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.066)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.063)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.051)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.071)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.076)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.04)	ND(0.081)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.057)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.032)	ND(0.064)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.073)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.07
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.075)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.062)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.072)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.094)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.056)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.033)	ND(0.067)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.055)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.053)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.12)	ND(0.12)	ND(0.12)	2.7	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	14
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.024)	ND(0.024)	ND(0.024)	0.39 J	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	0.88
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.026)	ND(0.026)	ND(0.026)	0.22 J	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.026)	0.63
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.031)	ND(0.031)	ND(0.031)	0.013J/ND(0.031) U*	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.031)	ND(0.063)
[a] 2019 Industrial NMED SSL		51,300	NA	1,650	61,300	1,610	NA	112	6,030	28.4	4,280
[b] 2019 Construction Worker NMED SSL		10,200	NA	7,910	14,000	305	NA	5,370	1,130	161	798
[c] 2019 Residential NMED SSL		7,260	NA	337	5,230	295	NA	15.5	1,230	0.742	871

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
mg/kg - Milligram per kilogram
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,4-Trichloro-benzene (mg/kg)	1,2-Dichloro-benzene (mg/kg)	1,3-Dichloro-benzene (mg/kg)	1,4-Dichloro-benzene (mg/kg)	1-Methyl-naphthalene (mg/kg)	2,4,5-Trichloro-phenol (mg/kg)	2,4,6-Trichloro-phenol (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	19	ND(2)	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	12	ND(1.9)	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	27	ND(1.9)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	39	ND(1.9)	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
[a] 2019 Industrial NMED SSL		1,250	13,000	NA	6,730	813	91,600	2,330
[b] 2019 Construction Worker NMED SSL		8,540	2,500	NA	45,900	6,060	26,900	17,000
[c] 2019 Residential NMED SSL		240	2,150	NA	1,290	172	6,160	484

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2,4-Dichloro-phenol (mg/kg)	2,4-Dimethyl-phenol (mg/kg)	2,4-Dinitro-phenol (mg/kg)	2,4-Dinitro Toluene (mg/kg)	2,6-Dinitro Toluene (mg/kg)	2-Chloro-naphthalene (mg/kg)	2-Chloro-phenol (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(7.7)	ND(5.8)	ND(9.6)	ND(9.6)	*ND(9.6)* [c]	ND(4.8)	ND(3.9)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(7.9)	ND(5.9)	ND(9.8)	ND(9.8)	*ND(9.8)* [c]	ND(4.9)	ND(3.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(3.9)	ND(2.9)	ND(4.8)	ND(4.8)	*ND(4.8)* [c]	ND(2.4)	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(7.9)	ND(5.9)	ND(9.9)	ND(9.9)	*ND(9.9)* [c]	ND(4.9)	ND(3.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(8)	ND(6)	ND(10)	ND(10)	*ND(10)* [c]	ND(5)	ND(4)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(7.9)	ND(6)	ND(9.9)	ND(9.9)	*ND(9.9)* [c]	ND(5)	ND(4)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(4)	ND(3)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(3.8)	ND(2.9)	ND(4.8)	ND(4.8)	*ND(4.8)* [c]	ND(2.4)	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(3.8)	ND(2.8)	ND(4.7)	ND(4.7)	*ND(4.7)* [c]	ND(2.4)	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(3.8)	ND(2.8)	ND(4.7)	ND(4.7)	*ND(4.7)* [c]	ND(2.4)	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(3.8)	ND(2.9)	ND(4.8)	ND(4.8)	*ND(4.8)* [c]	ND(2.4)	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
[a] 2019 Industrial NMED SSL		2,750	18,300	1,830	82.3	17.2	104,000	6,490
[b] 2019 Construction Worker NMED SSL		807	5,380	538	600	165	28,300	1,770
[c] 2019 Residential NMED SSL		185	1,230	123	17.1	3.56	6,260	391

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Methyl-4,6-dinitrophenol (mg/kg)	2-Methyl-naphthalene (mg/kg)	2-Methylphenol (mg/kg)	2-Nitroaniline (mg/kg)	2-Nitrophenol (mg/kg)	3,3'-Dichloro-benzidine (mg/kg)	3,4-Methyl phenol (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(7.7)	ND(3.9)	ND(7.7)	ND(3.9)	ND(3.9)	ND(4.8)	ND(3.9)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(7.9)	ND(3.9)	ND(7.9)	ND(3.9)	ND(3.9)	ND(4.9)	ND(3.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(7.9)	ND(3.9)	ND(7.9)	ND(3.9)	ND(3.9)	ND(4.9)	ND(3.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(8)	ND(4)	ND(8)	ND(4)	ND(4)	ND(5)	ND(4)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(7.9)	ND(4)	ND(7.9)	ND(4)	ND(4)	ND(5)	ND(4)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(3.9)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(3.9)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(3.8)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(4)	30	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(3.8)	18	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(3.8)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(3.9)	43	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(3.8)	59	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
[a] 2019 Industrial NMED SSL		NA	3,370	NA	NA	NA	57	NA
[b] 2019 Construction Worker NMED SSL		NA	1,000	NA	NA	NA	410	NA
[c] 2019 Residential NMED SSL		NA	232	NA	NA	NA	11.8	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	3-Nitroaniline (mg/kg)	4-Bromophenyl-phenylether (mg/kg)	4-Chloro-3-Methylphenol (mg/kg)	4-Chloroaniline (mg/kg)	4-Chlorophenyl-phenylether (mg/kg)	4-Nitroaniline (mg/kg)	4-Nitrophenol (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(3.9)	ND(3.9)	ND(9.6)	ND(9.6)	ND(3.9)	ND(7.7)	ND(4.8)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(3.9)	ND(3.9)	ND(9.8)	ND(9.8)	ND(3.9)	ND(7.9)	ND(4.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(1.9)	ND(1.9)	ND(4.8)	ND(4.8)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(3.9)	ND(3.9)	ND(9.9)	ND(9.9)	ND(3.9)	ND(7.9)	ND(4.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(4)	ND(4)	ND(10)	ND(10)	ND(4)	ND(8)	ND(5)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(4)	ND(4)	ND(9.9)	ND(9.9)	ND(4)	ND(7.9)	ND(5)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(4)	ND(2.5)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(3.9)	ND(2.5)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(3.9)	ND(2.5)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(4.8)	ND(4.8)	ND(1.9)	ND(3.8)	ND(2.4)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.9)	ND(1.9)	ND(4.7)	ND(4.7)	ND(1.9)	ND(3.8)	ND(2.4)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(4.7)	ND(4.7)	ND(1.9)	ND(3.8)	ND(2.4)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(4.8)	ND(4.8)	ND(1.9)	ND(3.8)	ND(2.4)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
[a] 2019 Industrial NMED SSL		NA	NA	NA	NA	NA	NA	NA
[b] 2019 Construction Worker NMED SSL		NA	NA	NA	NA	NA	NA	NA
[c] 2019 Residential NMED SSL		NA	NA	NA	NA	NA	NA	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Acenaphthene (mg/kg)	Acenaph-thylene (mg/kg)	Aniline (mg/kg)	Anthracene (mg/kg)	Azobenzene (mg/kg)	Benzo(a)-anthracene (mg/kg)	Benzo(a)-pyrene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	*ND(3.9)* [c]
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	*ND(3.9)* [c]
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	*ND(3.9)* [c]
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	*ND(4)* [c]	*ND(4)* [c]
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(4)	ND(4)	ND(4)	ND(4)	ND(4)	*ND(4)* [c]	*ND(4)* [c]
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
[a] 2019 Industrial NMED SSL		50,500	NA	NA	253,000	NA	32.3	23.6
[b] 2019 Construction Worker NMED SSL		15,100	NA	NA	75,300	NA	240	173
[c] 2019 Residential NMED SSL		3,480	NA	NA	17,400	NA	1.53	1.12

Notes:
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ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzo(b)fluor-anthene (mg/kg)	Benzo(ghi)-perylene (mg/kg)	Benzo(k)fluor-anthene (mg/kg)	Benzoic Acid (mg/kg)	Benzyl Alcohol (mg/kg)	Bis(2-chloro ethoxy)methane (mg/kg)	Bis(2-chloro ethyl)ether (mg/kg)	
NDD-MW-1 (0-0.5 ft)	08/16/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-MW-1 (1.5-2 ft)	08/16/21	*ND(3.9)*	ND(3.9)	ND(3.9)	ND(19)	ND(3.9)	ND(3.9)	*ND(3.9)*	b,c
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	*ND(3.9)*	ND(3.9)	ND(3.9)	ND(20)	ND(3.9)	ND(3.9)	*ND(3.9)*	b,c
NDD-MW-1 (27.5-28 ft)	08/17/21	*ND(2)*	ND(2)	ND(2)	ND(9.9)	ND(2)	ND(2)	*ND(2)*	b
NDD-MW-1 (35-35.5 ft)	08/17/21	*ND(2)*	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	*ND(2)*	b
NDD-MW-1 (45.5-46 ft)	08/17/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.6)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-MW-1 (7.5-8 ft)	08/17/21	*ND(3.9)*	ND(3.9)	ND(3.9)	ND(20)	ND(3.9)	ND(3.9)	*ND(3.9)*	b,c
NDD-MW-2 (0-0.5 ft)	08/17/21	*ND(4)*	ND(4)	ND(4)	ND(20)	ND(4)	ND(4)	*ND(4)*	c
NDD-MW-2 (1.5-2 ft)	08/17/21	*ND(4)*	ND(4)	ND(4)	ND(20)	ND(4)	ND(4)	*ND(4)*	b,c
NDD-MW-2 (28.2-28.7 ft)	08/17/21	*ND(2)*	ND(2)	ND(2)	ND(9.9)	ND(2)	ND(2)	*ND(2)*	b
NDD-MW-2 (42.5-43 ft)	08/18/21	*ND(2)*	ND(2)	ND(2)	ND(9.8)	ND(2)	ND(2)	*ND(2)*	b
NDD-MW-2 (47.5-48 ft)	08/18/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-1 (0-0.5 ft)	08/18/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-1 (1.5-2 ft)	08/18/21	*ND(2)*	ND(2)	ND(2)	ND(9.8)	ND(2)	ND(2)	*ND(2)*	b
NDD-SB-1 (13.5-14 ft)	08/19/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.5)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-1 (5-5.5 ft)	08/18/21	*ND(2)*	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	*ND(2)*	b
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.5)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-2 (0-0.5 ft)	08/20/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.4)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-2 (1.5-2 ft)	08/20/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.99)	ND(0.2)	ND(0.2)	ND(0.2)	
NDD-SB-2 (3.5-4 ft)	08/20/21	*ND(1.9)*	ND(1.9)	ND(1.9)	ND(9.6)	ND(1.9)	ND(1.9)	ND(1.9)	
NDD-SB-3 (0-0.5 ft)	08/23/21	*ND(2)*	ND(2)	ND(2)	ND(9.9)	ND(2)	ND(2)	ND(2)	
NDD-SB-3 (1.5-2 ft)	08/23/21	*ND(2)*	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	*ND(2)*	b
[a] 2019 Industrial NMED SSL		32.3	NA	323	NA	NA	NA	15.7	
[b] 2019 Construction Worker NMED SSL		240	NA	2,310	NA	NA	NA	1.95	
[c] 2019 Residential NMED SSL		1.53	NA	15.3	NA	NA	NA	3.11	

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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bis(2-chloro isopropyl)ether (mg/kg)	Bis(2-ethyl hexyl)phthalate (mg/kg)	Benzyl Butyl Phthalate (mg/kg)	Carbazole (mg/kg)	Chrysene (mg/kg)	Dibenz(a,h) anthracene (mg/kg)	Dibenzofuran (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(3.9)	ND(9.6)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	ND(3.9)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(3.9)	ND(9.8)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	ND(3.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(1.9)	ND(4.8)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(3.9)	ND(9.9)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	ND(3.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(4)	ND(10)	ND(4)	ND(4)	ND(4)	*ND(4)* [a,c]	ND(4)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(4)	ND(9.9)	ND(4)	ND(4)	ND(4)	*ND(4)* [c]	ND(4)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(1.9)	ND(4.8)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.9)	ND(4.7)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.9)	ND(4.7)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.9)	ND(4.8)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
[a] 2019 Industrial NMED SSL		NA	1,830	NA	NA	3,230	3.23	NA
[b] 2019 Construction Worker NMED SSL		NA	13,400	NA	NA	23,100	24	NA
[c] 2019 Residential NMED SSL		NA	380	NA	NA	153	0.153	NA

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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Diethyl-phthalate (mg/kg)	Dimethyl Phthalate (mg/kg)	Di-n-butyl-phthalate (mg/kg)	Di-n-octyl-phthalate (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Hexachloro Benzene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(9.6)	ND(3.9)	ND(7.7)	ND(7.7)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(9.8)	ND(3.9)	ND(7.9)	ND(7.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(4.8)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(9.9)	ND(3.9)	ND(7.9)	ND(7.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(10)	ND(4)	ND(8)	ND(8)	ND(4)	ND(4)	*ND(4)* [c]
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(9.9)	ND(4)	ND(7.9)	ND(7.9)	ND(4)	ND(4)	*ND(4)* [c]
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(4.9)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(4.9)	ND(2)	ND(3.9)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(4.9)	ND(2)	ND(3.9)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(4.8)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(4.7)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(4.7)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	1 J	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.5)	ND(0.2)	0.45	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(4.8)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	1.7 J	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
[a] 2019 Industrial NMED SSL		733,000	NA	91,600	NA	33,700	33,700	16
[b] 2019 Construction Worker NMED SSL		215,000	NA	26,900	NA	10,000	10,000	117
[c] 2019 Residential NMED SSL		49,300	NA	6,160	NA	2,320	2,320	3.33

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Hexachloro-butadiene (mg/kg)	Hexachloro-cyclopentadiene (mg/kg)	Hexachloro-ethane (mg/kg)	Indeno(1,2,3-cd) pyrene (mg/kg)	Isophorone (mg/kg)	Naphthalene (mg/kg)	Nitrobenzene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(3.9)	*ND(3.9)* [c]	ND(3.9)	*ND(3.9)* [c]	ND(7.7)	ND(3.9)	ND(7.7)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(3.9)	*ND(3.9)* [c]	ND(3.9)	*ND(3.9)* [c]	ND(7.9)	ND(3.9)	ND(7.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(3.9)	*ND(3.9)* [c]	ND(3.9)	*ND(3.9)* [c]	ND(7.9)	ND(3.9)	ND(7.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(4)	*ND(4)* [c]	ND(4)	*ND(4)* [c]	ND(8)	ND(4)	ND(8)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(4)	*ND(4)* [c]	ND(4)	*ND(4)* [c]	ND(7.9)	ND(4)	ND(7.9)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(3.9)	ND(2)	ND(3.9)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(3.9)	ND(2)	ND(3.9)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	ND(1.9)	ND(3.8)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	13 J	ND(4)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	7.4 J	ND(3.8)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	ND(1.9)	ND(3.8)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	19	ND(3.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	30	ND(3.8)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
[a] 2019 Industrial NMED SSL		52.1	5,490	641	32.3	27,000	241	293
[b] 2019 Construction Worker NMED SSL		2,400	867	4,670	240	198,000	1,110	1,350
[c] 2019 Residential NMED SSL		68.3	2.3	133	1.53	5,610	49.7	60.4

Notes:
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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	N-Nitroso-dimethylamine (mg/kg)	N-Nitrosodi-n-propylamine (mg/kg)	N-Nitroso-diphenylamine (mg/kg)	Pentachloro-phenol (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	*ND(1.9)* [a,c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	*ND(3.9)* [b,c]	ND(3.9)	ND(3.9)	ND(7.7)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	*ND(3.9)* [b,c]	ND(3.9)	ND(3.9)	ND(7.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (35-35.5 ft)	08/17/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-1 (45.5-46 ft)	08/17/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	*ND(3.9)* [b,c]	ND(3.9)	ND(3.9)	ND(7.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	*ND(4)* [a,c]	ND(4)	ND(4)	ND(8)	ND(4)	ND(4)	ND(4)
NDD-MW-2 (1.5-2 ft)	08/17/21	*ND(4)* [b,c]	ND(4)	ND(4)	ND(7.9)	ND(4)	ND(4)	ND(4)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (42.5-43 ft)	08/18/21	*ND(2)* [c]	ND(2)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-MW-2 (47.5-48 ft)	08/18/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	*ND(1.9)* [a,c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	*ND(2)* [c]	ND(2)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-1 (13.5-14 ft)	08/19/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-1 (5-5.5 ft)	08/18/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (0-0.5 ft)	08/20/21	*ND(1.9)* [a,c]	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-2 (1.5-2 ft)	08/20/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	1.7 J	ND(1.9)	ND(1.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-2 (3.5-4 ft)	08/20/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.8)	2.4	ND(1.9)	ND(1.9)
NDD-SB-3 (0-0.5 ft)	08/23/21	*ND(2)* [a,c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-3 (1.5-2 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
[a] 2019 Industrial NMED SSL		0.503	NA	5,240	44.5	25,300	275,000	25,300
[b] 2019 Construction Worker NMED SSL		3.66	NA	37,900	346	7,530	77,400	7,530
[c] 2019 Residential NMED SSL		0.0234	NA	1,090	9.85	1,740	18,500	1,740

Notes:
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mg/kg - Milligram per kilogram
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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Pyridine (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(3.9)
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(7.7)
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(7.9)
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(4)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(4)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(3.9)
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(7.9)
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(8)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(7.9)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(4)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(3.9)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(3.9)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(3.9)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(3.9)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(3.8)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(4)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(3.8)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(3.8)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(3.9)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.4)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(3.8)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(4)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(4)
[a] 2019 Industrial NMED SSL		NA
[b] 2019 Construction Worker NMED SSL		NA
[c] 2019 Residential NMED SSL		NA

Notes:
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ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
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NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,4-Trichloro-benzene (mg/kg)	1,2-Dichloro-benzene (mg/kg)	1,3-Dichloro-benzene (mg/kg)	1,4-Dichloro-benzene (mg/kg)	1-Methyl-naphthalene (mg/kg)	2,4,5-Trichloro-phenol (mg/kg)	2,4,6-Trichloro-phenol (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	4.6	ND(1.9)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	4.5	ND(2)	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	2.5	ND(2)	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	7.7	ND(1.9)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	9.6	ND(2)	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		1,250	13,000	NA	6,730	813	91,600	2,330
[b] 2019 Construction Worker NMED SSL		8,540	2,500	NA	45,900	6,060	26,900	17,000
[c] 2019 Residential NMED SSL		240	2,150	NA	1,290	172	6,160	484

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2,4-Dichloro-phenol (mg/kg)	2,4-Dimethyl-phenol (mg/kg)	2,4-Dinitro-phenol (mg/kg)	2,4-Dinitro Toluene (mg/kg)	2,6-Dinitro Toluene (mg/kg)	2-Chloro-naphthalene (mg/kg)	2-Chloro-phenol (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(3.8)	ND(2.8)	ND(4.7)	ND(4.7)	*ND(4.7)* [c]	ND(2.4)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.39)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(3.9)	ND(3)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.25)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(3.8)	ND(2.8)	ND(4.7)	ND(4.7)	*ND(4.7)* [c]	ND(2.3)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.24)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.39)	ND(0.3)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.25)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(7.7)	ND(5.8)	ND(9.6)	ND(9.6)	*ND(9.6)* [c]	ND(4.8)	ND(3.9)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.24)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(7.5)	ND(5.6)	ND(9.3)	ND(9.3)	*ND(9.3)* [c]	ND(4.7)	ND(3.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.39)	ND(0.3)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.25)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.39)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.24)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.39)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
[a] 2019 Industrial NMED SSL		2,750	18,300	1,830	82.3	17.2	104,000	6,490
[b] 2019 Construction Worker NMED SSL		807	5,380	538	600	165	28,300	1,770
[c] 2019 Residential NMED SSL		185	1,230	123	17.1	3.56	6,260	391

Notes:
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mg/kg - Milligram per kilogram
NA - Not available
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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Methyl-4,6-dinitrophenol (mg/kg)	2-Methyl-naphthalene (mg/kg)	2-Methylphenol (mg/kg)	2-Nitroaniline (mg/kg)	2-Nitrophenol (mg/kg)	3,3'-Dichloro-benzidine (mg/kg)	3,4-Methyl phenol (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(3.8)	6.7	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(4)	6.6	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(3.9)	3.5	ND(3.9)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(3.8)	12	ND(3.8)	ND(1.9)	ND(1.9)	ND(2.3)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(4)	14	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(3.9)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.24)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(7.7)	ND(3.9)	ND(7.7)	ND(3.9)	ND(3.9)	ND(4.8)	ND(3.9)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.24)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(7.5)	ND(3.7)	ND(7.5)	ND(3.7)	ND(3.7)	ND(4.7)	ND(3.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
[a] 2019 Industrial NMED SSL		NA	3,370	NA	NA	NA	57	NA
[b] 2019 Construction Worker NMED SSL		NA	1,000	NA	NA	NA	410	NA
[c] 2019 Residential NMED SSL		NA	232	NA	NA	NA	11.8	NA

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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	3-Nitroaniline (mg/kg)	4-Bromophenyl-phenylether (mg/kg)	4-Chloro-3-Methylphenol (mg/kg)	4-Chloroaniline (mg/kg)	4-Chlorophenyl-phenylether (mg/kg)	4-Nitroaniline (mg/kg)	4-Nitrophenol (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(4.7)	ND(4.7)	ND(1.9)	ND(3.8)	ND(2.4)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.24)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(3.9)	ND(2.5)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.25)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(4.7)	ND(4.7)	ND(1.9)	ND(3.8)	ND(2.3)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(3.9)	ND(2.5)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.24)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.25)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(3.9)	ND(3.9)	ND(9.6)	ND(9.6)	ND(3.9)	ND(7.7)	ND(4.8)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.24)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(3.7)	ND(3.7)	ND(9.3)	ND(9.3)	ND(3.7)	ND(7.5)	ND(4.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.25)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.24)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.49)	ND(0.49)	ND(0.19)	ND(0.39)	ND(0.24)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.24)
[a] 2019 Industrial NMED SSL		NA	NA	NA	NA	NA	NA	NA
[b] 2019 Construction Worker NMED SSL		NA	NA	NA	NA	NA	NA	NA
[c] 2019 Residential NMED SSL		NA	NA	NA	NA	NA	NA	NA

Notes:
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ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
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NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Acenaphthene (mg/kg)	Acenaph-thylene (mg/kg)	Aniline (mg/kg)	Anthracene (mg/kg)	Azobenzene (mg/kg)	Benzo(a)-anthracene (mg/kg)	Benzo(a)-pyrene (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	*ND(3.9)* [c]
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)	ND(3.7)	*ND(3.7)* [c]	*ND(3.7)* [c]
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		50,500	NA	NA	253,000	NA	32.3	23.6
[b] 2019 Construction Worker NMED SSL		15,100	NA	NA	75,300	NA	240	173
[c] 2019 Residential NMED SSL		3,480	NA	NA	17,400	NA	1.53	1.12

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzo(b)fluor-anthene (mg/kg)	Benzo(ghi)-perylene (mg/kg)	Benzo(k)fluor-anthene (mg/kg)	Benzoic Acid (mg/kg)	Benzyl Alcohol (mg/kg)	Bis(2-chloro ethoxy)methane (mg/kg)	Bis(2-chloro ethyl)ether (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.4)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(9.9)	ND(2)	ND(2)	*ND(2)* [b]
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.96)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(9.8)	ND(2)	ND(2)	*ND(2)* [b]
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.4)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	*ND(2)* [b]
NDD-SB-5 (0-0.5 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(9.8)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	*ND(2)* [b]
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(1)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(1)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	*ND(3.9)* [c]	ND(3.9)	ND(3.9)	ND(19)	ND(3.9)	ND(3.9)	*ND(3.9)* [b,c]
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(1)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	*ND(3.7)* [c]	ND(3.7)	ND(3.7)	ND(19)	ND(3.7)	ND(3.7)	*ND(3.7)* [c]
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		32.3	NA	323	NA	NA	NA	15.7
[b] 2019 Construction Worker NMED SSL		240	NA	2,310	NA	NA	NA	1.95
[c] 2019 Residential NMED SSL		1.53	NA	15.3	NA	NA	NA	3.11

Notes:
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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bis(2-chloro isopropyl)ether (mg/kg)	Bis(2-ethyl hexyl)phthalate (mg/kg)	Benzyl Butyl Phthalate (mg/kg)	Carbazole (mg/kg)	Chrysene (mg/kg)	Dibenz(a,h) anthracene (mg/kg)	Dibenzofuran (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(1.9)	ND(4.7)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(1.9)	ND(4.7)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(3.9)	ND(9.6)	ND(3.9)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]	ND(3.9)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(3.7)	ND(9.3)	ND(3.7)	ND(3.7)	ND(3.7)	*ND(3.7)* [a,c]	ND(3.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.49)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
[a] 2019 Industrial NMED SSL		NA	1,830	NA	NA	3,230	3.23	NA
[b] 2019 Construction Worker NMED SSL		NA	13,400	NA	NA	23,100	24	NA
[c] 2019 Residential NMED SSL		NA	380	NA	NA	153	0.153	NA

Notes:
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NA - Not available
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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Diethyl-phthalate (mg/kg)	Dimethyl Phthalate (mg/kg)	Di-n-butyl-phthalate (mg/kg)	Di-n-octyl-phthalate (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Hexachloro Benzene (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(4.7)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(4.9)	ND(2)	ND(3.9)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(4.7)	ND(1.9)	ND(3.8)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(4.9)	ND(2)	ND(3.9)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.49)	ND(0.2)	0.29 J	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(9.6)	ND(3.9)	ND(7.7)	ND(7.7)	ND(3.9)	ND(3.9)	*ND(3.9)* [c]
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.49)	ND(0.2)	0.4	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(9.3)	ND(3.7)	ND(7.5)	ND(7.5)	ND(3.7)	ND(3.7)	*ND(3.7)* [c]
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.49)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		733,000	NA	91,600	NA	33,700	33,700	16
[b] 2019 Construction Worker NMED SSL		215,000	NA	26,900	NA	10,000	10,000	117
[c] 2019 Residential NMED SSL		49,300	NA	6,160	NA	2,320	2,320	3.33

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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Hexachloro-butadiene (mg/kg)	Hexachloro-cyclopentadiene (mg/kg)	Hexachloro-ethane (mg/kg)	Indeno(1,2,3-cd) pyrene (mg/kg)	Isophorone (mg/kg)	Naphthalene (mg/kg)	Nitrobenzene (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	2.7	ND(3.8)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	2.6	ND(4)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(3.9)	2.1	ND(3.9)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.8)	5.2	ND(3.8)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	5	ND(4)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(3.9)	ND(2)	ND(3.9)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(3.9)	*ND(3.9)* [c]	ND(3.9)	*ND(3.9)* [c]	ND(7.7)	ND(3.9)	ND(7.7)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(3.7)	*ND(3.7)* [c]	ND(3.7)	*ND(3.7)* [c]	ND(7.5)	ND(3.7)	ND(7.5)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
[a] 2019 Industrial NMED SSL		52.1	5,490	641	32.3	27,000	241	293
[b] 2019 Construction Worker NMED SSL		2,400	867	4,670	240	198,000	1,110	1,350
[c] 2019 Residential NMED SSL		68.3	2.3	133	1.53	5,610	49.7	60.4

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	N-Nitroso-dimethylamine (mg/kg)	N-Nitrosodi-n-propylamine (mg/kg)	N-Nitroso-diphenylamine (mg/kg)	Pentachloro-phenol (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-3 (9.5-10 ft)	08/23/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-SB-4 (1-1.5 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-4 (19.5-20 ft)	08/23/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-4 (2.5-3 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.8)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-4 (2-2.5 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (0-0.5 ft)	08/23/21	*ND(2)* [a,c]	ND(2)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (1.5-2 ft)	08/23/21	*ND(2)* [c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-SB-5 (12-12.5 ft)	08/24/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (17.5-18 ft)	08/24/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft)	08/24/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (1.5-2 ft)	08/23/21	*ND(3.9)* [b,c]	ND(3.9)	ND(3.9)	ND(7.7)	ND(3.9)	ND(3.9)	ND(3.9)
NDD-SB-6 (15-15.5 ft)	08/23/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (21-21.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-SB-6 (3-3.5 ft)	08/23/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	*ND(3.7)* [a,c]	ND(3.7)	ND(3.7)	ND(7.5)	ND(3.7)	ND(3.7)	ND(3.7)
NDD-TW-1 (1.5-2 ft)	08/12/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-1 (26.5-27 ft)	08/12/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft)	08/12/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		0.503	NA	5,240	44.5	25,300	275,000	25,300
[b] 2019 Construction Worker NMED SSL		3.66	NA	37,900	346	7,530	77,400	7,530
[c] 2019 Residential NMED SSL		0.0234	NA	1,090	9.85	1,740	18,500	1,740

Notes:
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ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Pyridine (mg/kg)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(3.8)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(4)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.39)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(3.9)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.39)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(3.8)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(4)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(3.9)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(4)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.4)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.39)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.39)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.4)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(7.7)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.39)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(3.9)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.4)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(3.9)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(7.5)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.39)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.39)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.39)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.39)
[a] 2019 Industrial NMED SSL		NA
[b] 2019 Construction Worker NMED SSL		NA
[c] 2019 Residential NMED SSL		NA

Notes:
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Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,4-Trichloro-benzene (mg/kg)	1,2-Dichloro-benzene (mg/kg)	1,3-Dichloro-benzene (mg/kg)	1,4-Dichloro-benzene (mg/kg)	1-Methyl-naphthalene (mg/kg)	2,4,5-Trichloro-phenol (mg/kg)	2,4,6-Trichloro-phenol (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	0.17 J	ND(0.19)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		1,250	13,000	NA	6,730	813	91,600	2,330
[b] 2019 Construction Worker NMED SSL		8,540	2,500	NA	45,900	6,060	26,900	17,000
[c] 2019 Residential NMED SSL		240	2,150	NA	1,290	172	6,160	484

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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2,4-Dichloro-phenol (mg/kg)	2,4-Dimethyl-phenol (mg/kg)	2,4-Dinitro-phenol (mg/kg)	2,4-Dinitro Toluene (mg/kg)	2,6-Dinitro Toluene (mg/kg)	2-Chloro-naphthalene (mg/kg)	2-Chloro-phenol (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.24)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.38)	ND(0.28)	ND(0.47)	ND(0.47)	ND(0.47)	ND(0.24)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.38)	ND(0.28)	ND(0.47)	ND(0.47)	ND(0.47)	ND(0.24)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.38)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.25)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(3.9)	ND(2.9)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.4)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(3.9)	ND(3)	ND(4.9)	ND(4.9)	*ND(4.9)* [c]	ND(2.5)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.3)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.25)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.37)	ND(0.28)	ND(0.46)	ND(0.46)	ND(0.46)	ND(0.23)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.39)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(4)	ND(3)	ND(5)	ND(5)	*ND(5)* [c]	ND(2.5)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.29)	ND(0.49)	ND(0.49)	ND(0.49)	ND(0.24)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.38)	0.068 J	ND(0.47)	ND(0.47)	ND(0.47)	ND(0.23)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.4)	ND(0.3)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.39)	ND(0.29)	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.24)	ND(0.19)
[a] 2019 Industrial NMED SSL		2,750	18,300	1,830	82.3	17.2	104,000	6,490
[b] 2019 Construction Worker NMED SSL		807	5,380	538	600	165	28,300	1,770
[c] 2019 Residential NMED SSL		185	1,230	123	17.1	3.56	6,260	391

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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
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NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Methyl-4,6-dinitrophenol (mg/kg)	2-Methyl-naphthalene (mg/kg)	2-Methylphenol (mg/kg)	2-Nitroaniline (mg/kg)	2-Nitrophenol (mg/kg)	3,3'-Dichloro-benzidine (mg/kg)	3,4-Methyl phenol (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.24)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.38)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.38)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.38)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(3.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(2.4)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(3.9)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.37)	ND(0.19)	ND(0.37)	ND(0.19)	ND(0.19)	ND(0.23)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(4)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2.5)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.38)	0.31	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.23)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.4)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.25)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.39)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.24)	ND(0.19)
[a] 2019 Industrial NMED SSL		NA	3,370	NA	NA	NA	57	NA
[b] 2019 Construction Worker NMED SSL		NA	1,000	NA	NA	NA	410	NA
[c] 2019 Residential NMED SSL		NA	232	NA	NA	NA	11.8	NA

Notes:
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NA - Not available
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NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	3-Nitroaniline (mg/kg)	4-Bromophenyl-phenylether (mg/kg)	4-Chloro-3-Methylphenol (mg/kg)	4-Chloroaniline (mg/kg)	4-Chlorophenyl-phenylether (mg/kg)	4-Nitroaniline (mg/kg)	4-Nitrophenol (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.24)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.47)	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.24)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.47)	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.24)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.38)	ND(0.24)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.25)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(4.9)	ND(4.9)	ND(1.9)	ND(3.9)	ND(2.4)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(4.9)	ND(4.9)	ND(2)	ND(3.9)	ND(2.5)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.49)	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.25)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.46)	ND(0.46)	ND(0.19)	ND(0.37)	ND(0.23)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.24)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(5)	ND(5)	ND(2)	ND(4)	ND(2.5)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.49)	ND(0.49)	ND(0.19)	ND(0.39)	ND(0.24)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.47)	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.23)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.25)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.19)	ND(0.48)	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.24)
[a] 2019 Industrial NMED SSL		NA	NA	NA	NA	NA	NA	NA
[b] 2019 Construction Worker NMED SSL		NA	NA	NA	NA	NA	NA	NA
[c] 2019 Residential NMED SSL		NA	NA	NA	NA	NA	NA	NA

Notes:
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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Acenaphthene (mg/kg)	Acenaph-thylene (mg/kg)	Aniline (mg/kg)	Anthracene (mg/kg)	Azobenzene (mg/kg)	Benzo(a)-anthracene (mg/kg)	Benzo(a)-pyrene (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	*ND(1.9)* [c]
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	*ND(2)* [c]
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		50,500	NA	NA	253,000	NA	32.3	23.6
[b] 2019 Construction Worker NMED SSL		15,100	NA	NA	75,300	NA	240	173
[c] 2019 Residential NMED SSL		3,480	NA	NA	17,400	NA	1.53	1.12

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TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzo(b)fluor-anthene (mg/kg)	Benzo(ghi)-perylene (mg/kg)	Benzo(k)fluor-anthene (mg/kg)	Benzoic Acid (mg/kg)	Benzyl Alcohol (mg/kg)	Bis(2-chloro ethoxy)methane (mg/kg)	Bis(2-chloro ethyl)ether (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(1)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.95)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.94)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.95)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.98)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(9.7)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	*ND(2)* [c]	ND(2)	ND(2)	ND(9.8)	ND(2)	ND(2)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.99)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.93)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	*ND(2)* [c]	ND(2)	ND(2)	ND(9.9)	ND(2)	ND(2)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.94)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.99)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(1)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.97)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		32.3	NA	323	NA	NA	NA	15.7
[b] 2019 Construction Worker NMED SSL		240	NA	2,310	NA	NA	NA	1.95
[c] 2019 Residential NMED SSL		1.53	NA	15.3	NA	NA	NA	3.11

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NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bis(2-chloro isopropyl)ether (mg/kg)	Bis(2-ethyl hexyl)phthalate (mg/kg)	Benzyl Butyl Phthalate (mg/kg)	Carbazole (mg/kg)	Chrysene (mg/kg)	Dibenz(a,h) anthracene (mg/kg)	Dibenzofuran (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.47)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.47)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(1.9)	ND(4.9)	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(2)	ND(4.9)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.49)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.46)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(2)	ND(5)	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.49)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.47)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	*ND(0.2)* [c]	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.48)	ND(0.19)	ND(0.19)	ND(0.19)	*ND(0.19)* [c]	ND(0.19)
[a] 2019 Industrial NMED SSL		NA	1,830	NA	NA	3,230	3.23	NA
[b] 2019 Construction Worker NMED SSL		NA	13,400	NA	NA	23,100	24	NA
[c] 2019 Residential NMED SSL		NA	380	NA	NA	153	0.153	NA

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Diethyl-phthalate (mg/kg)	Dimethyl Phthalate (mg/kg)	Di-n-butyl-phthalate (mg/kg)	Di-n-octyl-phthalate (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Hexachloro Benzene (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.48)	ND(0.19)	ND(0.38)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.49)	ND(0.2)	ND(0.39)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(4.9)	ND(1.9)	ND(3.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(4.9)	ND(2)	ND(3.9)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.49)	ND(0.2)	0.47	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.46)	ND(0.19)	0.33 J	ND(0.37)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(5)	ND(2)	ND(4)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.49)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.47)	ND(0.19)	ND(0.38)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.5)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.48)	ND(0.19)	ND(0.39)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		733,000	NA	91,600	NA	33,700	33,700	16
[b] 2019 Construction Worker NMED SSL		215,000	NA	26,900	NA	10,000	10,000	117
[c] 2019 Residential NMED SSL		49,300	NA	6,160	NA	2,320	2,320	3.33

Notes:
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NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Hexachloro-butadiene (mg/kg)	Hexachloro-cyclopentadiene (mg/kg)	Hexachloro-ethane (mg/kg)	Indeno(1,2,3-cd) pyrene (mg/kg)	Isophorone (mg/kg)	Naphthalene (mg/kg)	Nitrobenzene (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.38)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.38)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.38)	0.1 J	ND(0.38)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(1.9)	ND(1.9)	ND(1.9)	*ND(1.9)* [c]	ND(3.9)	ND(1.9)	ND(3.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(3.9)	ND(2)	ND(3.9)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.39)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.37)	ND(0.19)	ND(0.37)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(2)	ND(2)	ND(2)	*ND(2)* [c]	ND(4)	ND(2)	ND(4)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.38)	0.3	ND(0.38)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.4)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.39)
[a] 2019 Industrial NMED SSL		52.1	5,490	641	32.3	27,000	241	293
[b] 2019 Construction Worker NMED SSL		2,400	867	4,670	240	198,000	1,110	1,350
[c] 2019 Residential NMED SSL		68.3	2.3	133	1.53	5,610	49.7	60.4

Notes:
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ft - Feet
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mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	N-Nitroso-dimethylamine (mg/kg)	N-Nitrosodi-n-propylamine (mg/kg)	N-Nitroso-diphenylamine (mg/kg)	Pentachloro-phenol (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (1.5-2 ft)	08/12/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-2 (30.5-31 ft)	08/13/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (33.5-34 ft)	08/13/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-2 (5.5-6 ft)	08/13/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-3 (0-0.5 ft)	08/19/21	*ND(1.9)* [a,c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-3 (33.5-34 ft)	08/19/21	*ND(1.9)* [c]	ND(1.9)	ND(1.9)	ND(3.9)	ND(1.9)	ND(1.9)	ND(1.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	*ND(2)* [a,c]	ND(2)	ND(2)	ND(3.9)	ND(2)	ND(2)	ND(2)
NDD-TW-4 (1.5-2 ft)	08/19/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-4 (15-15.5 ft)	08/19/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.37)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-4 (31.5-32 ft)	08/19/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (0-0.5 ft)	08/19/21	*ND(2)* [a,c]	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)
NDD-TW-5 (1.5-2 ft)	08/19/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
NDD-TW-5 (18.5-19 ft)	08/19/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	0.16 J	ND(0.19)
NDD-TW-5 (23-23.5 ft)	08/19/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	*ND(0.2)* [c]	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.2)
NDD-TW-5 (30.5-31 ft)	08/20/21	*ND(0.19)* [c]	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.19)
[a] 2019 Industrial NMED SSL		0.503	NA	5,240	44.5	25,300	275,000	25,300
[b] 2019 Construction Worker NMED SSL		3.66	NA	37,900	346	7,530	77,400	7,530
[c] 2019 Residential NMED SSL		0.0234	NA	1,090	9.85	1,740	18,500	1,740

Notes:
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ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-2. SOIL SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Pyridine (mg/kg)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.39)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.4)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.38)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.38)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.38)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(3.9)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.39)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(3.9)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(3.9)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.39)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.37)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.39)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(4)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.39)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.38)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.4)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.4)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.39)

[a]	2019 Industrial NMED SSL	NA
[b]	2019 Construction Worker NMED SSL	NA
[c]	2019 Residential NMED SSL	NA

Notes:
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Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, June 2019 for samples between 0 - 1 ft bgs
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, June 2019 for samples between 1 - 10 ft bgs
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
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Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)	Iron, Total (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(2.5)	1.6 J	380	0.93	ND(0.099)	12	4.6	16000
NDD-MW-1 (1.5-2 ft)	08/16/21	ND(4.9)	ND(4.9)	710	0.83	ND(0.2)	22	5.3	14000
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	ND(4.8)	ND(4.8)	730	0.83	ND(0.19)	22	4.9	13000
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(5)	ND(5)	310	0.96	ND(0.2)	8.4	4.3	13000
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(4.9)	ND(4.9)	700	0.62	ND(0.19)	5.4	3	9400
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(4.9)	ND(4.9)	610	1.3	ND(0.2)	10	5.3	22000
NDD-MW-1 (7.5-8 ft)	08/17/21	ND(4.9)	6.2	760	0.77	ND(0.2)	21	3.7	13000
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(5)	ND(5)	470	0.57	ND(0.2)	86	3.6	14000
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(5.1)	4.7 J	640	0.59	ND(0.2)	20	3.4	16000
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(12)	*ND(12)* [c]	250	0.95	ND(0.48)	6.4	3.9	11000
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(4.9)	ND(4.9)	3000	1.4	ND(0.19)	17	6.2	24000
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(4.8)	ND(4.8)	160	1.6	ND(0.19)	19	7	28000
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(4.8) UJ	ND(4.8)	410	0.93	ND(0.19)	10	4.3	14000
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(5) UJ	ND(5)	300	1.1	ND(0.2)	9.7	5.1	15000
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(5.1) UJ	ND(5.1)	350	1.3	ND(0.21)	13	5.5	20000
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(4.8) UJ	ND(4.8)	260	0.78	ND(0.19)	7.3	4	11000
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(5) UJ	ND(5)	300	0.78	ND(0.2)	6.7	3.7	11000
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(5) UJ	ND(5)	430	0.97	ND(0.2)	9.8	4.7	13000
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(5) UJ	ND(5)	300	0.91	ND(0.2)	8.6	4.4	13000
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(5.1) UJ	ND(5.1)	300	1	ND(0.2)	13	6.9	19000
[a] 2019 Industrial NMED SSL		519	35.9	255,000	313,000	417,000	505	83,400	908,000
[b] 2019 Construction Worker NMED SSL		142	216	4,390	2,710	3,610	468	722	248,000
[c] 2019 Residential NMED SSL		31.3	7.07	15,600	64,400	85,900	96.6	17,200	54,800

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
J+ - Estimated concentration, possibly biased high
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
R - Rejected, Data not usable
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TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Lead, Total (mg/kg)	Manganese, Total (mg/kg)	Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	5.3	380	0.089 J	11	ND(2.5)	ND(0.25)	19	23
NDD-MW-1 (1.5-2 ft)	08/16/21	16	450	0.26 J	16	ND(4.9)	ND(0.49)	24	54
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	16	**480** [b]	0.52 J	17	ND(4.8)	ND(0.48)	24	53
NDD-MW-1 (27.5-28 ft)	08/17/21	4	320	ND(0.033) UJ	8	ND(5)	ND(0.5)	17	13
NDD-MW-1 (35-35.5 ft)	08/17/21	1.4	**1500** [b]	ND(0.033) UJ	5.3	ND(4.9)	ND(0.49)	14	10
NDD-MW-1 (45.5-46 ft)	08/17/21	4.2	190	ND(0.033) UJ	12	ND(4.9)	ND(0.49)	18	23
NDD-MW-1 (7.5-8 ft)	08/17/21	15	400	0.21 J	23	ND(4.9)	ND(0.49)	29	93
NDD-MW-2 (0-0.5 ft)	08/17/21	3.9	710	0.019 J	76	ND(5)	0.64	17	32
NDD-MW-2 (1.5-2 ft)	08/17/21	13	**720** [b]	0.037 J	48	ND(5.1)	ND(0.51)	19	61
NDD-MW-2 (28.2-28.7 ft)	08/17/21	4.1	**1900** [b]	0.004 J	6.3	ND(12)	1.1 J	17	13
NDD-MW-2 (42.5-43 ft)	08/18/21	2	**1200** [b]	ND(0.033) UJ	17	ND(4.9)	ND(0.49)	27	25
NDD-MW-2 (47.5-48 ft)	08/18/21	2.2	320	ND(0.035) UJ	19	ND(4.8)	ND(0.48)	21	29
NDD-SB-1 (0-0.5 ft)	08/18/21	4.1	330	0.013 J	9	ND(4.8)	ND(0.48) UJ	23	16
NDD-SB-1 (1.5-2 ft)	08/18/21	4.2	410	0.0034 J	10	ND(5)	ND(0.5) UJ	23	14
NDD-SB-1 (13.5-14 ft)	08/19/21	1.8	**830** [b]	ND(0.031)	13	ND(5.1)	ND(0.51) UJ	13	18
NDD-SB-1 (5-5.5 ft)	08/18/21	5.9	300	0.0043 J	7.1	ND(4.8)	ND(0.48) UJ	16	11
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	6.3	190	0.0035 J	6.6	ND(5)	ND(0.5) UJ	15	11
NDD-SB-2 (0-0.5 ft)	08/20/21	5.4	410	0.02 J	22	ND(5)	ND(0.5) UJ	22	27
NDD-SB-2 (1.5-2 ft)	08/20/21	5.5	270	0.0042 J	8.8	ND(5)	ND(0.5) UJ	21	14
NDD-SB-2 (19-19.5 ft)	08/20/21	3.5	440	ND(0.032)	14	ND(5.1)	ND(0.51) UJ	14	25
[a] 2019 Industrial NMED SSL		800	160,000	NA	2,890,000	6,490	6,490	6,530	389,000
[b] 2019 Construction Worker NMED SSL		800	464	NA	25,000	1,750	1,770	614	106,000
[c] 2019 Residential NMED SSL		400	10,500	NA	595,000	391	391	394	23,500

Notes:
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Dup - Field duplicate
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TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)	Iron, Total (mg/kg)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(4.8) UJ	ND(4.8)	200	0.85	ND(0.19)	8.3	4.1	12000
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(4.9) UJ	ND(4.9)	410	0.96	ND(0.2)	12	4.9	15000
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(5) UJ	ND(5)	580	0.95	ND(0.2)	10	4.6	14000
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(4.9) UJ	ND(4.9)	620	0.98	ND(0.2)	6.7	5.4	12000
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(4.9) UJ	ND(4.9)	980	1	ND(0.2)	10	4.5	16000
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(5) UJ	ND(5)	340	1.2	ND(0.2)	10	5.6	14000
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(2.4) UJ	ND(4.9)	390	1.1	ND(0.098)	20	5.9	18000
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(2.4) UJ	ND(4.9)	130	1.1	ND(0.098)	12	4.5	18000
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(2.5) UJ	ND(5)	400	0.72	ND(0.1)	9.3	3.6	13000
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(4.9) UJ	ND(4.9)	390	1	ND(0.2)	14	5	16000
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(5) UJ	ND(5)	330	1.4	ND(0.2)	16	7	20000
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(5) UJ	ND(5)	280	1.3	ND(0.2)	15	6.5	19000
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(2.5) UJ	ND(5)	320	0.83	ND(0.099)	9.1	4.3	13000
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(2.5) UJ	ND(5)	58	1	ND(0.1)	18	11	18000
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(4.9) UJ	ND(4.9)	350	0.85	ND(0.19)	9.1	4.6	13000
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(5) UJ	ND(5)	280	0.92	ND(0.2)	9.7	4.7	13000
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(5) UJ	ND(5)	430	1.2	ND(0.2)	18	5.7	18000
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(4.9) UJ	ND(4.9)	140	0.95	ND(0.2)	8.1	4.2	12000
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(5) UJ	ND(5)	470	0.46	ND(0.2)	4	7.9	8200
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(12) R	*ND(12)* [c]	780	0.76	ND(0.49)	9.1	5.4	12000
[a] 2019 Industrial NMED SSL		519	35.9	255,000	313,000	417,000	505	83,400	908,000
[b] 2019 Construction Worker NMED SSL		142	216	4,390	2,710	3,610	468	722	248,000
[c] 2019 Residential NMED SSL		31.3	7.07	15,600	64,400	85,900	96.6	17,200	54,800

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TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Lead, Total (mg/kg)	Manganese, Total (mg/kg)		Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
NDD-SB-2 (3.5-4 ft)	08/20/21	5.3	220		0.0025 J	7.7	ND(4.8)	ND(0.48) UJ	19	13
NDD-SB-3 (0-0.5 ft)	08/23/21	3	460		0.023 J	10	ND(4.9)	ND(0.49) UJ	25 J+	21 J+
NDD-SB-3 (1.5-2 ft)	08/23/21	1.9	**710**	b	0.011 J	9.3	ND(5)	ND(0.5) UJ	22 J+	18 J+
NDD-SB-3 (6-6.5 ft)	08/23/21	1.8 J	380 J		0.0064 J	9.5	ND(4.9)	ND(0.49) UJ	11 J+	17 J+
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	3.2 J	**660 J**	b	0.0077 J	9.2	ND(4.9)	ND(0.49) UJ	19 J+	16 J+
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.6)	460		ND(0.034)	11	ND(5)	ND(0.5) UJ	13 J+	20 J+
NDD-SB-4 (1-1.5 ft)	08/23/21	11	440		0.055	20	ND(2.4)	ND(0.24) UJ	32 J+	56 J+
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.29)	**790**	b	ND(0.033)	11	ND(2.4)	ND(0.24) UJ	15 J+	24 J+
NDD-SB-4 (2.5-3 ft)	08/23/21	2.4	**470**	b	0.018 J	7.5	ND(2.5)	ND(0.25) UJ	21 J+	15 J+
NDD-SB-4 (2-2.5 ft)	08/23/21	5.5	420		0.0068 J	11	ND(4.9)	ND(0.49) UJ	24 J+	26 J+
NDD-SB-5 (0-0.5 ft)	08/23/21	4	420		0.0078 J	20	ND(5)	ND(0.5) UJ	37 J+	40 J+
NDD-SB-5 (1.5-2 ft)	08/23/21	3	400		0.0067 J	14	ND(5)	ND(0.5) UJ	27 J+	24 J+
NDD-SB-5 (12-12.5 ft)	08/24/21	0.99	450		0.0042 J	7.8	ND(2.5)	ND(0.25) UJ	20 J+	17 J+
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.3)	290		ND(0.034)	15	ND(2.5)	ND(0.25) UJ	38 J+	36 J+
NDD-SB-5 (9.5-10 ft)	08/24/21	2.2	420		ND(0.031)	7.9	ND(4.9)	ND(0.49) UJ	19 J+	15 J+
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	2.2	**470**	b	0.0042 J	8.8	ND(5)	ND(0.5) UJ	21 J+	16 J+
NDD-SB-6 (1.5-2 ft)	08/23/21	5.1	440		0.035	17	ND(5)	ND(0.5) UJ	34 J+	42 J+
NDD-SB-6 (15-15.5 ft)	08/23/21	1.6	350		0.0029 J	7.9	ND(4.9)	ND(0.49) UJ	17 J+	13 J+
NDD-SB-6 (21-21.5 ft)	08/23/21	2.2	430		0.0038 J	4.9	ND(5)	ND(0.5) UJ	15 J+	9.8 J+
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(1.5)	**1000**	b	ND(0.031)	8.1	ND(12)	ND(1.2) UJ	17 J+	19 J+
[a] 2019 Industrial NMED SSL		800	160,000		NA	2,890,000	6,490	6,490	6,530	389,000
[b] 2019 Construction Worker NMED SSL		800	464		NA	25,000	1,750	1,770	614	106,000
[c] 2019 Residential NMED SSL		400	10,500		NA	595,000	391	391	394	23,500

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NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)	Iron, Total (mg/kg)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(4.9) UJ	ND(4.9)	330	1.1	ND(0.19)	12	5.4	16000
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(4.8)	ND(4.8)	220	1.5	ND(0.19)	15	6.6	21000
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(5)	ND(5)	230	1.4	ND(0.2)	14	6.4	20000
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(2.5)	ND(2.5)	500	0.74	ND(0.1)	6.8	3.5	12000
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(2.5)	1.8 J	130	1.2	ND(0.099)	13	6.1	21000
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(4.9)	ND(4.9)	120	1.5	ND(0.19)	17	7.5	26000
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(4.9)	ND(4.9)	330	1.3	ND(0.2)	12	5.8	18000
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(5.2)	ND(5.2)	310	1.5	ND(0.21)	15	6.9	21000
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(2.5)	ND(2.5)	220	1.2	ND(0.098)	14	6.1	21000
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(2.6)	ND(2.6)	110	1.2	ND(0.1)	11	5.7	20000
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(2.5)	ND(2.5)	490	0.65	ND(0.098)	6.8	3.2	11000
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(4.9) UJ	ND(4.9)	270	1.4	ND(0.2)	15	6.4	20000
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(5.1) UJ	ND(5.1)	370	1	ND(0.2)	11	4.9	15000
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(4.8) UJ	ND(4.8)	60	1.7	ND(0.19)	17	5.9	25000
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(5.2) UJ	ND(5.2)	390	1.5	ND(0.21)	15	6.8	21000
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(4.9) UJ	ND(4.9)	300	1.2	ND(0.2)	11	5.5	17000
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(4.8)	ND(4.8)	640	1	ND(0.19)	11	4.6	15000
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(5)	ND(5)	45	1.6	ND(0.2)	16	9.2	18000
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(5) R	ND(5)	300	1.2	ND(0.2)	12	5.7	17000
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(4.8) UJ	ND(4.8)	240	1.5	ND(0.19)	16	6.5	21000
[a] 2019 Industrial NMED SSL		519	35.9	255,000	313,000	417,000	505	83,400	908,000
[b] 2019 Construction Worker NMED SSL		142	216	4,390	2,710	3,610	468	722	248,000
[c] 2019 Residential NMED SSL		31.3	7.07	15,600	64,400	85,900	96.6	17,200	54,800

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WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Lead, Total (mg/kg)	Manganese, Total (mg/kg)	Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
NDD-SB-6 (3-3.5 ft)	08/23/21	1.6	370	0.012 J	11	ND(4.9)	ND(0.49) UJ	23 J+	18 J+
NDD-TW-1 (0-0.5 ft)	08/12/21	4	360	0.0049 J-	14	ND(4.8)	ND(0.48)	25	21
NDD-TW-1 (1.5-2 ft)	08/12/21	5	360	ND(0.036) UJ	13	ND(5)	ND(0.5)	24	19
NDD-TW-1 (26.5-27 ft)	08/12/21	2.5	340	ND(0.031) UJ	6.4	ND(2.5)	ND(0.25)	16	10
NDD-TW-1 (34-34.5 ft)	08/12/21	4.7	350	ND(0.034) UJ	15	ND(2.5)	ND(0.25)	16	21
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	3.4	400	ND(0.033) UJ	18	ND(4.9)	ND(0.49)	24	28
NDD-TW-2 (0-0.5 ft)	08/12/21	6.3	760	0.0051 J-	12	ND(4.9)	ND(0.49)	22	17
NDD-TW-2 (1.5-2 ft)	08/12/21	5.3	380	ND(0.033) UJ	14	ND(5.2)	ND(0.52)	26	21
NDD-TW-2 (30.5-31 ft)	08/13/21	2.9	440	ND(0.034) UJ	15	ND(2.5)	ND(0.25)	16	23
NDD-TW-2 (33.5-34 ft)	08/13/21	3.9	170	ND(0.036) UJ	14	ND(2.6)	ND(0.26)	14	22
NDD-TW-2 (5.5-6 ft)	08/13/21	1.6	**650** [b]	0.022 J-	5.6	ND(2.5)	ND(0.25)	17	11
NDD-TW-3 (0-0.5 ft)	08/19/21	5.2	400	0.0061 J	14	ND(4.9)	ND(0.49) UJ	24	23
NDD-TW-3 (1.5-2 ft)	08/19/21	3.2	460	0.0032 J	10	ND(5.1)	ND(0.51) UJ	20	16
NDD-TW-3 (33.5-34 ft)	08/19/21	2.4	200	ND(0.033)	15	ND(4.8)	ND(0.48) UJ	47	24
NDD-TW-4 (0-0.5 ft)	08/19/21	6.1	390	0.0056 J	14	ND(5.2)	ND(0.52) UJ	24	21
NDD-TW-4 (1.5-2 ft)	08/19/21	6.6	390	ND(0.034)	11	ND(4.9)	ND(0.49) UJ	19	16
NDD-TW-4 (15-15.5 ft)	08/19/21	4.2	**660** [b]	0.0027 J	9.5	ND(4.8)	ND(0.48)	20	15
NDD-TW-4 (31.5-32 ft)	08/19/21	8.1	130	ND(0.033)	21	ND(5)	ND(0.5)	36	32
NDD-TW-5 (0-0.5 ft)	08/19/21	5.7	370	0.0068 J	12	ND(5)	ND(0.5) UJ	21	19
NDD-TW-5 (1.5-2 ft)	08/19/21	3.5	340	0.0038 J	14	ND(4.8)	ND(0.48) UJ	25	19
[a] 2019 Industrial NMED SSL		800	160,000	NA	2,890,000	6,490	6,490	6,530	389,000
[b] 2019 Construction Worker NMED SSL		800	464	NA	25,000	1,750	1,770	614	106,000
[c] 2019 Residential NMED SSL		400	10,500	NA	595,000	391	391	394	23,500

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
J+ - Estimated concentration, possibly biased high
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
R - Rejected, Data not usable
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)	Iron, Total (mg/kg)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(4.9) UJ	ND(4.9)	270	1.4	ND(0.2)	13	5.6	18000
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(4.9) UJ	ND(4.9)	360	0.95	ND(0.19)	8.8	4.5	14000
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(5.2) UJ	ND(5.2)	290	0.97	ND(0.21)	8.1	4.2	12000
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(4.9) UJ	ND(4.9)	730	0.51	ND(0.19)	9.3	3.5	7700
[a] 2019 Industrial NMED SSL		519	35.9	255,000	313,000	417,000	505	83,400	908,000
[b] 2019 Construction Worker NMED SSL		142	216	4,390	2,710	3,610	468	722	248,000
[c] 2019 Residential NMED SSL		31.3	7.07	15,600	64,400	85,900	96.6	17,200	54,800

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
J+ - Estimated concentration, possibly biased high
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
R - Rejected, Data not usable
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-3. SOIL SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Lead, Total (mg/kg)	Manganese, Total (mg/kg)	Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
NDD-TW-5 (18.5-19 ft)	08/19/21	4.4	300	0.0038 J	11	ND(4.9)	ND(0.49) UJ	23	17
NDD-TW-5 (23-23.5 ft)	08/19/21	4	**490 J** [b]	ND(0.032)	8.3	ND(4.9)	ND(0.49) UJ	19	12
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	3.7	**840 J** [b]	ND(0.035)	7.7	ND(5.2)	ND(0.52) UJ	17	12
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.58)	150	0.0049 J	5.8	ND(4.9)	ND(0.49) UJ	33	15

[a] 2019 Industrial NMED SSL	800	160,000	NA	2,890,000	6,490	6,490	6,530	389,000
[b] 2019 Construction Worker NMED SSL	800	464	NA	25,000	1,750	1,770	614	106,000
[c] 2019 Residential NMED SSL	400	10,500	NA	595,000	391	391	394	23,500

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J- - Estimated concentration, possibly biased low
J+ - Estimated concentration, possibly biased high
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
R - Rejected, Data not usable
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.

TABLE 4-4. SOIL SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Cyanide, Total (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Oil Range Organics (mg/kg)
NDD-MW-1 (0-0.5 ft)	08/16/21	ND(0.25) UJ	ND(9.3)	1.1J/ND(3.5)U*	130
NDD-MW-1 (1.5-2 ft)	08/16/21	0.884 J+	27	1.4J/ND(3.6)U*	200
NDD-MW-1 (1.5-2 ft) Dup	08/16/21	0.69 J+	35	1.3J/ND(3.9)U*	140
NDD-MW-1 (27.5-28 ft)	08/17/21	ND(0.25)	27 J+	**230** [c]	ND(49)
NDD-MW-1 (35-35.5 ft)	08/17/21	ND(0.25)	ND(9.7)	0.94J/ND(2.7)U*	ND(48)
NDD-MW-1 (45.5-46 ft)	08/17/21	ND(0.25)	ND(9.5)	1.1J/ND(3.3)U*	ND(47)
NDD-MW-1 (7.5-8 ft)	08/17/21	0.258 J+	**5400** [b,c]	1.2J/ND(2.6)U*	**12000** [b,c]
NDD-MW-2 (0-0.5 ft)	08/17/21	ND(0.25)	4.9 J	0.97J/ND(3)U*	ND(47)
NDD-MW-2 (1.5-2 ft)	08/17/21	ND(0.25)	9.5 J	5.2 JB	ND(48)
NDD-MW-2 (28.2-28.7 ft)	08/17/21	ND(0.25)	ND(9.3)	0.9J/ND(2.8)U*	ND(47)
NDD-MW-2 (42.5-43 ft)	08/18/21	ND(0.25)	89 JB	34	ND(47)
NDD-MW-2 (47.5-48 ft)	08/18/21	ND(0.25)	45 JB	**150** [c]	ND(48)
NDD-SB-1 (0-0.5 ft)	08/18/21	ND(0.25)	ND(9.4)	ND(3.3)	ND(47)
NDD-SB-1 (1.5-2 ft)	08/18/21	ND(0.25)	12	ND(2.7)	ND(45)
NDD-SB-1 (13.5-14 ft)	08/19/21	ND(0.25)	10	ND(2.7)	ND(49)
NDD-SB-1 (5-5.5 ft)	08/18/21	ND(0.25)	**2500** [c]	**1100** [b,c]	ND(450)
NDD-SB-1 (5-5.5 ft) Dup	08/19/21	ND(0.25)	**1500** [c]	**940** [b,c]	ND(490)
NDD-SB-2 (0-0.5 ft)	08/20/21	ND(0.25)	200	**810** [a,c]	ND(47)
NDD-SB-2 (1.5-2 ft)	08/20/21	ND(0.25)	**6100** [b,c]	**14000** [b,c]	ND(2400)
[a] 2019 Industrial NMED SSL		63.3	3,000	500	5,000
[b] 2019 Construction Worker NMED SSL		12.1	3,000	500	5,000
[c] 2019 Residential NMED SSL		11.2	1,000	100	3,000

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J+ - Estimated concentration, possibly biased high
JB - Estimated concentration due to blank contamination
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-4. SOIL SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Cyanide, Total (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Oil Range Organics (mg/kg)
NDD-SB-2 (19-19.5 ft)	08/20/21	ND(0.25)	5.2 J+	1.8 J	ND(46)
NDD-SB-2 (3.5-4 ft)	08/20/21	ND(0.25)	**8500** b,c	**8300** b,c	ND(2400)
NDD-SB-3 (0-0.5 ft)	08/23/21	ND(0.25)	ND(10)	ND(2.9)	ND(50)
NDD-SB-3 (1.5-2 ft)	08/23/21	ND(0.25)	ND(9.2)	ND(3)	ND(46)
NDD-SB-3 (6-6.5 ft)	08/23/21	ND(0.25)	**1500** c	**210 J** c	ND(470)
NDD-SB-3 (6-6.5 ft) Dup	08/23/21	ND(0.25)	**1600** c	**440 J** c	ND(500)
NDD-SB-3 (9.5-10 ft)	08/23/21	ND(0.25)	ND(9.9)	ND(3.3)	ND(50)
NDD-SB-4 (1-1.5 ft)	08/23/21	ND(0.25)	240	**1100** b,c	ND(49)
NDD-SB-4 (19.5-20 ft)	08/23/21	ND(0.25)	6.3 J+	ND(3.1)	ND(46)
NDD-SB-4 (2.5-3 ft)	08/23/21	ND(0.25)	**1700** c	**1100** b,c	ND(470)
NDD-SB-4 (2-2.5 ft)	08/23/21	ND(0.25)	**3000** c	**180** c	ND(490)
NDD-SB-5 (0-0.5 ft)	08/23/21	ND(0.25)	23	ND(3.6)	ND(48)
NDD-SB-5 (1.5-2 ft)	08/23/21	ND(0.25)	5.3 J+	ND(3.4)	ND(48)
NDD-SB-5 (12-12.5 ft)	08/24/21	ND(0.25)	ND(9.7)	2.1 J	ND(48)
NDD-SB-5 (17.5-18 ft)	08/24/21	ND(0.25)	ND(9.9)	ND(4.1)	ND(49)
NDD-SB-5 (9.5-10 ft)	08/24/21	ND(0.25)	ND(9.3)	ND(2.4)	ND(46)
NDD-SB-5 (9.5-10 ft) Dup	08/24/21	ND(0.25)	ND(9.6)	0.76 J	ND(48)
NDD-SB-6 (1.5-2 ft)	08/23/21	ND(0.25)	ND(9.4)	ND(2.7)	ND(47)
NDD-SB-6 (15-15.5 ft)	08/23/21	ND(0.25)	ND(9.3)	ND(3.3)	ND(46)
[a] 2019 Industrial NMED SSL		63.3	3,000	500	5,000
[b] 2019 Construction Worker NMED SSL		12.1	3,000	500	5,000
[c] 2019 Residential NMED SSL		11.2	1,000	100	3,000

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J+ - Estimated concentration, possibly biased high
JB - Estimated concentration due to blank contamination
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-4. SOIL SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Cyanide, Total (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Oil Range Organics (mg/kg)
NDD-SB-6 (21-21.5 ft)	08/23/21	ND(0.25)	180	**310** [c]	ND(44)
NDD-SB-6 (23.5-24 ft)	08/23/21	ND(0.25)	12	18	ND(48)
NDD-SB-6 (3-3.5 ft)	08/23/21	ND(0.25)	ND(9.9)	ND(3.3)	ND(50)
NDD-TW-1 (0-0.5 ft)	08/12/21	ND(0.295)	ND(9.8)	ND(3.1)	ND(49)
NDD-TW-1 (1.5-2 ft)	08/12/21	ND(0.294)	ND(9.2)	ND(3.1)	ND(46)
NDD-TW-1 (26.5-27 ft)	08/12/21	ND(0.102)	ND(9.9)	ND(2.5)	ND(50)
NDD-TW-1 (34-34.5 ft)	08/12/21	ND(0.226)	4.8 J	ND(3.6)	ND(48)
NDD-TW-1 (34-34.5 ft) Dup	08/12/21	ND(0.316)	ND(9.4)	1.1 J	ND(47)
NDD-TW-2 (0-0.5 ft)	08/12/21	ND(0.293)	ND(9.9)	ND(4)	ND(50)
NDD-TW-2 (1.5-2 ft)	08/12/21	ND(0.485)	ND(9.9)	1 J	ND(50)
NDD-TW-2 (30.5-31 ft)	08/13/21	ND(0.131)	4.9 J	0.99 J	ND(48)
NDD-TW-2 (33.5-34 ft)	08/13/21	ND(0.463)	ND(9.8)	1.1 J	ND(49)
NDD-TW-2 (5.5-6 ft)	08/13/21	ND(0.153)	ND(9.6)	5.5	ND(48)
NDD-TW-3 (0-0.5 ft)	08/19/21	ND(0.25)	35	ND(2.7)	ND(49)
NDD-TW-3 (1.5-2 ft)	08/19/21	ND(0.25)	ND(9.7)	ND(3.8)	ND(49)
NDD-TW-3 (33.5-34 ft)	08/19/21	ND(0.25)	ND(9.2)	ND(3.1)	ND(46)
NDD-TW-4 (0-0.5 ft)	08/19/21	ND(0.25)	8.4 J	ND(3.6)	ND(46)
NDD-TW-4 (1.5-2 ft)	08/19/21	ND(0.25)	8.3 J+	ND(4.7)	ND(47)
NDD-TW-4 (15-15.5 ft)	08/19/21	ND(0.25)	ND(9.7)	ND(2.8)	ND(48)
[a] 2019 Industrial NMED SSL		63.3	3,000	500	5,000
[b] 2019 Construction Worker NMED SSL		12.1	3,000	500	5,000
[c] 2019 Residential NMED SSL		11.2	1,000	100	3,000

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J+ - Estimated concentration, possibly biased high
JB - Estimated concentration due to blank contamination
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-4. SOIL SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Cyanide, Total (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Oil Range Organics (mg/kg)
NDD-TW-4 (31.5-32 ft)	08/19/21	ND(0.25)	ND(9.3)	ND(3.3)	ND(46)
NDD-TW-5 (0-0.5 ft)	08/19/21	ND(0.25)	ND(9.6)	ND(2.8)	ND(48)
NDD-TW-5 (1.5-2 ft)	08/19/21	ND(0.25)	ND(9.8)	ND(2.6)	ND(49)
NDD-TW-5 (18.5-19 ft)	08/19/21	ND(0.25)	57	**370** [c]	ND(47)
NDD-TW-5 (23-23.5 ft)	08/19/21	ND(0.25)	ND(9.5)	8.1	ND(47)
NDD-TW-5 (23-23.5 ft) Dup	08/19/21	ND(0.25)	ND(9.3)	5.1	ND(46)
NDD-TW-5 (30.5-31 ft)	08/20/21	ND(0.25)	5.5 J+	ND(3.1)	ND(46)

[a]	2019 Industrial NMED SSL	63.3	3,000	500	5,000
[b]	2019 Construction Worker NMED SSL	12.1	3,000	500	5,000
[c]	2019 Residential NMED SSL	11.2	1,000	100	3,000

Notes:
bgs - below ground surface
Dup - Field duplicate
ft - Feet
J - Estimated concentration
J+ - Estimated concentration, possibly biased high
JB - Estimated concentration due to blank contamination
mg/kg - Milligram per kilogram
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Industrial SSL - NMED Risk Assessment Guidance for Site Investigations, Industrial Soil Screening Level, (0-1 ft bgs), June 2019
NMED Construction Worker SSL - NMED Risk Assessment Guidance for Site Investigations, Construction Worker Soil Screening Level, (1-10 ft bgs), June 2019
NMED Residential SSL - NMED Risk Assessment Guidance for Site Investigations, Residential Soil Screening Level, June 2019
U - Evaluated to be undetected at the reported concentration
UJ - Estimated reporting limit
Bold text indicates detected results that exceed one or more of the SSL.
Italicized text indicates reporting limits that exceed one or more of the SSL.
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,1,1,2-Tetrachloro-ethane (ug/L)	1,1,1-Trichloro-ethane (ug/L)	1,1,2,2-Tetrachloro-ethane (ug/L)	1,1,2-Trichloro-ethane (ug/L)	1,1-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	1,1-Dichloro-propene (ug/L)	1,2,3-Trichloro-benzene (ug/L)	1,2,3-Trichloro-propane (ug/L)	1,2,4-Trichloro-benzene (ug/L)
NDD-MW-1	09/17/21	ND(1)	ND(1)	ND(2)	ND(1)	0.7 J	ND(1)	ND(1)	ND(1)	ND(2)	ND(1)
	12/22/21	--	--	--	--	0.85 J	--	--	--	--	--
NDD-MW-2	12/22/21	--	--	--	--	ND(1)	--	--	--	--	--
NDD-TW-2	09/09/21	ND(1)	ND(1)	ND(2)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(2)	ND(1)
NDD-TW-5	09/09/21	ND(50)	ND(50)	ND(100)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(100)	ND(50)
NDD-TW-5 Dup	09/09/21	ND(50)	ND(50)	ND(100)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(100)	ND(50)
[a] NMED Groundwater Cleanup Levels		NA	200	10	5	25	7	NA	NA	NA	70
[b] USEPA MCL HQ 1.0		NA	200	NA	5	NA	7	NA	NA	NA	70

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

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TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,4-Trimethyl-benzene (ug/L)	1,2-Dibromo 3-chloropropane (ug/L)	1,2-Dibromoethane (ug/L)	1,2-Dichloro-benzene (ug/L)	1,2-Dichloroethane (ug/L)	1,2-Dichloro-propane (ug/L)	1,3,5-Trimethyl-benzene (ug/L)	1,3-Dichloro-benzene (ug/L)	1,3-Dichloro-propane (ug/L)	1,4-Dichloro-benzene (ug/L)
NDD-MW-1	09/17/21	0.19 J	ND(2)	ND(1)	ND(1)	**13** [a,b]	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
	12/22/21	0.9J/ND(1)U*	--	ND(1)	--	**15** [a,b]	--	0.39J/ND(1)U*	--	--	--
NDD-MW-2	12/22/21	130	--	ND(1)	--	0.48 J	--	99	--	--	--
NDD-TW-2	09/09/21	ND(1)	ND(2)	ND(1)	ND(1)	0.39 J	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
NDD-TW-5	09/09/21	350	ND(100)	ND(50)	ND(50)	ND(50)	ND(50)	78	ND(50)	ND(50)	ND(50)
NDD-TW-5 Dup	09/09/21	320	ND(100)	ND(50)	ND(50)	ND(50)	ND(50)	71	ND(50)	ND(50)	ND(50)

[a] NMED Groundwater Cleanup Levels	NA	NA	0.05	600	5	5	NA	NA	NA	75
[b] USEPA MCL HQ 1.0	NA	0.2	0.05	600	5	5	NA	NA	NA	75

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
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TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1-Methyl-naphthalene (ug/L)	2,2-Dichloro-propane (ug/L)	2-Butanone (ug/L)	2-Chlorotoluene (ug/L)	2-Hexanone (ug/L)	2-Methyl-naphthalene (ug/L)	4-Chlorotoluene (ug/L)	4-Methyl-2-Pentanone (ug/L)	Acetone (ug/L)	Benzene (ug/L)	
NDD-MW-1	09/17/21	ND(4)	ND(2)	3.3 J	ND(1)	ND(10)	ND(4)	ND(1)	ND(10)	12	1.6	
	12/22/21	ND(4)	--	ND(10)	--	--	ND(4)	--	--	5J/ND(10)U*	**10**	a,b
NDD-MW-2	12/22/21	3.5 J	--	ND(10)	--	--	2.7 J	--	--	5.5J/ND(10)U*	**120**	a,b
NDD-TW-2	09/09/21	ND(4)	ND(2)	ND(10)	ND(1)	ND(10)	ND(4)	ND(1)	ND(10)	ND(10)	ND(1)	
NDD-TW-5	09/09/21	ND(200)	ND(100)	ND(500)	ND(50)	ND(500)	ND(200)	ND(50)	ND(500)	ND(500)	**4800**	a,b
NDD-TW-5 Dup	09/09/21	ND(200)	ND(100)	ND(500)	ND(50)	ND(500)	ND(200)	ND(50)	ND(500)	ND(500)	**4600**	a,b
[a] NMED Groundwater Cleanup Levels		NA	NA	NA	NA	NA	NA	NA	NA	NA	5	
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	NA	NA	NA	5	

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
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TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bromobenzene (ug/L)	Bromodichloro-methane (ug/L)	Bromoform (ug/L)	Bromomethane (ug/L)	Carbon Disulfide (ug/L)	Carbon Tetrachloride (ug/L)	Chlorobenzene (ug/L)	Chloroethane (ug/L)	Chloroform (ug/L)	Chloromethane (ug/L)
NDD-MW-1	09/17/21	ND(1)	ND(1)	ND(1)	ND(3)	ND(10)	ND(1)	ND(1)	ND(2)	ND(1)	1.3J/ND(3)U*
	12/22/21	--	--	--	--	--	--	--	ND(2)	--	--
NDD-MW-2	12/22/21	--	--	--	--	--	--	--	ND(2)	--	--
NDD-TW-2	09/09/21	ND(1)	ND(1)	ND(1)	ND(3)	ND(10)	ND(1)	ND(1)	ND(2)	ND(1)	ND(3)
NDD-TW-5	09/09/21	ND(50)	ND(50)	ND(50)	ND(150)	ND(500)	ND(50)	ND(50)	ND(100)	ND(50)	53J/ND(150)U*
NDD-TW-5 Dup	09/09/21	ND(50)	ND(50)	ND(50)	ND(150)	ND(500)	ND(50)	ND(50)	ND(100)	ND(50)	45J/ND(150)U*
[a] NMED Groundwater Cleanup Levels		NA	NA	NA	NA	NA	5	NA	NA	100	NA
[b] USEPA MCL HQ 1.0		NA	80	80	NA	NA	5	100	NA	80	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	cis-1,2-Dichloro-ethene (ug/L)	cis-1,3-Dichloro-propene (ug/L)	Dibromo-chloromethane (ug/L)	Dibromomethane (ug/L)	Dichlorodifluoro-methane (ug/L)	Ethylbenzene (ug/L)	Hexachloro-butadiene (ug/L)	Isopropylbenzene (ug/L)	Methylene Chloride (ug/L)	MTBE (ug/L)
NDD-MW-1	09/17/21	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	7.3	ND(3)	68
	12/22/21	--	--	--	--	--	0.29 J	--	25	ND(3)	63
NDD-MW-2	12/22/21	--	--	--	--	--	6.1	--	2.6	ND(3)	ND(1)
NDD-TW-2	09/09/21	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(3)	ND(1)
NDD-TW-5	09/09/21	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	**760** [a,b]	ND(50)	ND(50)	ND(150)	730
NDD-TW-5 Dup	09/09/21	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	**710** [a,b]	ND(50)	ND(50)	ND(150)	720
[a] NMED Groundwater Cleanup Levels		70	NA	NA	NA	NA	700	NA	NA	5	NA
[b] USEPA MCL HQ 1.0		70	NA	80	NA	NA	700	NA	NA	5	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
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TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Naphthalene (ug/L)	n-Butylbenzene (ug/L)	n-Propylbenzene (ug/L)	p-Isopropyltoluene (ug/L)	sec-Butylbenzene (ug/L)	Styrene (ug/L)	tert-Butylbenzene (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	trans-1,2-Dichloro-ethene (ug/L)
NDD-MW-1	09/17/21	ND(2)	ND(3)	0.46 J	ND(1)	1.6	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
	12/22/21	0.64 J	1 J	1.6	0.22 J	5.2	--	ND(1)	--	0.33J/ND(1)U*	--
NDD-MW-2	12/22/21	6.5	1.9 J	0.79 J	15	0.72 J	--	ND(1)	--	67	--
NDD-TW-2	09/09/21	ND(2)	ND(3)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
NDD-TW-5	09/09/21	**64 J** [a]	ND(150)	45 J	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	**3500** [a,b]	ND(50)
NDD-TW-5 Dup	09/09/21	**65 J** [a]	ND(150)	41 J	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	**3400** [a,b]	ND(50)
[a] NMED Groundwater Cleanup Levels		30	NA	NA	NA	NA	100	NA	5	1,000	100
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	100	NA	5	1,000	100

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
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TABLE 4-5. GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	trans-1,3-Dichloro-propene (ug/L)	Trichloroethene (ug/L)	Trichloro-fluoromethane (ug/L)	Vinyl Chloride (ug/L)	Xylenes, Total (ug/L)	
NDD-MW-1	09/17/21	ND(1)	ND(1)	ND(1)	ND(1)	2.4	
	12/22/21	--	--	--	--	2.8	
NDD-MW-2	12/22/21	--	--	--	--	**980**	a
NDD-TW-2	09/09/21	ND(1)	ND(1)	ND(1)	ND(1)	ND(1.5)	
NDD-TW-5	09/09/21	ND(50)	ND(50)	ND(50)	ND(50)	**3500**	a
NDD-TW-5 Dup	09/09/21	ND(50)	ND(50)	ND(50)	ND(50)	**3300**	a

a	NMED Groundwater Cleanup Levels	NA	5	NA	2	620
b	USEPA MCL HQ 1.0	NA	5	NA	2	10,000

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
MTBE - Methyl tert-Butyl Ether
ug/L - Microgram per liter
U - Evaluated to be undetected at the reported concentration
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0
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TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,4-Trichloro-benzene (ug/L)	1,2-Dichloro-benzene (ug/L)	1,3-Dichloro-benzene (ug/L)	1,4-Dichloro-benzene (ug/L)	1-Methyl-naphthalene (ug/L)	2,4,5-Trichloro-phenol (ug/L)	2,4,6-Trichloro-phenol (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(0.1)	ND(5)	ND(5)
	12/22/21	--	--	--	--	ND(0.1) UJ	--	--
NDD-MW-2	12/22/21	--	--	--	--	ND(0.1) UJ	--	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	6.4	ND(5)	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	7.4	ND(5)	ND(5)
[a] NMED GW Cleanup Levels		70	600	NA	75	NA	NA	NA
[b] USEPA MCL HQ 1.0		70	600	NA	75	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2,4-Dichloro-phenol (ug/L)	2,4-Dimethyl-phenol (ug/L)	2,4-Dinitro-phenol (ug/L)	2,4-Dinitro Toluene (ug/L)	2,6-Dinitro Toluene (ug/L)	2-Chloro-naphthalene (ug/L)	2-Chlorophenol (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
	12/22/21	--	ND(5)	--	--	--	--	--
NDD-MW-2	12/22/21	--	15	--	--	--	--	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
NDD-TW-5	09/09/21	ND(5)	7.5	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
NDD-TW-5 Dup	09/09/21	ND(5)	8.9	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Methyl-4,6-dinitrophenol (ug/L)	2-Methyl-naphthalene (ug/L)	2-Methylphenol (ug/L)	2-Nitroaniline (ug/L)	2-Nitrophenol (ug/L)	3,3'-Dichloro-benzidine (ug/L)	3,4-Methyl phenol (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(0.1)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
	12/22/21	--	ND(0.1) UJ	ND(5)	--	--	--	ND(5)
NDD-MW-2	12/22/21	--	ND(0.1) UJ	ND(5)	--	--	--	ND(5)
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	10	9	ND(5)	ND(5)	ND(5)	13
NDD-TW-5 Dup	09/09/21	ND(5)	11	12	ND(5)	ND(5)	ND(5)	16
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
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TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	3-Nitroaniline (ug/L)	4-Bromophenyl-phenylether (ug/L)	4-Chloro-3-Methylphenol (ug/L)	4-Chloroaniline (ug/L)	4-Chlorophenyl-phenylether (ug/L)	4-Nitroaniline (ug/L)	4-Nitrophenol (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
	12/22/21	--	--	--	--	--	--	--
NDD-MW-2	12/22/21	--	--	--	--	--	--	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5) UJ
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Acenaphthene (ug/L)	Acenaphthylene (ug/L)	Aniline (ug/L)	Anthracene (ug/L)	Azobenzene (ug/L)	Benzo(a)-anthracene (ug/L)	Benzo(a)pyrene (ug/L)
NDD-MW-1	09/17/21	ND(0.1)	ND(0.1)	ND(5)	ND(0.1)	ND(5)	ND(0.1)	ND(0.07)
	12/22/21	0.24 J	--	--	--	--	--	--
NDD-MW-2	12/22/21	ND(0.1) UJ	--	--	--	--	--	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	0.2
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	0.2

Notes:
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J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzo(b)fluor-anthene (ug/L)	Benzo(ghi)-perylene (ug/L)	Benzo(k)fluor-anthene (ug/L)	Benzoic Acid (ug/L)	Benzyl Alcohol (ug/L)	Bis(2-chloro ethoxy)methane (ug/L)	Bis(2-chloro ethyl)ether (ug/L)
NDD-MW-1	09/17/21	ND(0.1)	ND(0.1)	ND(0.1)	ND(20)	ND(5)	ND(5)	ND(5)
	12/22/21	--	--	--	ND(20)	--	--	--
NDD-MW-2	12/22/21	--	--	--	ND(20)	--	--	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(20)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(20)	ND(5)	ND(5)	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(20)	ND(5)	ND(5)	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Bis(2-chloro isopropyl)ether (ug/L)	Bis(2-ethyl hexyl) phthalate (ug/L)	Benzyl Butyl Phthalate (ug/L)	Carbazole (ug/L)	Chrysene (ug/L)	Dibenz(a,h) anthracene (ug/L)	Dibenzofuran (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(10)	ND(5)	3.7 J	ND(0.1)	ND(0.1)	ND(5)
	12/22/21	--	ND(10)	--	0.76 J	--	--	ND(5)
NDD-MW-2	12/22/21	--	ND(10)	--	ND(5)	--	--	ND(5)
NDD-TW-2	09/09/21	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(10)	ND(5)	3.8 J	ND(5)	ND(5)	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(10)	ND(5)	3.9 J	ND(5)	ND(5)	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	6	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Diethylphthalate (ug/L)	Dimethyl Phthalate (ug/L)	Di-n-butyl-phthalate (ug/L)	Di-n-octyl-phthalate (ug/L)	Fluoranthene (ug/L)	Fluorene (ug/L)	Hexachloro Benzene (ug/L)
NDD-MW-1	09/17/21	ND(10)	ND(10)	ND(10)	ND(20)	ND(0.2)	ND(0.1)	ND(5)
	12/22/21	--	ND(10)	--	ND(20)	ND(0.2)	ND(0.1) UJ	--
NDD-MW-2	12/22/21	--	ND(10)	--	ND(20)	ND(0.2) UJ	ND(0.1) UJ	--
NDD-TW-2	09/09/21	ND(10)	ND(10)	ND(10)	ND(20)	ND(10)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(10)	ND(10)	ND(10)	ND(20)	ND(10)	1.2 J	ND(5)
NDD-TW-5 Dup	09/09/21	ND(10)	ND(10)	ND(10)	ND(20)	ND(10)	1.1 J	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	NA	NA	NA	1

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Hexachloro-butadiene (ug/L)	Hexachloro-cyclopentadiene (ug/L)	Hexachloro-ethane (ug/L)	Indeno(1,2,3-cd) pyrene (ug/L)	Isophorone (ug/L)	Naphthalene (ug/L)	Nitrobenzene (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(5)	ND(5)	ND(0.3)	ND(5)	ND(0.1)	ND(5)
	12/22/21	--	--	--	--	--	0.28 J	--
NDD-MW-2	12/22/21	--	--	--	--	--	ND(0.1) UJ	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	**38** [a]	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	**45** [a]	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	NA	NA	30	NA
[b] USEPA MCL HQ 1.0		NA	50	NA	NA	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	N-Nitroso-dimethylamine (ug/L)	N-Nitrosodi-n-propylamine (ug/L)	N-Nitroso-diphenylamine (ug/L)	Pentachloro-phenol (ug/L)	Phenanthrene (ug/L)	Phenol (ug/L)	Pyrene (ug/L)
NDD-MW-1	09/17/21	ND(5)	ND(5)	ND(5)	ND(20)	ND(0.1)	ND(5)	ND(0.2)
	12/22/21	--	--	--	--	0.9 J	ND(5)	--
NDD-MW-2	12/22/21	--	--	--	--	ND(0.1) UJ	15	--
NDD-TW-2	09/09/21	ND(5)	ND(5)	ND(5)	ND(20) UJ	ND(5)	ND(5)	ND(5)
NDD-TW-5	09/09/21	ND(5)	ND(5)	ND(5)	ND(20) UJ	ND(5)	21	ND(5)
NDD-TW-5 Dup	09/09/21	ND(5)	ND(5)	ND(5)	ND(20) UJ	1.8 J	25	ND(5)
[a] NMED GW Cleanup Levels		NA	NA	NA	1	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	1	NA	NA	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-6. GROUNDWATER SAMPLE SEMI VOLATILE ORGANIC COMPOUNDS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Pyridine (ug/L)
NDD-MW-1	09/17/21	ND(5)
	12/22/21	--
NDD-MW-2	12/22/21	--
NDD-TW-2	09/09/21	ND(5)
NDD-TW-5	09/09/21	3.1 J
NDD-TW-5 Dup	09/09/21	2.8 J

[a]	NMED GW Cleanup Levels	NA
[b]	USEPA MCL HQ 1.0	NA

Notes:
Dup - Field duplicate
J - Estimated concentration
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
ug/L - Microgram per liter
UJ - Estimated reporting limit
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-7. GROUNDWATER SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Antimony, Dissolved (mg/L)	Antimony, Total (mg/L)	Arsenic, Dissolved (mg/L)	Arsenic, Total (mg/L)	Barium, Dissolved (mg/L)	Barium, Total (mg/L)	Beryllium, Dissolved (mg/L)	Beryllium, Total (mg/L)	Cadmium, Dissolved (mg/L)
NDD-MW-1	09/17/21	ND(0.001)	ND(0.001)	0.0024	0.003	0.48	0.56	ND(0.002)	ND(0.002)	ND(0.002)
	12/22/21	--	--	0.0025	0.0032	0.62	0.61	--	--	ND(0.002)
NDD-MW-2	12/22/21	--	--	0.0022	0.0028	0.12	0.15	--	--	ND(0.002)
NDD-TW-2	09/09/21	--	ND(0.02)	--	0.0026 J	--	0.47	--	ND(0.005)	--
NDD-TW-5	09/09/21	--	ND(0.02)	--	**0.018** [a,b]	--	**7.8** [a,b]	--	**0.01** [a,b]	--
NDD-TW-5 Dup	09/09/21	--	ND(0.02)	--	**0.016** [a,b]	--	**6.9** [a,b]	--	**0.0088** [a,b]	--
[a] NMED Groundwater Cleanup Levels		NA	0.006	0.01	0.01	2	2	NA	0.004	0.005
[b] USEPA MCL HQ 1.0		NA	0.006	NA	0.01	NA	2	NA	0.004	NA

Notes:
-- - Not measured
Dup - Field duplicate
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-7. GROUNDWATER SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Cadmium, Total (mg/L)	Calcium, Dissolved (mg/L)	Calcium, Total (mg/L)	Chromium, Dissolved (mg/L)	Chromium, Total (mg/L)	Cobalt, Dissolved (mg/L)	Cobalt, Total (mg/L)	Iron, Dissolved (mg/L)	Iron, Total (mg/L)
NDD-MW-1	09/17/21	ND(0.002)	22	24	ND(0.006)	ND(0.006)	0.0066	0.0084	0.013 J	0.78
	12/22/21	ND(0.002)	--	--	ND(0.006)	ND(0.006)	--	--	0.073	0.37
NDD-MW-2	12/22/21	ND(0.002)	--	--	ND(0.006)	ND(0.006)	--	--	0.068	0.59
NDD-TW-2	09/09/21	ND(0.005)	--	--	--	0.024	--	0.0062	--	16
NDD-TW-5	09/09/21	ND(0.005)	--	--	--	**0.24** [a,b]	--	0.1	--	120
NDD-TW-5 Dup	09/09/21	ND(0.005)	--	--	--	**0.21** [a,b]	--	0.09	--	120
[a] NMED Groundwater Cleanup Levels		0.005	NA	NA	0.05	0.05	NA	NA	NA	NA
[b] USEPA MCL HQ 1.0		0.005	NA	NA	NA	0.1	NA	NA	NA	NA

Notes:
-- - Not measured
Dup - Field duplicate
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-7. GROUNDWATER SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Lead, Dissolved (mg/L)	Lead, Total (mg/L)	Magnesium, Dissolved (mg/L)	Magnesium, Total (mg/L)	Manganese, Dissolved (mg/L)	Manganese, Total (mg/L)	Mercury, Total (mg/L)	Nickel, Dissolved (mg/L)	Nickel, Total (mg/L)
NDD-MW-1	09/17/21	0.00022 J	0.00057	3.9	4.7	0.19	0.23	ND(0.0002)	0.042	0.047
	12/22/21	0.00013 J	0.00031 J	--	--	0.32	0.31	ND(0.0002)	--	--
NDD-MW-2	12/22/21	ND(0.0005)	0.00052	--	--	0.76	0.77	ND(0.0002)	--	--
NDD-TW-2	09/09/21	--	0.0081	--	--	--	0.28	0.00066	--	0.014
NDD-TW-5	09/09/21	--	**0.071** [a,b]	--	--	--	4.7	ND(0.0008)	--	0.32
NDD-TW-5 Dup	09/09/21	--	**0.07** [a,b]	--	--	--	4.6	0.00089	--	0.31
[a] NMED Groundwater Cleanup Levels		0.015	0.015	NA	NA	NA	NA	0.002	NA	NA
[b] USEPA MCL HQ 1.0		NA	0.015	NA	NA	NA	NA	0.002	NA	NA

Notes:
-- - Not measured
Dup - Field duplicate
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-7. GROUNDWATER SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Potassium, Dissolved (mg/L)	Potassium, Total (mg/L)	Selenium, Dissolved (mg/L)	Selenium, Total (mg/L)	Silver, Dissolved (mg/L)	Silver, Total (mg/L)	Sodium, Dissolved (mg/L)	Sodium, Total (mg/L)	Vanadium, Total (mg/L)
NDD-MW-1	09/17/21	2.3	2.7	ND(0.001)	0.00053 J	ND(0.005)	ND(0.005)	270	300	--
	12/22/21	--	--	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)	--	--	--
NDD-MW-2	12/22/21	--	--	0.0015	0.0014	ND(0.005)	ND(0.005)	--	--	--
NDD-TW-2	09/09/21	--	--	--	0.0078	--	ND(0.005)	--	--	0.03
NDD-TW-5	09/09/21	--	--	--	0.0077	--	ND(0.005)	--	--	0.26
NDD-TW-5 Dup	09/09/21	--	--	--	0.0075	--	ND(0.005)	--	--	0.24
[a] NMED Groundwater Cleanup Levels		NA	NA	0.05	0.05	0.05	0.05	NA	NA	NA
[b] USEPA MCL HQ 1.0		NA	NA	NA	0.05	NA	NA	NA	NA	NA

Notes:
-- - Not measured
Dup - Field duplicate
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-7. GROUNDWATER SAMPLE METALS RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Zinc, Dissolved (mg/L)	Zinc, Total (mg/L)
NDD-MW-1	09/17/21	0.011	0.0098 J
	12/22/21	0.016 JB	ND(0.01) UJ
NDD-MW-2	12/22/21	0.16 J	0.014 J
NDD-TW-2	09/09/21	--	0.051
NDD-TW-5	09/09/21	--	0.26
NDD-TW-5 Dup	09/09/21	--	0.23

[a]	NMED Groundwater Cleanup Levels	NA	NA
[b]	USEPA MCL HQ 1.0	NA	NA

Notes:
-- - Not measured
Dup - Field duplicate
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED GW Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the USEPA MCL HQ 1.0

TABLE 4-8. GROUNDWATER SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Alkalinity (mg/L CaCO3)	Bicarbonate as CaCO3 (mg/L CaCO3)	Carbonate (mg/L CaCO3)	Chloride (mg/L)	Cyanide, Total (mg/L)	Fluoride, Total (mg/L)
NDD-MW-1	09/17/21	409.1	409.1	ND(2)	210	ND(0.01)	0.39 J
	12/22/21	--	--	--	230	--	ND(0.5)
NDD-MW-2	12/22/21	--	--	--	**770** [a]	--	ND(0.5)
NDD-TW-2	09/09/21	--	--	--	**1100** [a]	ND(0.005)	ND(0.5)
NDD-TW-5	09/09/21	--	--	--	220	0.00917	0.22 J
NDD-TW-5 Dup	09/09/21	--	--	--	220	0.00681	0.24 J
[a] NMED Groundwater Cleanup Levels		NA	NA	NA	250	0.2	1.6
[b] NMED TPH Levels		NA	NA	NA	NA	NA	NA
[c] USEPA MCL HQ 1.0		NA	NA	NA	NA	0.2	4

Notes:
-- - Not measured
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Groundwater Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
NMED TPH Levels - New Mexico Environment Department, Total Petroleum Hydrocarbons Screening Levels, Risk Assessment Guidance for Investigations and Remediation, Table 6-4, March 2017
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the NMED TPH Levels
c. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be

TABLE 4-8. GROUNDWATER SAMPLE GENERAL CHEMISTRY RESULTS
NORTH DRAINAGE DITCH AREA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Nitrogen, Nitrate (mg/L)	Nitrogen, Nitrite (mg/L)	Sulfate (mg/L)	Diesel Range Organics (mg/L)	Gasoline Range Organics (mg/L)	Oil Range Organics (mg/L)
NDD-MW-1	09/17/21	0.1 J	ND(0.5)	11	**0.91** [b]	**0.36** [b]	**0.09** [b]
	12/22/21	0.098J/ND(0.5)U*	ND(0.5)	8.4	**1.2** [b]	**0.65** [b]	0.061 J
NDD-MW-2	12/22/21	ND(0.5)	ND(0.5)	120	**1.9** [b]	**8.5** [b]	ND(0.08)
NDD-TW-2	09/09/21	--	--	100	ND(1)	ND(0.05)	ND(5)
NDD-TW-5	09/09/21	--	--	29	**1.4** [b]	**37** [b]	ND(5)
NDD-TW-5 Dup	09/09/21	--	--	31	**1.5** [b]	**37** [b]	ND(5)

[a] NMED Groundwater Cleanup Levels	10	1	600	NA	NA	NA
[b] NMED TPH Levels	NA	NA	NA	0.0167	0.0101	0.0858
[c] USEPA MCL HQ 1.0	10	1	NA	NA	NA	NA

Notes:
-- - Not measured
Dup - Field duplicate
ft - Feet
J - Estimated concentration
mg/L - Milligram per liter
NA - Not available
ND(X) - Not detected at the reporting limit, where (X) denotes the reporting limit concentration
NMED Groundwater Cleanup Level - New Mexico Environment Department Risk Assessment Guidance for Site Investigations, Tap Water, June 2019
NMED TPH Levels - New Mexico Environment Department, Total Petroleum Hydrocarbons Screening Levels, Risk Assessment Guidance for Investigations and Remediation, Table 6-4, March 2017
USEPA MCL HQ 1.0 - United States Environmental Protection Agency, Maximum Containment Limit, Hazardous Quotient 1.0, May 2021
a. Bold text indicates results that exceed the NMED Groundwater Cleanup Levels
b. Bold text indicates results that exceed the NMED TPH Levels
c. Bold text indicates results that exceed the USEPA MCL HQ 1.0
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be

Appendices - Please See Attached CD

A. Field Logs

B. Well Completion Logs

C. Boring Logs

D. Well Development Logs

E. Laboratory Analytical Reports

F. Groundwater Gauging Data and Sampling Forms

G. Data Validation Reports

Appendix A – Field Logs

Daily Field Report

Date:	8/12/2021	**Arrival Time:**	06:00
Project:	Gallup RCR / NDD	**Departure Time:**	18:00
Project #:	697-089-001 / TBD	**Logged by:**	Kara Hoppes
Client:	Marathon	**On Site:**	Emily Conkling, Kara Hoppes
Location:	Gallup, NM	**Visitors:**	Terracon drillers - Jeff & Elliot
Task/Scope:	Finish soil sampling for RCR area & work on drilling/installation of NDD temporary monitoring wells		

Time:	Notes:
06:00	Arrive & Tailgate / JSAs
06:50	Gather supplies for day
07:20	Set up to drill RCR-SB-4 (5') to regather sample + BD
08:00	Heading to NDDA for drilling of temporary wells
17:00	Stopped drilling for the day to allow drillers to get rest
	NDD --> Finished drilling west-most temporary wells
	Drilled to 20' for temporary well just to the east of the 1st
	(anticipated 25-30' more until bedrock on that one)
	As we move east & south for NDD borings, bedrock should get a bit
	more shallow which should speed things up a bit; slow now due to 2'
	sampling device & depth to bedrock
18:00	Completed sample processing
	Tomorrow's Objectives for this Project: Continue drilling/installing temporary monitoring
	wells w/in NDD
	H&S Notes: No Stop Works, incidents, or close calls
	Waste Notes: Each temporary monitoring well drilled had cuttings collected w/in its
	own drum
	RCR Project Status: Soil borings completed w/ exception of northmost (will have vac truck
	remove water on Monday to try and complete this boring & nearby
	surface soil samples)
	Ones not drowned have been collected; Emily has current
	count
	Note: Had planned to begin on MKTF wells today, but with how unpredictable the
	weather has been, decided to take advantage of dry ground @ at-risk locations
	so that the rig will not get stuck in the event of poor weather

Daily Field Report

Date:	8/13/2021	**Arrival Time:**	06:00
Project:	North Drainage Ditch Area & MKTF	**Departure Time:**	17:45
Project #:	697-082-002 & 697-092-001	**Logged by:**	Kara Hoppes
Client:	Marathon	**On Site:**	Kara Hoppes, Hilario Trejo
Location:	Gallup, NM	**Visitors:**	Terracon drillers - Jeff & Elliot
Task/Scope:	Drilling & installing temporary monitoring wells & developing yesterday's temp. MW		

Time:	Notes:
06:20	Tailgate meeting
06:45	Gather drilling supplies
07:10	Begin (resume) drilling NDD-TW-2
09:30	Finished drilling NDD-TW-2; this one likely will not produce much water
10:30	Finished construction of NDD-TW-2 — Convo w/ Caitlin @ 09:04 to determine if wanted to keep drilling or set well since reached bedrock w/o much water; set well so can say to NMED we tried; going deeper would likely not have told us anything about contamination runoff water infiltration
10:30 -12:25	Set up @ next location (RW-2R) & sample processing
	CLOSE CALL ---> there were two v-trenches w/in the vicinity of RW-2; one had a pin flag and the other was farther away & did not; driller noticed v-trench @ farther away location after setting up @ pin flag & doublechecked w/ v-trench crew (nothing was communicated to us about there being 2 v-trenches despite the first one hitting something (pipe?); was told by Hilario to drill the farther away location ARE THERE ANY OTHER LOCATIONS THAT NEEDED 2 V-TRENCHES? <-- Confirmed w/ Hilario that there are not (17:45)
16:00	Finished drilling RW-2R
17:00	Drillers stopped work; will need to finish completion of well tomorrow when we have obtained cement/grout
17:15	Sample processing/closing out permits for day
	Tomorrow's Objectives: keep working on drilling/installing MKTF wells
	H&S Notes: see above notes from 10:30-12:25
	Waste Notes: two soil drums labeled non-haz for NDD-TW-2; three soil drums labeled Haz pending laboratory analysis for RW-2R
	Note: was going to have Hilario develop the NDD temporary well finished on 8/12 but when he gauged it, it was dry (screen had been set to encompass saturated above bedrock intervals but there is so much clay & silt that it is not producing water very well)
	Laboratory News: Shipped all Rail Car Release & North Drainage Ditch samples to date

Daily Field Report

Date:	8/16/2021	**Arrival Time:**	06:00
Project:	MKTF Well Installation & NDD	**Departure Time:**	17:00
Project #:	697-092-001 & 697-082-002	**Logged by:**	Kara Hoppes
Client:	Marathon	**On Site:**	Kara Hoppes, Hilario Trejo
Location:	Gallup, NM	**Visitors:**	Jeff Cothron & Elliot Goddu
Task/Scope:	Well completions, drilling/well installation		

Time:	Notes:
06:00	Tailgate meeting & permitting
06:30	Equipment loading & start of pouring concrete well pads for permanent wells (RW-2R,
	MKTF-17R, MKTF-18R)
10:20	Augers cleaned & setting up to drill MKTF-04R
12:50	Finished drilling/installing (w/ exception of pad) MKTF-04R
13:00	Samples for MKTF wells dropped @ seemity for pickup
13:30	Pad finished for MKTF-04R --> just needs to be labeled once cement dries a bit more; going
	to start on NDD-MW-1 (permanent North Drainage Ditch well)
16:00	Stopped drilling NDD-MW-1 (drillers had to make a FedEx run before it closed) --> made it to
	22' bgs & will resume tomorrow
16:15	Sample processing, permit closeout
	Tomorrow's Objectives: Finish drilling & installing both North Drainage Ditch permanent
	monitoring wells
	H&S Notes: No Stop Works, incidents, or close calls
	Waste Notes: One soil drum labeled Non-Haz from MKTF-04R
	MKTF Well Install. Project Status ---> Complete. Will just need to develop & sample the
	four installed wells now. All of the soil samples
	were sent out today

Daily Field Report

Date:	8/17/2021	**Arrival Time:**	06:00
Project:	North Drainage Ditch Area	**Departure Time:**	17:00
Project #:	697-082-002	**Logged by:**	Kara Hoppes
Client:	Marathon	**On Site:**	Hilario Trejo
Location:	Gallup, NM	**Visitors:**	Jeff Cothron & Elliot Goddu
Task/Scope:	Drilling/installing permanent monitoring wells		

Time:	Notes:	
06:00	Tailgate meeting, permitting, gathering equipment for the day	
06:50	Setup to finish drilling/installing NDD-MW-1	
12:25	Going to clean augers & then set up on NDD-MW-2; Install of NDD-MW-1 completed w/	
	exception of pad (need grout to set first)	
17:00	Finished drilling for the day; made it to 38' on NDD-MW-2 so far	
	Tomorrow's Objectives:	Finish drilling/completing NDD-MW-2
		Finish NDD-MW-1 well pad
		Ship samples
		Drill next temporary monitoring well
	H&S Notes: No Stop Works, incidents, or close calls	
	Waste Notes: 3 Non-hazardous waste drums labeled @ NDD-MW-1	

Daily Field Report

Date:	8/18/2021	**Arrival Time:**	06:05
Project:	North Drainage Ditch Area	**Departure Time:**	15:30
Project #:	697-082-002	**Logged by:**	Kara Hoppes
Client:	Marathon	**On Site:**	
Location:	Gallup, NM	**Visitors:**	Terracon Drillers: Jeff Cothron & Elliot Goddu
Task/Scope:	Drilling/installing monitoring wells		

Time:	Notes:
06:10	Daily tailgate meeting, permitting
06:35	Drillers have to attend weekly safety meeting for Terracon
07:30	Begin drilling NDD-MW-2 again
09:15	Called Caitlin to discuss options for well installation @ NDD-MW-2; looped Heidi into
	discussion @ 9:40 --> it was decided that we should try our best to capture the saturated
	interval ABOVE bedrock; drillers poured concrete pad for NDD-MW-1
10:00	Installing NDD-MW-2
12:50	Set up @ NDD-SB-1 for drilling
13:15	STOP WORK for lightning w/in 6 miles
13:45	Resumed drilling after half hour of no lightning w/in 10 miles
14:00	STOP WORK for thunderstorms; after looking at radar, decision made to stop for the rest of
	the day since thunderstorms likely to continue for the remainder of the permitted day
14:20	Sample processing, permit closeout
	Tomorrow's Objectives: Release outfall by rail cars to see if soil will be dry enough to
	sample on Friday
	Finish drilling NDD-SB-1
	Begin drilling/installing remaining 3 temporary monitoring
	wells
	Pour concrete pad @ NDD-MW-2
	H&S Notes: None other than Stop Works noted above
	Waste Notes: 3 Non-haz labeled drums @ NDD-MW-2
	Other News: All permanent monitoring well soil samples shipped to laboratory today

Daily Field Report

Date:	8/19/2021	**Arrival Time:**	06:00
Project:	North Drainage Ditch & Rail Car Release	**Departure Time:**	18:20
Project #:	697-082-002 & 697-089-001	**Logged by:**	Kara Hoppes
Client:	Marathon	**On Site:**	Terracon: Jeff Cothron & Elliot Goddu
Location:	Gallup, NM	**Visitors:**	
Task/Scope:	Drill/install soil borings & temporary monitoring wells		

Time:	Notes:
06:00	Tailgate meeting & permitting
06:55	Start drilling NDD-SB-1 again
08:10	Completed NDD-SB-1 & starting on drilling NDD-TW-3
11:36	Set up on NDD-TW-4 after drilling NDD-TW-3 (did not complete as a temporary well due to
	lack of water)
14:00	Brian was able to complete the remaining Rail Car surface soil samples
15:30	Setting up on NDD-TW-5 after drilling/installing NDD-TW-4
17:00	Stop drilling for day; sample processing & permit closeout
	Tomorrow's Objectives: Finish drilling/installing final temporary monitoring well
	Finish drilling remaining soil borings
	H&S Notes: No Stop Works, incidents, or close calls
	Waste Notes: 1 Haz-pending drum @ NDD-SB-1
	2 Non-Haz drums @ NDD-TW-4
	Rail Car Release Project Status: Only 1 soil boring remaining (unable to get to with current
	wetness)
	North Drainage Ditch Project Status: Final temporary well in process of being drilled
	5 remaining soil borings to be drilled

Daily Field Report

Date:	8/20/2021	**Arrival Time:**	06:00
Project:	North Drainage Ditch Area	**Departure Time:**	15:30
Project #:	697-082-002	**Logged by:**	Kara Hoppes
Client:	Marathon	**On Site:**	Terracon: Jeff Cothron & Elliot Goddu
Location:	Gallup, NM	**Visitors:**	
Task/Scope:	Drill/install temporary monitoring wells & soil borings		

Time:	Notes:
06:00	Tailgate meeting, permitting, set up on NDD-TW-5
07:10	Resume drilling NDD-TW-5
10:30	Finished drilling/installing NDD-TW-5 & decontaminating augers; Setting up to pour concrete
	pad @ NDD-MW-2
11:15	Set up to drill NDD-SB-2
13:00	Finished drilling/plugging NDD-SB-2
	Decon augers & drillers packing up (flying home for the weekend)
13:50	Well spec. measurements, housekeeping, sample processing, permit closeout
	Monday's Objectives: Finish drilling final 4 borings
	H&S Notes: No Stop Works, incidents, or close calls
	Waste Notes: 2 Non-Haz labeled drums @ NDD-TW-5
	1 Haz. - pending analysis drum @ NDD-SB-2
	Other Notes: Samples from 8/19 & 8/20 (with exception of 8/20 equipment blank
	which was collected at the end of the day) shipped to laboratory

Daily Field Report

Date:	8/23/2021	**Arrival Time:**	06:00
Project:	North Drainage Ditch Area	**Departure Time:**	17:40
Project #:	697-082-002	**Logged by:**	Kara Hoppes
Client:	Marathon	**On Site:**	Terracon: Jeff Cothron & Elliot Goddu
Location:	Gallup, NM	**Visitors:**	
Task/Scope:	Drilling soil borings		

Time:	Notes:
06:00	Tailgate meeting, permitting, equipment gathering
07:58	Set up and ready to begin drilling NDD-SB-3
09:40	Finished drilling NDD-SB-3; start drilling NDD-SB-4
13:15	Finished drilling NDD-SB-4; start drilling NDD-SB-6;
	ANOTHER CLOSE CALL W/ HOLE CLEARANCE
	---> I was told by Brian & Hilario on Friday that NDD-SB-5 had been v-trenched
	despite not seeing a trench (only pink pin flag to mark location). Today I felt
	skeptical again since there would be difficulty getting the rig to the location so I
	had Brian walk out to the flag w/ me. He did not think it had been cleared once he
	saw it so he went and cleared it w/ a hand auger
15:30	Completed drilling NDD-SB-6; drillers are decontaminating augers & then we will set up to
	drill NDD-SB-5
16:15	Began drilling NDD-SB-5
16:30	Brian filming his drilling safety video
17:00	Stop drilling for the day; sample processing; permit closeout
	Tuesday's Objectives: Finish drilling NDD-SB-5 (last of NDD locations)
	Elliot & Kara: Wingate site-specific training
	Finish the majority of the Wingate borings
	Ship samples from North Drainage Ditch to laboratory
	H&S Notes: See "Notes" from 13:15
	Waste Notes: 1 Non-Haz drum each @ NDD-SB-4 & NDD-SB-6

Daily Field Report

Date:	8/24/2021	**Arrival Time:**	06:00
Project:	North Drainage Ditch & Wingate	**Departure Time:**	17:15
Project #:	697-082-002 & 697-072-003	**Logged by:**	Kara Hoppes
Client:	Marathon	**On Site:**	Jeff Cothron, Elliot Goddu, Brian McLoughlin
Location:	Gallup, NM	**Visitors:**	
Task/Scope:	Drill soil borings, sample H_2O & soil		

Time:	Notes:
06:00	Tailgate meeting, permitting, equipment gathering, set up to drill NDD-SB-5
07:25	Resumed drilling SB-5
08:10	Finished drilling NDD-SB-5 (last of NDD locations); equipment breakdown, sample processing
09:50	Arrived @ Wingate (but non-Wingate property; gravel company property) to scout locations/
	get ramps built for access
11:45	Set up to drill BH-51
13:00	Stop Work to find correct piece to remove pipe form hole; Hilario found it @ main refinery
	& delivered it to us
14:30	Finished drilling/sampling BH-51; setting up on BH-46
15:30	Finished drilling/sampling BH-46; setting up on BH-47
16:30	Stop drilling for day (property we were on closes @ 17:00, so needed to pack up & leave;
	sample processing; equipment storage
17:00	Look into elevation difference between two Wingate monitoring wells by train tracks
17:15	Leave Wingate
	Wednesday's Objectives: Finish drilling/sampling Wingate boreholes
	H&S Notes: See 13:00
	Waste Notes: 1 Non-Haz drum @ NDD-SB-5
	Other Notes: All North Drainage Ditch samples shipped to laboratory today

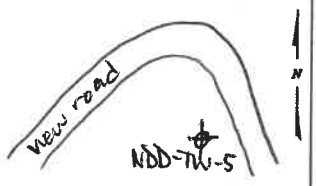
Appendix B – Well Completion Logs

Well Completion Diagram

Well Designation NDD-TW-5
Job Number 697-082-002
Project Gallup Refinery, North Drainage Ditch Area
Loc. or Coords.
Datum Location and Elevation (if applicable)
Start Date 8/20/21
End Date 8/20/21

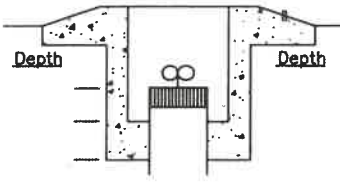
Logged by Kara Hoppes
Drilling Company and Drilling Personnel Terracon: Jeff Cotwon, Elliot Godsw
Drilling Method/Fluid Used HSA
Surveyed By

Location Sketch

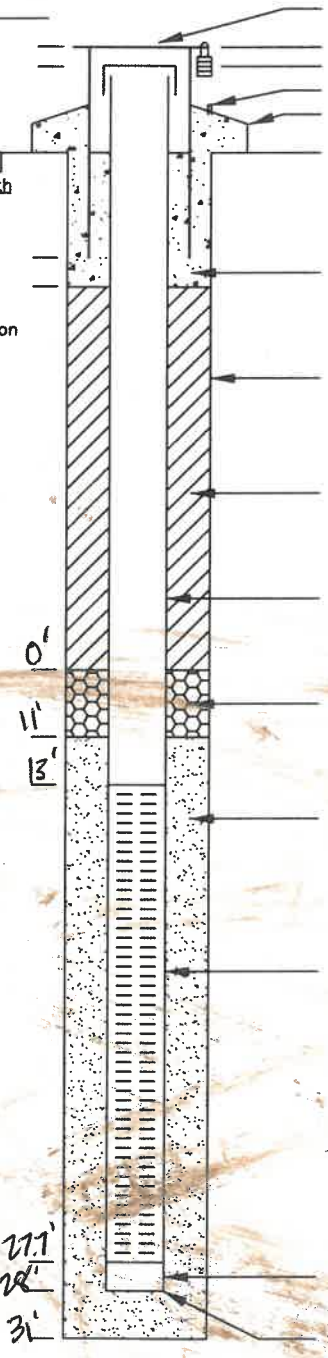


(show north if not up)

Diameter and Type of Flush Mount Box:
Elevation of Top of Casing:
Type and Size of Apron:



(complete flush mount information if applicable)



Diameter and Type of Protective Casing
Elevation of Top of Protective Casing
Elevation of Top of Casing 23" above ground surface
Elevation of Survey Pin (if any)
Type and Size of Apron (if any)
Ground Surface Elevation
Type of Surface Seal
Diameter of Borehole
Type of Grout or Backfill
Diameter and Type of Casing 2" PVC
Type of Seal 3/8" chip bentonite
Type of Sand Pack 10/20 sand
Diameter and Type of Well Screen 2" SCH 40 slotted PVC
Perforation Size and Type 0.010" Slots
Type and Length of Sediment Trap (if any)
Type and Length of End Cap (if any) 4" PVC cap

Include Fluid Levels, Date and Time for:
Depth to Water Encountered During Drilling 23'
Depth to Water in Completed Well
Depth to Water After Development

Materials Used in Well Construction:
50 lb sand bags → ||||
50 lb bentonite bags → ||||

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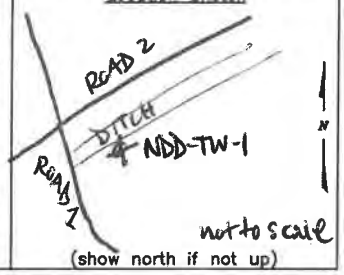
WELLCOMP_FIELDLOG

Well Completion Diagram

Well Designation: NDD-TW-1
Job Number: 697-082-002
Project: Gallup Refinery, North Drainage Ditch Area
Loc. or Coords.:
Datum Location and Elevation (if applicable):
Start Date: 8/12/21
End Date: 8/12/21

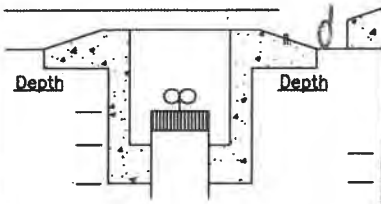
Logged by: Kara Hoppes
Drilling Company and Drilling Personnel: Terracon, Jeff & Elliot, Ethan Gaddy
Drilling Method/Fluid Used: HSA
Surveyed By:

Location Sketch

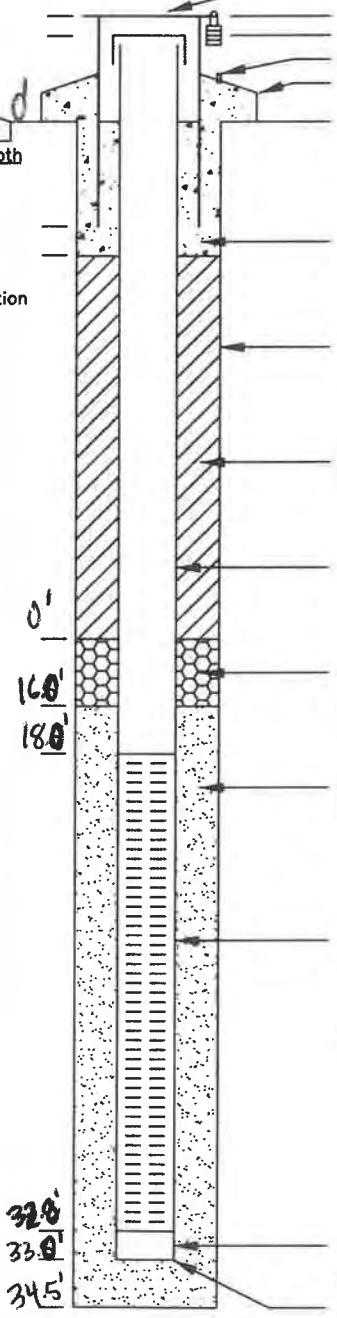


(show north if not up)

Diameter and Type of Flush Mount Box:
Elevation of Top of Casing:
Type and Size of Apron:



(complete flush mount information if applicable)



Diameter and Type of Protective Casing:
Elevation of Top of Protective Casing:
Elevation of Top of Casing: 2' above ground
Elevation of Survey Pin (if any):
Type and Size of Apron (if any):
Ground Surface Elevation:

Type of Surface Seal:

Diameter of Borehole: 8"

Type of Grout or Backfill:

Diameter and Type of Casing: 2" PVC

Type of Seal: bentonite chips; 3/8" chip

Type of Sand Pack: 10/20 sand

Diameter and Type of Well Screen: 2" diam. SCH 40 PVC slotted

Perforation Size and Type: 0.010" Slots

Type and Length of Sediment Trap (if any): 4" PVC cap

Type and Length of End Cap (if any):

Include Fluid Levels, Date and Time for:
Depth to Water Encountered During Drilling: 26.5'
Depth to Water in Completed Well:
Depth to Water After Development:

Materials Used in Well Construction:
Sand bags (50lb) -> [illegible]
bentonite bags (50lb) -> [illegible]
[illegible]

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WELLCOMP_FIELDLOG

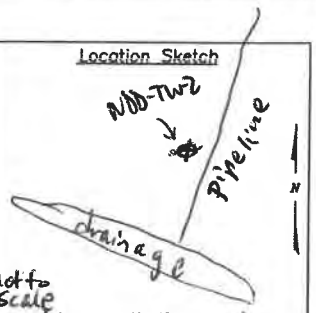
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Well Completion Diagram

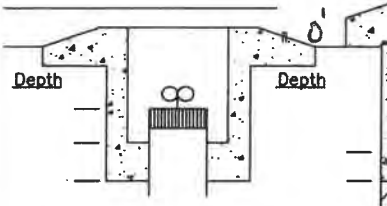
Well Designation NDD-TW-2
Job Number 697-082002
Project Gallup Refinery, North Drainage Ditch Area
Loc. or Coords.
Datum Location and Elevation (if applicable)
Start Date 8/12/21
End Date 8/13/21

Logged by Kara Hoppes
Drilling Company and Drilling Personnel Terracon
Jeff & Elliot Goddu
Cameron
Drilling Method/Fluid Used HSA
Surveyed By

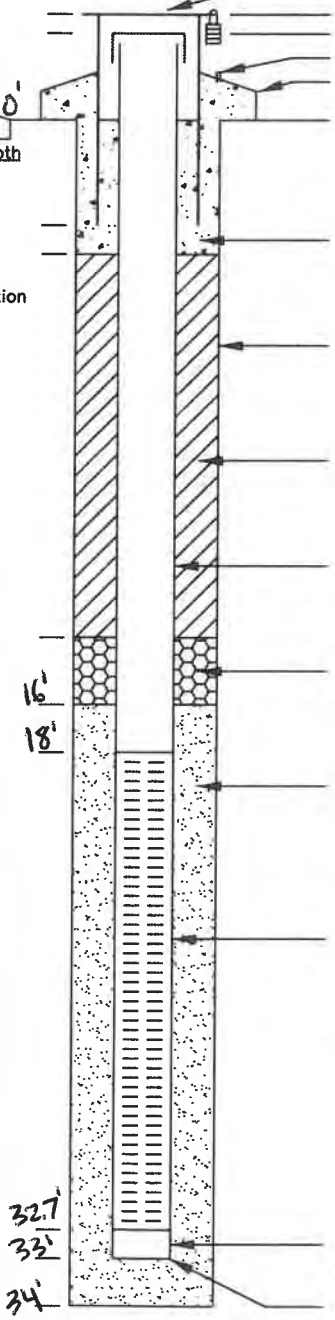
Location Sketch



Diameter and Type of Flush Mount Box:
Elevation of Top of Casing:
Type and Size of Apron:



(complete flush mount information if applicable)



Diameter and Type of Protective Casing
Elevation of Top of Protective Casing
Elevation of Top of Casing 25.5" above ground surface
Elevation of Survey Pin (if any)
Type and Size of Apron (if any)
Ground Surface Elevation
Type of Surface Seal
Diameter of Borehole 8"
Type of Grout or Backfill
Diameter and Type of Casing 2" PVC
Type of Seal 3/8" bentonite chips
Type of Sand Pack 10/20 sand
Diameter and Type of Well Screen Sch-40 slotted PVC - 2" diam.
Perforation Size and Type 0.010" Slots
Type and Length of Sediment Trap (if any)
Type and Length of End Cap (if any) 4" PVC cap

Include Fluid Levels, Date and Time for:
Depth to Water Encountered During Drilling 30.5'
Depth to Water in Completed Well
Depth to Water After Development

Materials Used in Well Construction:
50 lb sand bags → 8
50 lb bentonite bags → 6

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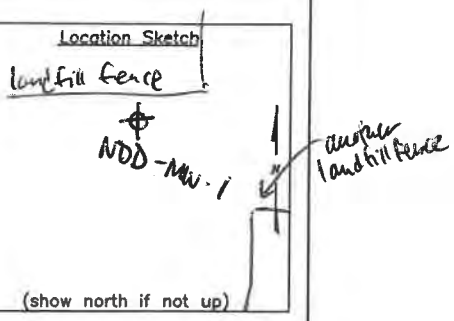
WELLCOMP_FIELDLOG

Well Completion Diagram

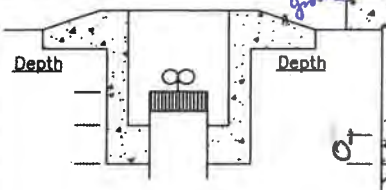
Well Designation NDD-MW-1
Job Number 697-082-002
Project Gallup Refinery, North Drainage Ditch Area
Loc. or Coords.
Datum Location and Elevation (if applicable)
Start Date 8/16/21
End Date

Logged by Kara Hoppes
Drilling Company and Drilling Personnel Terracon
Jeff Cothron
Elliot Gaddy
Drilling Method/Fluid Used HSA
Surveyed By

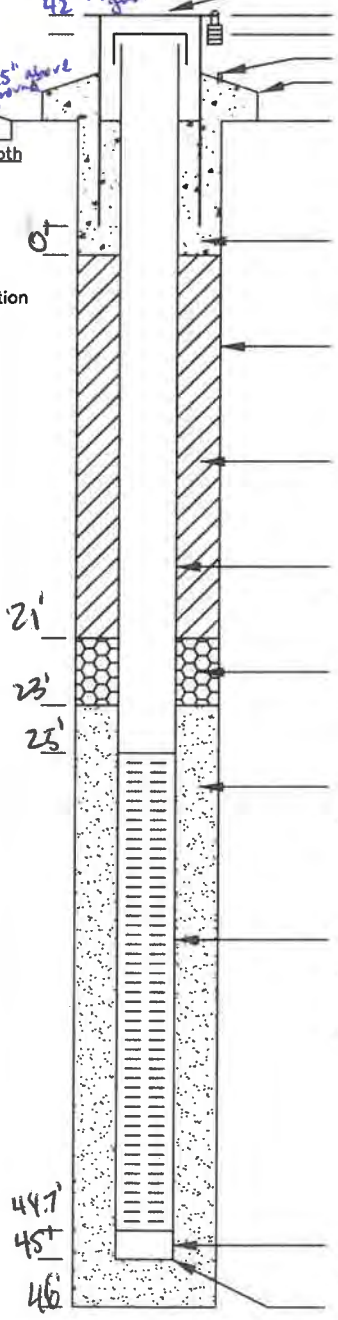
Location Sketch



Diameter and Type of Flush Mount Box:
Elevation of Top of Casing: 42" above ground
Type and Size of Apron: 3.5" above ground



(complete flush mount information if applicable)



Diameter and Type of Protective Casing
Elevation of Top of Protective Casing
Elevation of Top of Casing
Elevation of Survey Pin (if any)
Type and Size of Apron (if any)
Ground Surface Elevation
Type of Surface Seal
Diameter of Borehole 4 1/4" ID
Type of Grout or Backfill Portland cement
Diameter and Type of Casing 2" PVC
Type of Seal 3/8" chip bentonite
Type of Sand Pack 10/20 Sand
Diameter and Type of Well Screen 2" Sch-40 PVC slotted
Perforation Size and Type 0.010" Slots
Type and Length of Sediment Trap (if any)
Type and Length of End Cap (if any) 4" cap

Include Fluid Levels, Date and Time for:
Depth to Water Encountered During Drilling 35'
Depth to Water in Completed Well
Depth to Water After Development

Materials Used in Well Construction:
50 lb sand bags → IIII
50 lb bentonite bags → II
6 of 6 Portland cement bags → I

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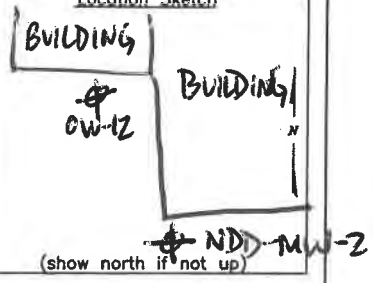
WELLCOMP_FIELDLOG

Well Completion Diagram

Well Designation NDD-MW-2
Job Number 697-082-002
Project Gallup Refinery, North Drainage Ditch Area
Loc. or Coords.
Datum Location and Elevation (if applicable)
Start Date 8/18/21
End Date 8/20/21

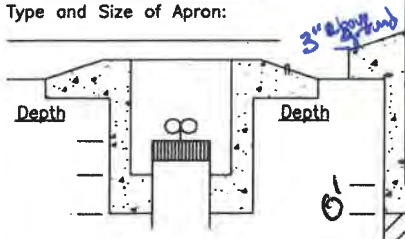
Logged by Kara Hoppes
Drilling Company and Drilling Personnel Terracon: Jeff Cotturon, Elliot Goddu
Drilling Method/Fluid Used HSA / water
Surveyed By

Location Sketch



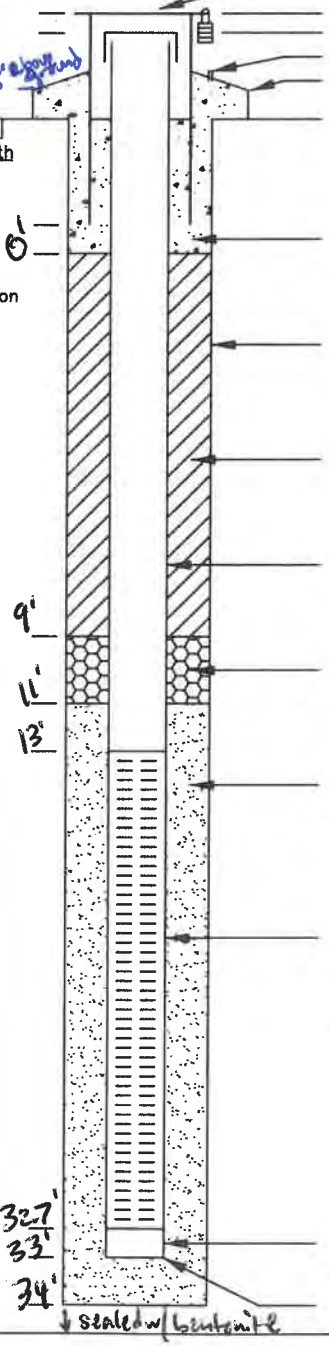
(show north if not up)

Diameter and Type of Flush Mount Box:
Elevation of Top of Casing:
Type and Size of Apron:



(complete flush mount information if applicable)

Diameter and Type of Protective Casing
Elevation of Top of Protective Casing
Elevation of Top of Casing
Elevation of Survey Pin (if any)
Type and Size of Apron (if any) 2' x 2'
Ground Surface Elevation



Type of Surface Seal
Diameter of Borehole 4 1/4" ID
Type of Grout or Backfill Portland cement
Diameter and Type of Casing 2" PVC
Type of Seal 3/8" chip bentonite
Type of Sand Pack 10/20 sand
Diameter and Type of Well Screen 2" SCH40 PVC slotted
Perforation Size and Type 0.010" Slots
Type and Length of Sediment Trap (if any)
Type and Length of End Cap (if any) 4" PVC cap

Include Fluid Levels, Date and Time for:
Depth to Water Encountered During Drilling 28.2'
Depth to Water in Completed Well
Depth to Water After Development

Materials Used in Well Construction:
50 lb sand bags → III
50 lb bentonite bags → II
94 lb bag Portland cement → I
60 lb bag Quikcrete concrete → III

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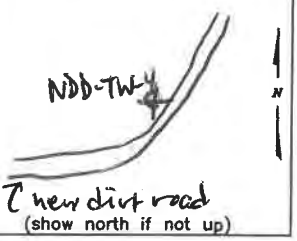
WELLCOMP_FIELDLOG

Well Completion Diagram

Well Designation NDD-TW-4
Job Number 697-082-002
Project Gallup Refinery, North Drainage Ditch Area
Loc. or Coords.
Datum Location and Elevation (if applicable)
Start Date 8/19/21
End Date 8/19/21

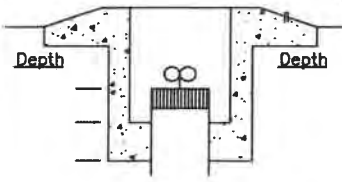
Logged by Kara Hoppes
Drilling Company and Drilling Personnel Terracon
Jeff Cothron
Elliot Goddu
Drilling Method/Fluid Used HSA
Surveyed By

Location Sketch

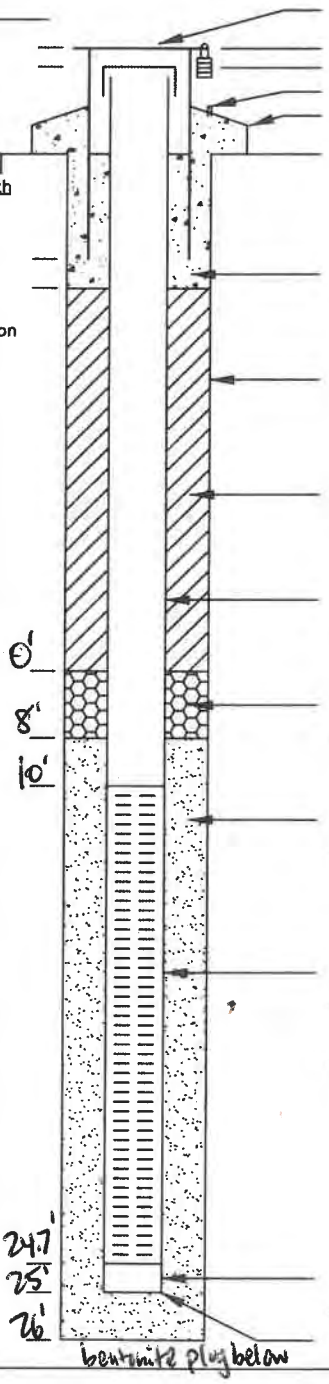


(show north if not up)

Diameter and Type of Flush Mount Box:
Elevation of Top of Casing:
Type and Size of Apron:



(complete flush mount information if applicable)



Diameter and Type of Protective Casing
Elevation of Top of Protective Casing
Elevation of Top of Casing 5.5" above ground surface
Elevation of Survey Pin (if any)
Type and Size of Apron (if any)
Ground Surface Elevation
Type of Surface Seal
Diameter of Borehole 4 1/4" ID
Type of Grout or Backfill
Diameter and Type of Casing 2" PVC
Type of Seal 3/8" chip bentonite
Type of Sand Pack 10/20 sand
Diameter and Type of Well Screen 2" SCH40 slotted PVC
Perforation Size and Type 0.010" Slots
Type and Length of Sediment Trap (if any)
Type and Length of End Cap (if any) 4" PVC

Include Fluid Levels, Date and Time for:
Depth to Water Encountered During Drilling 15'
Depth to Water in Completed Well
Depth to Water After Development

Materials Used in Well Construction:
50 lb sand bags → 1/4" III
50 lb bentonite bags → 11'

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WELLCOMP_FIELDLOG

Appendix C – Boring Logs

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Lithology Log

Sheet 1 of 3

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-TW-1

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		34.5 feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55	HSA	8"	8/12/21 08:55	8/12/21 12:10

Type of Sampling Device	Water Level (bgs)	Final
Split Spoon California Modified	26.5 feet-bgs	34.5'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite) - PGM7300	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Cloudy, good temp. ~60°

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0				0-2'	0-0.5'	0.0
			1	0 - 0.5' tan-brown clayey-silt, dry; roots; cohesive, somewhat plastic, moderate stiffness to soft		
			2	0.5 - 2' brown silty-clay; dense, cohesive, moderate plasticity; very stiff @ 2' otherwise stiff; occasional roots		
1			6		1.5-2'	0.0
			14			
2				2-4' brown, hard, cohesive, non-plastic silty-clay; dry; occ. roots & calcareous F-grained material		
			17			
			26			
3						
			28			
			30			
4				4-6'	4'	0.0
			4	4-4.5' brown, hard, cohesive, dry, mildly plastic clay w/ occ. roots		
			19	4.5-6' brown, very hard/stiff, cohesive, dry, non-plastic silty-clay; occassional roots, organic fragments, & calcareous F-C grained calcareous fragments.		
5			33			
			42			
6				6-7'	6'	0.0
			42	6-6.8' Same as above		
			56	6.8-7' brown, hard, cohesive, non-plastic silty (10%) - sandy (10%) - clay (80%); sand VF-F & very well-sorted		
7			7	7-9' SAA but moist & contains regular calcareous fragments up to C-grained & black organic fragments & roots		
			19			
8					8'	0.0
			28			
			50			
9				9-11'		
			8	9-9.5' damp, same as above		
			24	9.5-10.5' dry brown silty-clay; hard, cohesive, non-plastic w/ roots & light grey lenses/laminations of light brown silt ~50/50; occ. Calcareous material similar to above	10'	0.0

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Lithology Log (continued)

Sheet 2 of 3

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
			24	10.5-11' brown sandy-silty clay; cohesive, moderate stiffness, damp; sand content increasing w/ depth from 10% to 20%, VF-C, poorly-sorted, predominately subround (includes calcareous grains & other mixed minerals); brittle		
			23			
11				11-13'		
			19	11-12.5' med-brown, damp, cohesive, non-plastic, stiff silty-clay w/ rare F-grained sand; roots & calcareous material similar to above still present		
			25			
12					12'	0.0
			35	12.5-13' brown sandy (25%) - clay (75%); dense, cohesive but brittle when squeezed; sand VF-C, poorly-sorted, mixed minerology but ~50% calcareous grains; occasional VC grains to 1 cm diameter. gravel & organic frags		
			32			
13				13-15'		
			14	13-14' brown sandy (10-20%)-clay (80-90%) dense, non-plastic, damp; sand VF-C, poorly-sorted, round subang; thin light green-grey ash layer @ 13.5, sand grains include calcareous; organic fragments & silicate minerals		
			25			
14				14-15' Same as above but harder & sand content down to ~5%, roots occasional	14'	0.0
			41			
			47			
15				15-17'		
			15	15-16.5' Same as above but slightly more moisture		
			23			
16				16.5-16.8' sandy (20-40%) - clay (60-80%), brown-light brown, damp, cohesive but brittle; sand VF-VC, poorly-sorted, mixed minimum, round subang	16'	0.0
			23			
				16.8-17' brown-light brown silty-clay w/ calcareous lenses/laminations, rare black organic fragments; fissile		
			11			
17				17-19'		
			7	17-17.5' tan clayey-silty (25%) - sand (75%); cohesive until pressure applied; soft, dry, sand VF-F; well-sorted		
			5	17-5-19' dry, tan silty-sand; soft, loose, VF-F; occasional black organic fragments		
18					18'	0.0
			5			
			5			
19				19-21'		
			7	19-19.5' Same as 17-17.5'		
				19.5-20.5' silty-sand, tan; grades from VF-F & well-sorted @ top to VF-C & poorly-sorted @ base; round-subround quartz dominant ~90%, else lithics; damp starting @ 20.2'; soft, loose		
			7			
20					20'	0.0
			5	20.5-21' brown, damp clayey (10%) - sand (90%); sand VF-C, poorly-sorted, same sand composition as above, slightly cohesive; soft		
			6			
21				21-23'		
			4	21-21.5' tan silty-sand VF-M, poorly-sorted, same composition as above, damp, soft, loose		
			6	21.5-22.5' brown material grading from sandy (10%) - gravelly (5%) - clay (85%) @ top, cohesive, damp, mildly plastic, sand (round gravel up to 4mm diameter) to clayey (5%) - gravelly (5%) - sand (90%) @ base (loose; gravel up to 2 cm otherwise similar comp. --> 80% quartz, 20% lithics round subangular		
22					22'	0.0
			5			
			4			

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Lithology Log (continued)

Sheet 3 of 3

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
23			1	22.5-23' brown, moist, sandy (10%) - clay (90%); plastic, soft, cohesive; sand VF & well-sorted; occasional black organic fragments		
				23-25'		
			4	23-24.5' brown, very moist sandy-clay same as above		
24			5	24.5-25' brown, very moist, soft, mostly cohesive sandy (20%) - clay (80%); sand VF-M, moderately-sorted, angular-round, quartz dominant	24'	0.0
			8			
25				25-27'		
			4	25-25.5' brown, very moist material same as above		
			4	25.5-26' brown, moist clayey (15%) - sand (80%) gravel occasionnally ~5%; gravel up to 5 cm diam., round; sand VF-VC, poorly sorted, round-subangular, mixed lithologic composition; somewhat cohesive to loose; soft		
26			7	26-26.5' soft, moist, cohesive, highly plastic sandy (5%) - clay (95%); sand VF & well-sorted; brown	26'	0.0
			14	26.5-27' Saturation @ 26.5'; clayey (30%) - gravely (10%) - sand (60%); mineral composition angularity & sorting same as 25.5-26'; somewhat cohesive to loose	26.5-27'	0.0 (Sample)
27				27-29'		
			6	27-27.5' brown clayey (40%)-sand (60%); wet, soft, mildly cohesive; sand VF-F, well sorted		
			12	27.5-29' brown, stiff, highly plastic, moist-damp sandy (10%)-clay (90%); sand F-VC, round-subangular, poorly-sorted; organic material (rare) & rare gravel up to 2 cm diameter beginning @ 28'		
28			19		28'	0.0
			21			
29				29-31'		
			10	29-30.5' Same as above but only damp now		
			18			
30			33	30.5-31' dampish (not as much as above) fissile, weathered silty-clay w/ occasional light green clay lenses; breaking similar to weathered shale but not quite bedrock	30'	0.0
			50			
31			15	31-32.5' Same as above but slightly less weathered, breaks apart easily		
			40			
32			50		32'	0.0
			10	32.5-34.5' Same as above but even less weathered (only slightly now); fully consolidated ashy brown silty-clay shale lamination @ 33.5' gives confidence to bedrock; extremely fissile		
33			23			
			36			
34			45		34'	0.0
					34.5'	0.0
35						
36						

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Lithology Log

Sheet 1 of 3

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-TW-2

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff		34 feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (on tracks)	HSA	8"	8/12/21 15:25	8/13/21 09:30

Type of Sampling Device	Water Level (bgs)	Final
Split Spoon California Modified	30.5 feet-bgs	34'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite) - PGM7300	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Hot, sunny, slight breeze

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0				0-2' 1' recovery	0-0.5'	0.0
			2	0-1' loamy-silt; brown, dry, somewhat cohesive; roots; soft		
			2			
1				1-2' brown silty-clay; cohesive, non-plastic, dry; moderately soft		
			2			
			2			
2				2-4'	1.5-2'	0.0
			3	2-3' Same as above		
			4			
3				3-4' brown silty (10%) - sandy (10%) - clay (80%); somewhat stiff, damp, cohesive, moderately plastic; lots of roots (some w/ FeO around them); sand VF-F grained; well-sorted		
			5			
			6			
4				4-6' Hydrocarbon odor starting @ 4.5' & continuing throughout	4'	0.0
			3	4-4.5' Same as above		
				4.5-5' Same as above but damp, moist & soft, very plastic		
			3			
5				5-6' brown sandy (30%) - silty (10%) - clay (60%); soft, moist, cohesive & very plastic; sand VF-F, well-sorted		
			3			
			3			
6				6-8' slight hydrocarbon odor throughout; same as above but sand content down to 20%, clay up to 70%; sand VF-M, moderate-sorting, moist	6'	36.3
			3			
			4			
7						
			6			
			8			
8				8-10' no odor	8'	14.0
			2	8-8.5' Same as above but slightly more dense & damp, not moist		
				8.5-10' Same as above but light greyish-brown, sticky and only mildly plastic		
			5			
9						
			5			
			12		10'	3.4

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Lithology Log (continued)

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
			5	10-12' 10-10.5' Same as above 10.5'-12' Same as above but with multicolor clay mottling of orange, brown & light greenish-grey; rare gravel up to 1 cm & sand now up to VC; dry		
11			11			
			14			
			20			
12			15	12-14' Grey-brown moderately dense, dry; cohesive until pressure applied, sandy (10%) - clayey (30%) - silt (60%); non-plastic; rare gravel up to 0.5 cm; sand largely VF-F & moderately sorted; light-green clay mottling & lenses	12'	1.8
			21			
13			23			
			25			
14			5	14-16' grey-brown silty-clay & clayey silt; stiff, non-plastic, dry; light green & orange clay lenses	14'	0.0
			15			
15			25			
			43			
16			20	16-18' brown clayey-silt; dry, moderately cohesive (until pressure applied); occasional light green clay streaks; non-plastic; mildly stiff	16'	0.0
			26			
17			23			
			28			
18			5	18-20' Same as above but moderately stiff	18'	0.0
			22			
19			30			
			38			
20				STOP @ 16:56 so drillers can rest for the night	20'	0.0
			13	8/13 7:35 resuming drilling 20-22' reddish-brown, dry, cohesive, somewhat stiff, non-plastic clayey-silt & silty-clay (interbedded); occasional whitish-grey to whitish-grey ashy-clay lenses		
21			20			
			28			
			32			
22			24	22-24' 1.5' recovery; same as above	22'	
			36			

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Lithology Log (continued)

Sheet 3 of 3

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
23			37			
			40			
24				24-26' Same as above	24'	0.0
			10			
			19			
25						
			24			
			37			
26				26-27' Same as above but whitish-green lenses/streaking are clearly ash in this section & material becomes extremely dense/stiff ~26.5'	26'	0.0
			36			
			70			
27				27-29' Same as above but not as stiff as above section & contains 5-10% VF well-sorted sand		
			10			
			23			
28					28'	0.0
			33			
			42			
29				29-30.5'		
			25	29-29.5' brown sandy (10%) - clayey (40%) - silt (50%); cohesive until pressure applied; dry; moderately soft; regular (white) ash streaking; sand VF & well-sorted		
			30	29.5-30.5' beginning to look like extremely weathered shale; brown silty-clay with white to whitish-blue ash streaks/lenses; quite consolidated, stiff, non-plastic; damp		
30					30'	0.0
			50	30.5-32'		
			31	30.5-30.7' Saturated very weathered soft, brown clayey-silt shale		
				30.7-31' Same as above but only damp, more cohesive, occasional ash lenses up to 0.5 cm long		
31			40	31-32' mildly weathered brown silty-clay shale w/ whitish to whitish-greenish blue ash streaks; dry, highly fissile		
			73			
32				32-34'	32'	0.0
			11	32-33' Same as above; 1" thick white ash layer @ 33'		
			32			
33				33-34' brown, clay-dominant shale; highly fissile, breaking easily into sheets; occasional light grey-white ash streaks; confirms location of bedrock (unweathered)		
			52			
			50			
34					34'	0.0
35						
36						

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Lithology Log Sheet 1 of 4

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-MW-1

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		46 feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (tracks)	HSA	4.25"	8/16/21 14:00	8/17/21 10:15

Type of Sampling Device	Water Level (bgs) (for continuous saturation)	Final
Split Spoon (California Modified) & regular Split Spoon	35 feet-bgs	46'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite - PGM7300)	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Sunny, hot, breezy

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0				0-2'	0-0.5'	0.0
			5	0-1' brown, dry, gravelly (10%) - sandy (30%) - silt (60%), loose, soft; roots; sand VF, well-sorted		
			6			
1				1-1.5' light brown, loose, dry gravelly (20%) - silty (30%) - sand (50%), asphaltic & concrete debris		
			5			
				1.5-2' brown, loamy sandy (30%) - gravelly (20%) - clayey (10%) - silt (40%); sand VF-F, well-sorted, gravel ang-round up to 4 cm diameter & includes concrete debris; loose other than somewhat cohesive clayey silt chunks; no odor; dry	1.5-2'	0.0
			4			
2						
			5			
				2-4'		
			6	2-2.5' Same as 0-1' but gravel up to 20%		
				2.5-3' Same as 1.5-2'		
3				3-4' Whitish-grey concrete		
			14			
			12			
4				4-6' 6" recovery; concrete blocked shoe; mostly concrete recovered; not enough recovery of soil to justify PID screening (will measure top of next section for 6' meas.)	4'	0.0
			10			
			6			
5						
			5			
			4			
				6-8'		
6				6-6.5' Same as 1-1.5'	6'	0.0
			4	6.5-7' tan-brown @ top to grey-brown @ bottom; gravelly (10%) - sandy (10%) - clay (80%); cohesive, soft, mildly plastic; black asphaltic looking material; sand F, well-sorted, 95% quartz		
			6			
7				7-7.5' blackish-brown material SAA but stuck together w/ asphaltic material; slight hydrocarbon odor		
			5			
			7	7.5-8' black tarry clay; strong hydrocarbon odor; tar saturated; chunks of concrete throughout; extremely cohesive (has to be pulled apart like taffy); moderate stiffness	8'	0.0 (photo)
8						
			2	8-10'		
				8-8.5' Same as above		
			5	8.5-9.5' brownish-black tar-saturated gravelly (10%) - sand (90%); sand VF-F, well-sorted; same cohesive nature as above; moderately soft; strong hyrocarbon odor		
9						
			5			
				9.5-10' brown silty-clay; cohesive, moderate plasticity, hydrocarbon odor, occasional sand (up to F) & 2 mm calcareous lenses; damp		
			8		10'	0.0

0-0.5' 14:41
1.5-2.0' 14:55 + NDD-BD2
>2.0 HC high, 27.5-28' 10:20
H_2O @ 35-35.5' 08:30
Total Depth 45.5-46' 10:30
7.5-8' being collected based on visual/olfactory components 8/17 9:25

Trihydro CORPORATION

Lithology Log (continued)

Sheet 2 of 4

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
			4	10-12' No odor; reddish-brown interbedded sand & sandy-clayey-silt sand intervals up to 4" thick & VF-F, well-sorted, 90-95% quartz; sandy (10%) - clayey - silt; moderate to high plasticity, cohesive, soft; damp @ bottom 6"		
			5			
11			6			
			5			
12			3	12-14' reddish-brown, cohesive, no odor, highly plastic, soft, interbedded silty-clay & sandy (30%) -silty - clay; sand VF & well-sorted; bottom 6" contains blackish-brownish vegetation matter; damp	12'	0.0
			5			
13			6			
			9			
14			4	14-16' 1' recovery 14-15' reddish-brown silty-sandy (10% VF-F well-sorted)-clay; stiff, cohesive, damp, mild plasticity	14'	0.0
			7	15-16' sandy-clayey-silt; sand VF-F, well-sorted; soft, moist, cohesive, moderate plasticity		
15			12			
			12			
16			12	16-18' 16-17' Stiff, brown, highly plastic & cohesive clay, lots of black org. matter & small roots; no odor; moist to damp; occasional calcareous modules	16'	0.0
			17	17-18' brown, interbedded sand & silty-clay; no odor, dry; clay is cohesive & stiff w/ high plasticity; sand is loose, VF-F, well-sorted, 95% quartz, 5% calcareous frags & lithics		
17			20			
			15			
18			3	18-20' 18-18.5' Same as above	18'	0.0
			7	18.5-19.5' tannish-greyish-brown silty-sand grading from VF @ top to VF-VC w/ ~5% gravel at base; damp, loose; grains round-subangular; gravel up to 1 cm diameter		
19			7	19.5-20' reddish-brown, moist, cohesive, highly plastic sandy-silty-clay; sand VF, well-sorted; soft		
			5			
20			3	20-22' Same as above interbedded w/ silty-clay; bottom 6" are stiff and only mildly plastic	20'	0.0
			5			
21			10			
			10	8/16/21 16:00 stop for day		
22				8/17/21 07:00 resume	22'	0.0
			11	22-24' SAA but entire section is soft & damp & highly plastic		
			12			

Trihydro CORPORATION

Lithology Log (continued)

Sheet 3 of 4

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
23			11			
			12			
24			11	24-26' brown, damp, interbedded silty-clay (highly plastic, cohesive, soft) & silty-clayey sand (loose to mildly cohesive, VF-F, well-sorted); ~80% of the section is the silty-clay; sandy intervals up to 2" thick	24'	7.6
			12			
25			11			
			12			
26			6	26-28' Slight hydrocarbon odor (gasoline) @ top of section getting stronger with depth; greyish-reddish brown sandy-silty-clay; soft, moderately plastic, cohesive; very damp; sand VF-F well-sorted	26'	44.3
			7			
27			9			
			9			
28			3	28-30' Same as 24-26' but moist beginning @ 29' & a 1" thick saturated sand seam at 29.8' (moist below), slight hydrocarbon odor throughout which gets stronger in saturated seam	28'	830.9
			6			
29			6			
			6			
30			5	30-32' Interbedded silty-clay (moderately stiff, plastic, damp to dry, rare calcareous fragments including a tiny snail shell) & sandy-clayey-silt (soft, damp, moderate plasticity, cohesive, sand VF-M, moderately sorted; rare black organic fragments); brown other than bottom 2" which are rusty-brown	30'	470.7
			8			
31			10			
			11			
32			12	32-34' 32-32.5 Same as 30-31.8' 32.5-34' Rusty-red silty-clay; moderately stiff to stiff, dry, rare calcareous modules & black organic fragments, highly plastic & cohesive; occasional root remnants	32'	0.1
			15			
33			15			
			21			
34			13	34-36' Saturated @ 35'; reddish-brown interbedded gravelly (20%) - sandy - (10%) - clay (70%) (cohesive, soft; sand M-VC, poorly sorted; gravel up to 2" diam & mostly sandstone/chert chunks) & clayey (10%) - sandy (30%) - gravel (60%) (sand VF-VC, poorly sorted; loose; gravel up to core diameter, round-angular) ~70% of section is the gravel material	34'	0.7
			17			
35			18		35-35.5'	1.5
			20			
36						

Trihydro CORPORATION

Lithology Log (continued)

Sheet 4 of 4

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
36			14	36-38' 36-37' Same as above; still saturated 37-37.5' light brown, dry, silty-clay with occasional greenish-white clay lenses up to 2" diam.; cohesive; non-plastic; somewhat stiff		
			11			
37			17	37.5-37.8' Interbedded same as above & sandy (50%) - silt; sand VF & well-sorted; loose to mildly cohesive, soft, dry; light brown 37.8-38' rusty-brown clay with rare light green clay lenses up to 0.5 cm diameter, dry, cohesive but fissile, starting to resemble weathered shale	37'	6.0
			20			
38			14	38-40' dry, brown, VF sand, somewhat consolidated, likely to be weathered sandstone but can still break apart with fingers; rare whitish-tan clay lenses up to 3 mm diameter; well-sorted; breaks apart nearly in wafers		
			24			
39			50		39'	2.8
			50			
40			22	40-42' 40-40.5' reddish-brown VF-grained, well-sorted sandstone; damp 40.5-41.5' reddish-brown sandy (VF) - siltstone		
			40	41.5-41.8' unconsolidated clayey (10%) - silty (10%) - gravel; saturated; gravel up to 1" diameter & subround-angular		
41			47	41.8-42' red silty shale with occasional calcareous concretions; soft, damp	41'	0.8
			40			
42			35	42-43' 42-42.5' Same as above 42.5-43' dry light grey-tan VF-grained, highly consolidated sandstone; well-sorted; top foot of sampler filled with water --> good sign for well production		
			50			
43			43	43-44' Same as above but grain size up to VF-F; still well-sorted	43'	1.9
			50			
44			22	44-46' 44-45.5' Same as above but grain size back down to VF 45.5-46' brown silty-clay shale w/occ. white calcareous modules up to 4 cm diameter; consolidated, damp		
			36			
45			53		45'	0.4
			60			
46					46'	0.6
47						
48						
49						

Lithology Log Sheet 1 of 4

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-MW-2

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		48 feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (tracks)	HSA	4.25" ID 8" OD	8/17/21 13:40	8/18/21 09:15

Type of Sampling Device	Water Level (bgs)	Final
California Modified Split Spoon & Regular Split Spoon	28.2 feet-bgs	48'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite - PGM7300)	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Hot, bright

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0				0-1' 1' recovery	0-0.5'	0.1
			5	0-0.5' loose, dry gravelly (10%) - clayey (10%) - sand (80%) & concrete chunks; sand VF or VC (no in between), poorly-sorted; brown		
			3			
1				0.5-1' firm, brown red-brown clay interbedded evenly with loose material same as above; damp; clay intervals are cohesive & non-plastic		
			3			
					1.5-2'	0.2
			2			
2				1-2' 1' recovery		
			2	1-1.5 reddish-brown, damp, gravelly (15%) - silty (10%) - sand (75%); sand VF-F w/ regular VC grains; poorly-sorted; damp, loose		
			3			
3				1.5-2' brown, firm, silty (10%) - sandy (10%) - clay (80%); cohesive, non-plastic, dry; occasional black organic vegetative fragments & white clay lenses up to 3 mm		
			3			
			5			
4				2-4' brown, mildly plastic, moderately stiff clay with regular calcareous modules, roots, black org. frags & white clay lenses/streaking	4'	0.0
			2			
			4			
5						
			6			
			8			
6				4-6' 1.5' recovery	6'	0.0
			5	4-5.5' Same as above		
				5.5-6' brown, gravelly (20%) - sandy (20%) - clay (60%); dry, stiff, cohesive, non-plastic; drilled through rock the same diam. or greater than split spoon; sand F-VC, poorly-sorted; gravel & sand ang-round		
			14			
7						
			19			
			13			
8				6-8'	8'	0.0
			3	6-7' Same as above; 7-8' brown, stiff, silty-clay with calcareous modules; non-plastic; dry		
			4			
9				8-10'		
			6	8-9' Same as above		
				9-10' Same as above with ~10% gravel & 10% sand (VF-VC, poorly-sorted); gravel up to size of modified split spoon core; rare black vegetative matter		
			14		10'	0.1

Lithology Log (continued) Sheet 2 of 4

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
			10	10-12' 10-10.5' Same as above 10.5-11.8' loose, clayey (10%) - gravelly (20% - up to 2" diameter) - sand (70%); sand VF-VC, poorly-sorted; sand & gravel round-angular; 10.5-11' damp; 11-11.5' moist		
			10			
11			10	11.8-12' same as 10-10.5', damp		
			6			
12			3	12-14' brown, damp, cohesive, soft clayey-silt	12'	0.1
			5			
13			7			
			5			
14			2	14-16'	14'	0.1
				14-14.5' brown sandy (10%) - gravelly (10%) - clay (80%); cohesive, soft; non-plastic; sand VF-F, well-sorted, gravel up to 1" diameter, round-ang		
			8			
15			8	14.5-16' damp to moist tannish-brown; material grades from gravelly (10%)-clayey (10%) - sand (80%) (sand VF-VC, poorly-sorted, round-subang.) @ top to F-M, well-sorted sand @ base; loose		
			12			
16			13	16-18'	16'	0.1
				16-17.5' brown gravelly (10-20%) - clayey (10%) - sand (70-80%), damp; angular-round, VF-VC, poorly-sorted; loose; gravel up to 3" diameter		
			16	17.5-18' brown gravelly (30% - up to size of a core diameter) - clay; cohesive, moderately plastic, medium stiffness; dry; gravel includes petrified wood frags		
17			15			
			15			
18			6	18-20' Same as above but gravel content up to 40%	18'	0.0
				18-19' Same as above 19-19.5' same as 16-17.5' but dry & gravel content up to 30%		
			16	19.5-20' same as 18-19'		
19			18			
			14			
20			6	20-22'	20'	0.0
				20-20.5' Same as above 20.5-21' loose, damp, gravelly (30%) - sand; brown; sand VF-VC, poorly-sorted; gravel up to 2 cm diameter		
			15			
21			13	21-21.5' brown clayey (20%) - gravel (80%); gravel damp round-subang., up to 1" diameter 21.5-22' brown sandy (30%) - clayey (20%) - silt (50%); sand VF & well-sorted; soft, damp, mildly cohesive		
			7			
22			7	22-24' 1.5' recovery, brown interbedded sandy (20%, VF, well-sorted)-silty-clay & silty-clay; soft, cohesive, mildly plastic, dry to damp	22'	0.1
			12			

Trihydro CORPORATION

Lithology Log (continued) Sheet 3 of 4

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
23			12			
			14			
24				24-26'	24'	0.6
			6	24-25' strong gasoline odor; gravelly (30%) - sand (70%); gravel up to 3" diameter; sand VF-VC, poorly-sorted; loose, damp		
			13	25-25.5' tan, damp gravelly (5%) - sand; sand mostly F-M, round-subround, moderate sorting; gravel up to 2 cm diameter; strong gasoline odor		
25			22	25.5-26' dry, brown, gravelly (10%) - sandy (20%) - silty (30%) - clay (40%); cohesive, non-plastic, moderately soft, no odor	25'	668
			23			
26				26-28'	26'	14.9
			14	26-26.5' Same as above but slight hydrocarbon odor		
			13	26.5-27' brown, very moist sand, gravel, silt & clay (~equal parts of each); strong gasoline odor; gravel up to size of core diameter; sand poorly-sorted in terms of size, angular & mineralogy		
27			8	27-28' brown sandy-silty (20%) - clay; dry, slight hydrocarbon odor; occasional gravel, cohesive, moderate plasticity, stiff		
			18			
28				28-30' Saturated @ 28.2'	28'	103.2
			30	28-28.5' brown gravelly (40%) - clayey (10%) - sand (50%); gravel > size of core diameter; sand VF-VC; poorly-sorted; mildly cohesive; no odor	28.2-28.7'	4.2
			21	28.5-29' moist to damp, gravelly (20%) - sandy (20%) - clay (60%); brown, cohesive non-plastic		
29			32	29-30' brown, weathered silty shale; breaks apart easily with fingers; somewhat fissile; cohesive, damp		
			45			
30				30-32'	30'	0.2
			20	30-31' Same as above		
			42	31-32' reddish-brown weathered siltstone w/ greenish-white clay lenses up to 2 mm diameter, dry		
31			52			
			50			
32				32-34' Same as above but with white calcareous streaking	32'	0.1
			10			
			9			
33			13			
			50			
34				34-35' Same as above but hard & with greenish-white clay lenses & streaking; up to diameter of core	34'	0.3
			17			
			37			
35			42			
			50			
36					36'	0.1

Lithology Log (continued) Sheet 4 of 4

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
36			23	36-37' Same as above but more fissile; can break apart easily with hands		
			50			
37			40		37'	0.1
			50	END OF DAY		
				37-38' 8/18/21 RESUME @ 07:30		
38			24	37-37.7' reddish-brown, extremely fissile silty shale with whitish-green clay lenses; cohesive		
			55	37.7-38' reddish-brown, damp; extremely weathered silty-claystone; cohesive but only moderately consolidated; greenish-white only streaking occasional		
39			10	38-39' silty-clay shale otherwise similar to 37-37.7'; dry	39'	0.1
			28	39-40.5' Same as above but damp		
40			65	40.5-42' Same as above but 41-41.5'; smells of gasoline		
			16			
41			37		41'	727
			60			
42			39	42-43' gasoline odor; same as above		
			66			
43			22	43-44.5' Same as above	43'	1434
			44			
44			67			
			24	44.5-46' Same as above but with lead-grey metallic faces on some of the shales broken pieces; hydrocarbon odor increasing with depth; lense of black asphaltic-looking material ~45.8'		
45			52		45'	1136
			60			
46			17	46-48' Same as above including metallic streaking, but dry & crumbles more easily than above section		
			28			
47			41		47'	1042
			50			
48					48'	598
49						

Lithology Log Sheet 1 of 2

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-SB-1

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		14 feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (tracks)	HSA		8/18/21 12:50	8/19/21 07:25

Type of Sampling Device	Water Level (bgs)	Final
Split Spoon (California Modified)	5 feet-bgs	14'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite - PGM7300)	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Cloudy, breezy, nice temp.

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0						
			2	0-2' brown loamy silt grading into brown clayey-silt; top 6" loose, soft, damp; rest mildly cohesive non-plastic, damp, soft; roots throughout; rare gravel up to 2" diameter; white chalky streaking from 1-2"	0-0.5'	0.7
			3			
1			3			
					1.5-2'	49.2
			4			
2				2-4' brown, damp, soft		
			3	2-2.5' sandy (10%) - silty-clay w/ roots, black org. matter & white calcareous lenses; sand VF-F, sell-sorted		
			3	2.5-4' White calcareous lenses; sand VF-F, well-sorted sandy (20%)-clayey-silt; mildly cohesive, HC odor, moderate plasticity; sand same as above		
3			3			
			3			
4				4-6' Saturation @ 5'; soft	4'	587
			2	4-4.5' Same as above with occasional gravel up to 2" diameter; gravel subround-round color reddish-brown @ top to grey-brown to brown @ bottom; interbedded clay & clayey-sand; sand VF, well-sorted; damp-moist 4.5-5'; hydrocarbon-staining throughout; rare white calcareous lenses; cohesive, somewhat plastic		
			2			
5			2		5-5.5'	1442
			2			
6				6-8' grey-brown, saturated, loose; sheen on water	6'	803
			1	6-7.5' muddy (20%) - sand (80%); sand VF-F; hydrocarbon odor strong & staining present		
			5			
7			7	7.5-8' brown gravelly (20%) sand (40%) & clay (40%); gravel up to 3" diam, round-subangular, sand VF-VC, poorly-sorted; mostly cohesive, saturated, strong hydrocarbon odor		
			9	STOP WORK FOR LIGHTNING @ 14:00		
8				8/19/21 07:00 RESUME	8'	1340
			2	8-10' Same as above but loose & has grey hydrocarbon staining		
			5			
9			8			
			16		10'	1335

Lithology Log (continued) Sheet 2 of 2

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
11			5	10-12'		
			11	10-10.5' brown gravelly (10%) -sandy (10%) - clay (80%); cohesive, soft, moist, highly plastic; hydrocarbon odor; rare white chalky lenses; gravel up to diameter of core, round; sand VF-VC, poorly-sorted		
			18	10.5-12' damp, brown, weathered clay shale with rare black organic regular pieces @ top & occasional whitish-green 2 mm clay lenses; rare gravel up to 1 cm diameter; fissile; hydrocarbon odor gone by 11', 10.5-11' only slight odor		
12			32	12-14' Same as above but dry, no odor, & somewhat silty; only minorly weathered now	12'	18.2
			14			
			22			
13			35			
			50			
14					14'	2.1
				Since borehole appears contaminated, sealing with bentonite chips (3, 50 lb. bags)		
15						
16						
17						
18						
19						
20						
21						
22						

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Lithology Log

Sheet 1 of 3

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-TW-3

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		34 feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (tracks)	HSA	4.25" ID 8" OD	8/19/21 08:10	8/19/21 10:40

Type of Sampling Device	Water Level (bgs)	Final
Split Spoon & Calif. Modified Split Spoon	No Water Detected	34'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite) - PGM7300	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Cloudy, breezy, good temp.

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0				0-2' brown, damp, roots, cohesive, mild plasticity, soft; clayey-silt & silty-clay with rare sand (VF-F, well-sorted); 1' recovery; no odor	0-0.5'	20.2
			2			
			2			
1						
			2		1.5-2'	0.0
			2			
2				2-4' damp, brown		
			4	2-3' clayey (20%) - sandy (40%) - silt (40%); roots, slightly cohesive to cohesive, soft, non-plastic; sand VF-F, well-sorted, no odor		
			7	3-4' sandy (15%) - silty (20%) - clay (65%); cohesive, stiff, non-plastic, occasional roots; no odor		
3						
			11			
			15			
4				4-6' brown, no odor, same as above but dry 4-5' & black organic fragments 5-6'	4'	0.7
			7			
			18			
5						
			18			
			20			
6				6-8'	6'	5.2
			12	6-7' Same as above but sand up to 10% & includes calcareous grains & very stiff, damp		
			19	7-8' Same as above but hard & completely consolidated; cannot break apart w/ hands; bedrock already? --> no, must have been a cobble or something we drilled through		
7						
			24			
			33			
8				8-10' brown interbedded silty-clay (cohesive, roots, damp, non-plastic, stiff) & sandy (20%) - silty (20%) - clay (60%) (cohesive, damp, non-plastic, slightly softer than the silty-clay beds); occasional roots & carbonate fragments; sand VF-F well-sorted	8'	0.0
			6			
			14			
9						
			16			
			15		10'	0.0

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Lithology Log (continued)

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
			11	10-12' 10-10.5' Same as above 10.5-12' brown sandy (10%)-silty-clay; hard, sand VF-M, poorly-sorted (includes carbonaceous & black organic fragments); non-plastic, extremely cohesive, dry		
			20			
11			23			
			22			
12			16	12-14' 1' recovery, brown, dry, consolidated sandy (10-20%) - silty (30%) - clay; sand poorly sorted, VF-VC, round-and; includes carb. & org. frags.; hard; 12-12.5' appears slightly less consolidated than below; 12-14' may be transitioned into bedrock --> hope not quite yet	12'	0.0
			27			
13			50			
			50			
14			7	14-16' dry, brown clayey-silt & silty-clay; softer than above material but still stiff; occasional roots & black organic fragments, rare calcareous streaking	14'	0.0
			20			
15			22			
			22			
16			14	16-18' 1' recovery, same as above but damp	16'	0.0
			21			
17			43			
			40			
18			14	18-20' Same as above but dry & slightly softer	18'	0.0
			16			
19			14			
			14			
20			7	20-22' 20-21' Same as above w/ rare evaporite crystallization	20'	0.0
			16			
21			18	21-22' brown sandy (15%) - clayey-silt; stiff, damp, rare white ashy streaking; sand VF-VC; poorly-sorted, ang-round, mixed mineralogy		
			20			
22			14	22-24' 1' recovery 22-22.5' Same as above 22.5-23.5' brown gravelly (10%) - sandy (10%) - silty (10%) - clay; stiff, very cohesive; gravel up to 2 cm diameter, angular-round; sand same as above, damp	22'	0.0
			16			

Trihydro CORPORATION

Lithology Log (continued)

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
23			45	23.5-24' same as 22-22.5'		
			50			
24			25	24-26' damp, brown, silty-clay; flakes apart very easily, soft, cohesive; rare whitish-green clay lenses up to 1" diameter, non-plastic	24'	0.0
			28			
25			32			
			35			
26			26	26-28' brown, damp 26-27' clayey-silt; moderately stiff, containing whitish-green clay lenses similar to above, non-plastic, mostly cohesive	26'	0.0
			35	27-28' same as 24-26' but stiffer		
27			47			
			48			
28			15	28-30' 28-29.5' Same as above	28'	0.0
			24			
29			36	29.5-30' brown, highly-weathered clay shale; highly fissile; soft, dry; rare whitish-green clay lenses up to 2 cm diameter		
			35			
30			23	30-32' Same as above but slightly less weathered	30'	0.0
			35			
31			42			
			62			
32			17	32-34' Same as above but even less weathered; bedrock	32'	0.0
			30			
33			28	NOT COMPLETING AS TEMPORARY WELL DUE TO LACK OF WATER; BOREHOLE FILLED WITH CUTTING SINCE THEY WERE NOT IMPACTED		
			26			
34					34'	0.0
35						
36						

Trihydro CORPORATION

Lithology Log

Sheet 1 of 3

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-TW-4

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		32 feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (tracks)	HSA	4.25" ID 8" OD	8/19/21 11:40	8/19/21 14:20

Type of Sampling Device	Water Level (bgs)	Final
Split Spoon & Calif. Modified Split Spoon	15 ft-bgs	32'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite) - PGM7300	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Sunny, windy, warm

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0				0-2'	0-0.5'	0.0
			7	0-1' brown, damp, slightly loamy silt; roots, cohesive until mild pressure applied; moderately soft		
			4	1-2' interbedded brown, damp, sandy (40%)-silt (60%) (sand VF-F, well-sorted; occasional roots) & dry, brown sandy (10%)-silt (90%) (sand VF, well-sorted, soft, occasional roots); cohesive until pressure applied		
1			6		1.5-2'	0.0
			5			
2				2-4'		
			9	2-2.5' dry, light brown silt; rare sand (VF-F, well-sorted); cohesive until pressure applied, soft		
			11	2.5-3' light-brown sandy (45%)-silt (55%), damp; sand VF-VC, poorly sorted with mixed mineralogy revealing calcareous grains; soft, cohesive until pressure applied		
3			10	3-4' brownish-tan, loose, dry-damp sand; VF-VC, poorly-sorted, ~85% quartz, 10% white carbonate grains, 5% lithics; round-angular		
			9			
4				4-6' Same as 2.5-3'	4'	0.0
			5			
			11			
5						
			7			
			9			
6				6-8' brown, dry, sandy (20%)-clayey-silt (sand same as above) @ top grading to brown, damp, silty-clay @ base; entire section cohesive & stiff	6'	0.0
			10			
			15			
7						
			18			
			30			
8				8-10' same as base of 6-8' but even stiffer, hard now, occasional white calcareous streaking & roots; rare black organic fragments	8'	0.0
			11			
			21			
9						
			25			
			29		10'	0.0

Trihydro CORPORATION

Lithology Log (continued)

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
			9	10-12' 10-11.5' Same as above; becoming damp around 10.5'; increased amount of calcareous fragments & roots		
			22	11.5-12' brown, damp, sandy (20%)-clay (cohesive, stiff, roots & calccareous streaking, sand VF-M; poorly-sorted) @ top grading to gravelly (10%)-sandy (30%)-clay (60%) (cohesive, dense, hard; gravel up to 1 cm, round-subangular; sand VF-VC, poorly-sorted; gravel & sand of mixed mineralogy) @ base; occasional white ashy modules		
11			33			
			35			
12			8	12-14' 0.5' recovery; same as above @ top grading to brown sandy (10%)-silty (20%)-clay @ base (cohesive, stiff, damp)	12'	0.0
			10			
13			11			
			13			
14			3	14-16' no odor 14-15' brown, damp clay (cohesive, slightly less stiff than above material, plastic; with evaporated crystals (calcite; highly effervescent when exposed to HCl) & rare white clay lenses) @ top, grading to moist, brown; sandy (10%)-clay (90%) (cohesive, highly plastic, moderate stiffness; sand VF-VC, poorly-sorted) @ bottom	14'	0.0
			7			
15			6	15-16' saturated brown gravelly (20%)-sandy (20%)-clay (60%) (ang-round; gravel up to 2 cm diam; sand VF-VC, poorly-sorted; cohesive, soft, somewhat plastic) @ top grading to moist brown sandy (20%)-silty-clay (sand VF-M, moderately sorted; soft, highly plastic, cohesive) @ base	15-15.5'	0.0
			8			
16			5	16-18' 1' recovery 16-17.5' brown, moderately stiff, cohesive, plastic, sandy (20%)-clay (80%); sand VF-F, well-sorted		
			12	17.5-18' gravelly (30%)-clayey (30%)-sand (40%); gravel up to core diameter, sand F-VC, poorly-sorted, loose, damp		
17			14			
			13			
18			6	18-20' brown, damp, clayey-silt; cohesive, moderate stiffness; non-plastic; occasional white ashy streaking/lenses	18'	0.0
			12			
19			13			
			18			
20			6	20-22' silty-clay; otherwise same as above	20'	0.0
			18			
21			28			
			26			
22			10	22-24' 1' recovery; same as above	22'	0.0
			17			

Trihydro CORPORATION

Lithology Log (continued)

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
23			2			
			26			
24			11	24-26' brown, dry, soft clay (beginning to look like very weathered shale); non-plastic, highly fissile	24'	0.0
			22			
25			27			
			27			
26			20	26-28' 1' recovery; same as above but slightly more firm	26'	0.0
			22			
27			42			
			45			
28			8	28-30' Same as above but with occasional white ashy clay lenses towards base; looking like weathered shale still	28'	0.0
			23			
29			23			
			26			
30			12	30-32' brown & light grey (alternates) clay shale; fresh bedrock, cohesive, brittle, dry	30'	0.0
			25			
31			30			
			34			
32					32'	0.0
33						
34						
35						
36						

Trihydro CORPORATION

Lithology Log

Sheet 1 of 3

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-TW-5

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		31 feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (tracks)	HSA	4.25" ID 8" OD	8/19/21 15:30	8/20/21 08:05

Type of Sampling Device	Water Level (bgs)	Final
Split Spoon & Calif. Modified Split Spoon	23 ft-bgs	31'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite) - PGM7300	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Sunny, windy, warm

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0				0-2' brown, damp, sandy (10%)-silty-clay of roots; sand VF-F, well-sorted; cohesive, moderate stiffness, highly plastic	0-0.5'	0.0
			2			
			2			
1						
			2		1.5-2'	0.0
			5			
2				2-4' Same as above with some white carbonaceous fragments & stiff, non-plastic		
			7			
			11			
3						
			14			
			18			
4				4-6'	4'	2.5
			5	4-5' Same as above 5-6' brown, dry, stiff, cohesive, non-plastic silty-clay		
			11			
5						
			18			
			20			
6				6-8' 1' recovery; brown, dry, hard, sandy (10%)-clayey-silt; cohesive, non-plastic; sand VF-F, well-sorted & includes carbonaceous grains & black organic fragments; rare roots	6'	0.0
			10			
			23			
7						
			27			
			32			
8				8-10'	8'	0.0
			8	8-8.5' Same as above 8.5-9' Same as above but sand content up to 30%		
			15	9-10' brown, hard, cohesive, dry, non-plastic sandy (10%)-silty-clay; sand VF-F, well-sorted; rare calcareous modules up to 2 mm diameter		
9						
			18			
			17		10'	0.0

Trihydro CORPORATION

Lithology Log (continued)

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
			9	10-12' 6" recovery: top section is SAA, then grades into brown, hard, silty-sand (90%) (consolidated, VF, well-sorted) @ base --> includes black organic fragments & white carbonaceous grains; dry		
			14			
11			14			
			14			
12				12-14'	12'	0.0
			9	12-12.5' Same as above but moderately stiff instead of hard		
			13	12.5-14' brown, hard, sandy (5%)-silty-clay; extremely cohesive, hard plastic, dry; contains black org. frags & white carbonaceous fragments; sand VF-M, moderately sorted		
13			20			
			20			
14				14-16'	14'	0.0
			11	14-15' Same as above with calcareous streaking & occasional lenses		
			18	15-16' Same as above but damp & sand size down to VF, well-sorted		
15			22			
			20			
16				16-18' 1.5' recovery; brown sandy (10%)-clayey-silt; damp 16-16.5' else moist; moderately stiff, extremely cohesive & plastic; sand VF, well-sorted; rare calcareous & black organic fragments	16'	0.0
			4			
			8			
17			8			
			8			
18				18-20' brown, moist; hydrocarbon dark grey staining starting @ 18.5' & odor throughout; soft, cohesive, extremely plastic; sandy (40%)-clay; sand VF, well-sorted	18'	20.7
			3		18.5-19'	805.3
			4			
19			6			
			6			
20				20-22' Hydrocarbon odor; saturated with oily substance but doesn't appear wet with fluid; same as above @ top grading to gravelly (5%)-sandy (30%)-clay @ base (gravel up to 1 cm diameter, round-subangular; sand VF-VC, poorly-sorted), soft, extremely plastic & cohesive	20'	578.4
			1			
			3			
21			7			
			7			
22				22-24' fluid saturation @ 23'; slight hydrocarbon odor	22'	97.4
			2	22-22.5' sandy (40%)-silty-clay, brown, highly plastic, moist; sand VF-M, moderate-sorting, angular-round		
			4			

Trihydro CORPORATION

Lithology Log (continued)

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
23			4	22.5-24' brown interbedded same as above & saturated seams of loose, muddy sand (F-C, poorly to moderately sorted, round-subangular; varying minerals)	23-23.5'	86.0
			5	8/19/2021 8/20/21 07:10 RESUME --> water level @ 16' prior to resuming drilling		
24			4	24-26' Hydrocarbon odor throughout 24-25.8' greyish-brown silty (10%)-gravelly (10%)-sand (80%; VF-VC) @ top; loose, saturated; slight hydrocarbon staining, grades to silty (20%)-sand (VF-M, moderately sorted); gravel up to diameter of core	24'	133.1
			5	25.8-26' dark grey, saturated, loose clayey (10%)-sandy (20%)-gravel; gravel up to 2" diameter, round-subround		
25			5			
			4	26-28' Hydrocarbon odor & staining throughout		
26			1	26-27.5' muddy-sand (grey-brown, loose, saturated; VF-VC, poorly-sorted, round-ang) @ top grading to muddy-gravelly-sand (dark grey, loose, saturated; sand same as above; gravel round-subround & up to 2" diameter)	26'	84.5
			4	27.5-28' dark-grey, saturated, loose clayey (20%)-sand (40%)-gravel (40%); sand same as above; gravel up to diameter eof core & subround-round; mixed mineralogy/lithic compositions		
27			13			
			22			
28			58	28-29' light grey & light brown extremely weathered sandstone; sand VF-F, well-sorted; cohesive, damp @ top to dry @ base; highly fissile; occasional Greenish-white clay lenses; soft; no odor, non-calcareous	28'	96.0
			50			
29				29-30' too hard to sample; had to drill past		
30				30-31' dry, mostly consolidated, (slightly weathered) sandstone (VF-F, well-sorted); alternating laminations of brown & cream colors; soft but somewhat firmer than 28-29'; no odor; breaks like shale; occasional whitish green clay lenses up to 1 cm diameter		
31					31'	13.1
32						
33						
34						
35						
36						

Lithology Log Sheet 1 of 2

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-SB-2

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		__ feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (tracks)	HSA	4.5" ID 8" OD	8/20/21 11:22	8/20/21 12:45

Type of Sampling Device	Water Level (bgs)	Final
Split Spoon & Calif. Modified Split Spoon	3.5' feet-bgs	19.5'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite - PGM7300)	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Partly cloudy, bright, slight breeze, warm

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0				0-2' Hydrocarbon odor throughout, brown; 1' recovery	0-0.5'	760.1
			1	0-0.5' sandy (30%)-clayey-silt, soft; sand VF-F, well-sorted; slightly loamy, cohesive, damp, low plasticity; occasional roots		
			2	0.5-2' soft, damp, silty-clay; very cohesive & plastic; occasional roots		
1			2			
			2		1.5-2'	1145
2			2	2-4' 1.5' recovery; mostly loose sandy (45%)-silt (55%); overpowering gasoline odor; soft; occ. roots throughout; reddish-brown & damp @ top grading to brown & moist @ 3' & then to saturated & grey-brown @ 3.5' (majorly hydrocarbon stained)		
			2			
3			2			
			2		3.5-4'	1447
4			2	4-6' brown-grey w/ mottled black hydrocarbon staining; overpowering hydrocarbon c		
			1	4-5' Same as above (base of 2-4' section) but mildly cohesive & plastic		
			3	5-6' saturated, soft, silty (40%)-sand (60%) (VF-F, well-sorted); mildly cohesive & plastic		
5			2			
			3			
6				6-8' brown-dark grey (hydrocarbon-stained); overpowering hydrocarbon odor	6'	999.3
			1	6-6.5' Same as above w/ 2" layer of gravelly (30%)-sand (70%) (loose w/roots; F-VC, poorly-sorted)		
			2	6.5-6.8' brown clay w/ calcareous white streaking; cohesive, moderately soft & plastic		
7				6.8-7.4' same as 5-6' but VF-grained sand now		
			2	7.4-8' silty (10%)-sand (90%) (F-M, well-sorted; loose) @ top grading to silty (40%)-sand (60%) (F-VF, well-sorted; mostly loose) @ base		
			7			
8				8-10' 1.5' recovery; hydrocarbon staining & odor throughout; saturated	8'	1122
			1	8-8.5' dark grey silty-clay; cohesive, soft, moderately plastic		
			2	8.5-10' muddy (10%), loose, sand (F-M, well-sorted, round-subang); brownish-grey		
9			5			
			8		10'	323.3

Trihydro CORPORATION

Lithology Log (continued) Sheet 2 of 2

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
			1	10-12' grey-brown, saturated, loose; hydrocarob odor & staining 10-10.5' loose sand, saturated; grades from VF-F & round-subang well-sorted @ top to F-VC, poorly-sorted round-angular @ base		
			2	10.5-11' muddy (10%)-gravelly (30%)-sand (60%); gravel up to 2 cm, round-subround; sand F-VC, poorly-sorted, round-subround		
11			2	11-12' clayey (10-20%)-sand grading from F-VC (poorly-sorted, round-subround) @ top to VF-F (well-sorted, round-subang) @ base		
			4			
12			2	12-14' Hydrocarbon odor; saturated 12-12.5' M-VC sand, loose, grey-brown (hydrocarbon stained); round-angular, poorly-sorted	12'	110.3
			4	12.5-13.5' muddy (20%)-sand (80%); VF-F, well-sorted, loose, brown		
13			8	13.5-14' same as 12-12.5' but w/ rare gravel up to diameter of core & ~15% clay		
			8			
14			6	14-16' saturated, loose; @ top, sand (M-VC; moderate sorting; ang-round) muddy (10%)-sandy (30%)-gravel (60%) (sand same as above; gravel up to 3" diameter, angular-round) @ base, ~30-40% quartz, else lithics; hydrocarbon odor	14'	153.3
			14			
15			14			
			7			
16			1	16-18' 16-17.5' Same as above including top to base grading pattern	16'	119.1
			5	17.5-18' brown-grey (hydrocarbon stained stained) gravelly (10%)-sand (45%) & clay (45%); some loose, some cohesive, material that is cohesive is soft & highly plastic, sand mostly VF-F		
17			5			
			5			
18			3	18-19.5' 18-18.2' Same as above	18'	95.9
			30	18.2-18.5' brown, hard, clay w/ white calcitrant modules up to 1 cm diameter; slight hydrocarbon odor		
19			56	18.5-19.5' reddish-brown, sandy (30%, VF, well-sorted)-siltstone w/ occasional whitish-green lenses up to 1 mm diameter; hard, bedrock; dry	19.5	48.1
20						
21				SINCE IMPACTED, PLUGGED WITH 5 BAGS (50 LB EACH) BENTONITE CHIPS, 3/8"		
22						

Lithology Log Sheet 1 of 1

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-SB-3

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		10 feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (tracks)	HSA	4.25" ID, 8" OD	8/23/21 08:10	8/23/21 09:00

Type of Sampling Device	Water Level (bgs)	Final
Split Spoon & Calif. Modified Split Spoon	6' feet-bgs	10'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite - PGM7300)	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Sunny, warm, humid

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0						
			1	0-2' brown, very moist, cohesive, highly plastic silty-clay; roots; occasional F sand @ base	0-0.5'	1.0
			2			
1						
			2			
					1.5-2'	3.8
			2			
2				2-4'		
			2	2-2.5' Same as above w/ worm & only damp now 2.5-3' Sa,e as anpve w/ ~10% VF sand (well-sorted)		
			3	3-4'		
3				Hydrocarbon odor; interbedded same as above & gravelly (10%)-sandy (20%)-clay (70% - cohesive, damp, somewhat plastic) (brown to grey-brown, hydrocarbon staining w/ lenses of light green & light grey clay; sand & gravel ang-round; sand F-VC, poorly-sorted)		
			4			
			2			
4				4-6' HC odor	4'	1433
			2	4-5' brown, soft, moist silty-clay (cohesive, highly plastic) grading into silty (20%)-sand (80%) @ base (loose, VF-F, well-sorted); occasional roots & worms		
			4			
5				5-6' light grey/brown gravelly (30%)-sandy (10%)-clay (60%); gravel up to size of core; sand VF-VC, poorly-sorted; hydrocarbon stained; most of gravel is sandstone		
			7			
			5			
6				6-8'	6'	1529
			8	6-6.5' light greyish-brown, saturated clay; soft; occasional light green lenses; strong hydrocarbon odor		
			11	6.5-8' soft @ top transitioning to moderately firm @ base; appears to be weathered sandy (10%)-siltstone; dry; highly fissile; occasional laminated with light green claystone; sand VF, well-sorted; no hydrocarbon odor remaining		
7						
			16			
			22			
8				8-10' no odor; definite bedrock	8'	608
			4	8-9' Same as above with occasional calcite crystals; highly calcareous rock 9-9.8' light brown silty-clay shale		
			16	9.8-10' light grey sandy (10%)-siltstone with rare metallic grains (copper & silver in color)		
9						
			23			
			37	PLUGGED WITH 2 BAGS 3/8" CHIP BENTONITE	10'	25.5

Lithology Log Sheet 1 of 2

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-SB-4

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		20' feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (tracks)	HSA	4.25" ID, 8" OD	8/23/21 09:40	8/23/21 11:10

Type of Sampling Device	Water Level (bgs)	Final
Split Spoon & Calif. Modified	2' feet-bgs	20'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite - PGM7300)	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Sunny, warm, breezy

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0				0-2'		
			1	0-1' non-native backfill so tentatively we could access with rig (supplementing what would have been 0-0.5' & 1.5-2' with appropriate intervals)		
			1	1-2' highly-moist, brown silty-clay; very cohesive & plastic; HC odor; soft; roots		
1			1		1-1.5'	1334
			1			
2				2-4'		
			1	2-3' Same as above but saturated	2-2.5'	1213
				3-4' Hydrocarbon odor & dark-grey staining throughout; brown-grey, occ. roots, highly moist; grades from sandy (50%), silty-clay (50%) @ top (sand VF-F, well-sorted, soft, mostly cohesive, plastic) to silty-clay @ bottom (highly cohesive & plastic)	2.5-3'	1190
3			2			
			3			
			2			
4				4-6' Same as above (bottom of section) interlaminated with rare 1" thick blackish-grey, saturated sand (VF-F, well-sorted); occasional angular to subangular gravel up to 1" diameter from 5.5-6'		
			1			
			1			
5					5'	703.3
			2			
			3			
6				6-8' slight hydrocarbon odor, brown & grey-brown hydrocarbon staining, saturated sandy (30%)-clayey (30%)-silt (40%); very cohesive & plastic, soft		
			2			
			3			
7					7'	203.7
			3			
			3			
8				8-10'		
			1	8-8.5' Same as above		
				8.5-10' brown with rare grey hydrocarbon staining; saturated, soft, cohesive; grades from clayey (10%)-silty (30%)-sand (60%) (VF, well-sorted) @ top to sandy (30%)-clayey (20%)-gravel (50%), gravel round-subangular & up to diameter of core; sand mostly F-VF, well-sorted) @ base		
			2			
9			2		9'	51.0
			3			

Lithology Log (continued) Sheet 2 of 2

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
			7	10-12' saturated, no odor 10-11' brown, F-M-grained sand, round-subround, well-sorted, loose with layer of muddy (10%)-gravelly (20%)-sand (70%) from 10.2-10.3' (loose, gravel round-angular & up to 2" diameter, sand same as above)		
			7			
11			11	11-12' grey-brown clayey (20%)-gravelly (10%)-sand (70%) (sand VF-M, moderately sorted; gravel up to 2" diam); loose to mildly cohesive	11'	130.7
			11			
12			1	12-14' saturated, grey-brown, loose sand; predominately F-M, well-sorted w/ occasional gravel up to 1" diameter & VC grains throughout; base of section ~ 10% mud, gravel round-angular		
			3			
13			3		13'	19.6
			3			
14			5	14-16' 1.5' recovery red, stiff silty-clay; highly cohesive, somewhat consolidated; appears to be transitioning to highly weather claystone @ base; rare whitish-grey ashy laminations; moist-damp		
			11			
15			12		15'	19.3
			12			
16			9	16-18' 1' recovery; damp-dry; same as above except looks even more like claystone --> bedrock; occasional whitish-green clay lenses up to 1 cm width		
			12			
17			17		17'	7.6
			15			
18			9	18-20' Same as above but harder/more consolidated then above & with regular whitish green clay lenses & laminations; no odor		
			15			
19			22		19'	13.4
			25		19.5-20'	10.9
20						
21				PLUGGED WITH 4 BAGS 3/8" CHIP BENTONITE		
22						

Lithology Log Sheet 1 of 2

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-SB-5

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		18' feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (tracks)	HSA	4.25" ID, 8" OD	8/23/21 16:15	8/24/21 08:10

Type of Sampling Device	Water Level (bgs)	Final
Split Spoon & Calif. Modified Split Spoon	12' feet-bgs	18'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite - PGM7300)	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Sunny, hot, breezy

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0						
			4	0-2' brown, dry, clayey-silt; occasional roots; loose @ top, cohesive @ base; soft	0-0.5'	0.1
			4			
1						
			3			
			3		1.5-2'	0.3
2				2-4'		
			2	2-2.5' Same as above		
				2.5-4' brown, stiff, cohesive, silty-clay; dry; rare white ashy (calcareous streaking) gravel up to 1 cm diameter & roots		
3			4			
			7			
			7			
4				4-6' Same as above with black organic fragments up to F-grained	4'	0.1
			4			
			6			
5						
			7			
			7			
6				6-8' stiff, brown, sandy (10%)-silty (10%)-clay; cohesive, non-plastic; sand VF-F, well-sorted & includes carbonaceous & black organic grains; dry	6'	0.0
			9			
			9			
7						
			9			
			13			
8				8-10'	8'	0.0
			2	8-8.2' Same as above		
				8.2-10' brown, moist, soft sandy (10%)-silty-clay interbedded with 1 cm thick laminations of clayey (45%)-sand (45%); slight hydrocarbon odor; rare rounded gravel up to 1 cm diameter; very cohesive & plastic		
			3			
9						
			4			
			4		10'	14.2

Lithology Log (continued) Sheet 2 of 2

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
11			3 4 5 6	10-12' Same as above but no gravel & sand laminations now rare; moist		
12			4	8/24 07:25 RESUME 12-14' 12-13.8' brown, soft, saturated, cohesive, highly plastic silty-clay; slight hydrocarbon odor	12'	4.8 12-12.5' 4.2
13			4 10	13.8-14' interbedded brown & greenish-white clay; slightly consolidated, damp; stiff; no odor		
14			15 2	14-16' brown moderately stiff to stiff, unconsolidated to slightly consolidated silty-clay with occasional greenish-white clay ashy-looking lenses/laminations; moist to damp; slight hydrocarbon odor ~15.5'	14'	2.8
15			7 11			
16			13 7	16-18' 16-17' moderately stiff, consolidated light green & light brown clayey-siltstone & silty-claystone; dry, no odor	16'	1.6
17			22 50	17-18' consolidated, hard, silty-sandstone; dry, no odor; light brown with occasional light green mottling; sand VF, well-sorted		
18			50		18'	0.0
19						
20						
21				5 BAGS BENTONITE TO PLUG HOLE		
22						

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Lithology Log

Sheet 1 of 3

Project Name	Project Number	Borehole ID
Gallup Refinery, North Drainage Ditch Area	697-082-002	NDD-SB-6

Drilling Company	Driller	Ground Elevation	Total Drilled Depth
Terracon	Jeff Cothron		24 feet-bgs

Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
CME 55 (tracks)	HSA	4.25" ID, 8" OD	8/23/21 13:15	8/23/21 14:30

Type of Sampling Device	Water Level (bgs)	Final
Split Spoon & Calif. Modified	15 ft-bgs	24'

PID/FID (make, model, serial no.)	Geologist	Checked by/Date
PID (Honeywell Mini RAE Lite) - PGM7300	Kara Hoppes	

Location Description (include sketch in field logbook)	Weather Conditions (temp., clear, rain, wind)
	Hot, sunny, breezy

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
0				0-2'		
			1	0-1.5' non-native backfill		
				1.5-2' brown, dense/stiff, silty-clay; occasional roots; dry		
			2			
1			4		1.5-2'	0.2
			8			
2				2-4'		
			12	2-3' light brown, dry, firm, mostly cohesive gravelly (10%)-sandy (20%)-silt (70%); gravel up to 1" diameter; angular-subround; sand VF-F, well-sorted		
			11	3-4'		
3			11	brown, dry, cohesive, stiff, non-plastic clay @ top grading to sandy (10%)-silty (20%)-clay (70%) @ base (sand VF-F, well-sorted)	3-3.5'	0.1
			13			
4				4-6'		
			6	4-5' gravelly (10%)-sandy (40%)-silt (50%); light brown, dry, stiff, cohesive; gravel up to 2" diameter & predominantly comprised of chert & sandstone; sand VF-M, moderately well-sorted		
			9	5-5.5' light brown gravelly (15%)-silty (30%)-sand (35%); gravel same as above but angular-round; sand VF-VC, poorly-sorted; dry; mildly cohesive to loose	5'	0.1
5			7			
				5.5-6' dry, light brown sandy (20%)-silt (80%); sand VF, well-sorted		
			6			
6				6-8'		
			5	6-7' brown silty-clay grading to brown clay @ base; stiff, cohesive, non-plastic, white ashy/calcareous streaking throughout		
			11	7-7.5' loose to mildly cohesive, tan, sandy (45%)-silt (55%); sand VF, well-sorted		
7			13	7.5-8' same as 6-7' including grading	7'	0.0
			16			
8			9	8-10' 6" recovery; tan, dry, hard silty-clay with white ashy modules up to 1 cm diameter; lost some sample out bottom of split spoon		
			15			
9			14		9'	0.1
			11			

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Lithology Log (continued)

Sheet 2 of 3

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
				10-12'		
			8	10-10.2' Same as above but brown		
				10.2-12' tan @ top, brown @ base; dry; VF-VC loose sand (poorly-sorted, subangular-round) @ top, grading into silty (20%)-clay (80%) (cohesive, mildly plastic, stiff) @ base		
			9			
11					11'	1.0
			8			
			8			
12				12-14'		
			8	12-13' brown, cohesive, damp, moderately stiff silty-clay interbedded w/ sandy (20%)-silty-clay (sand VF-F, well-sorted), moderate plasticity		
			12	13-14' tan-brown, loose, soft, damp sand; F-M, well-sorted, equant, ~100% quartz		
13					13'	0.7
			13			
			12			
14				14-16'		
			3	14-15' brown, moist; loose sand (F-M well-sorted; 90% quartz, 5% calc. frags, 5% lithics; round-subround) @ top grading to soft silty-clay (cohesive, highly plastic) @ base		
			4	15-15.2' saturated, brown, loose sand, F-VC, poorly-sorted, varying mineralogy		
15					15'	1.1
			5	15.2-16' saturated, brown, interbedded silty-sand (loose) & sandy-silt (cohesive, plastic)		
			6			
16				16-18'		
			1	16-17.5' SAA but w/ rare grey hydrocarbon staining		
				17.5-17.8' brown, gravelly-muddy-sand; saturated; slight hydrocarbon grey staining; loose		
			6	17.8-18' brown-grey silty-clay; soft, cohesive, highly plastic; slight hydrocarbon odor		
17					17'	50.6
			6			
			6			
18				18-20' saturated, strong hydrocarbon odor; silty-clayey (20%)-gravelly (20%)-brownish-grey (hydrocarbon staining) down to 19.2', else dark grey (hydrocarbon staining); loose; gravel up to size of core diameter; grains round-ang; sand VF-VC; poorly-sorted; varying minerals		
			2			
			4			
19					19'	939.0
			5			
			5			
20				20-22'		
			3	20-26.2' dark grey hydrocarbon-stained otherwise same as above; slight hydrocarbon odor		
			7	21.2-22' Same as above but tan, no odor		
21					21'	1423
			8			
			12			
22				22-24'		
			3	22-23' same as 20-21.2'		
				23-23.5' same as 21.2-22'		
			7			

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Lithology Log (continued)

Sheet 3 of 3

Depth	Interval	Recovery	Blow Counts	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	Screened Interval (ft-bgs)	PID (ppm)
23			20	23.5-24' light brown, dry silty-sandstone; sand VF, well-sorted; hard, consolidated, no odor or staining	23.5-24'	196.3
			19			
24						
25						
26				PLUGGED WITH 6 BAGS BENTONITE		
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						

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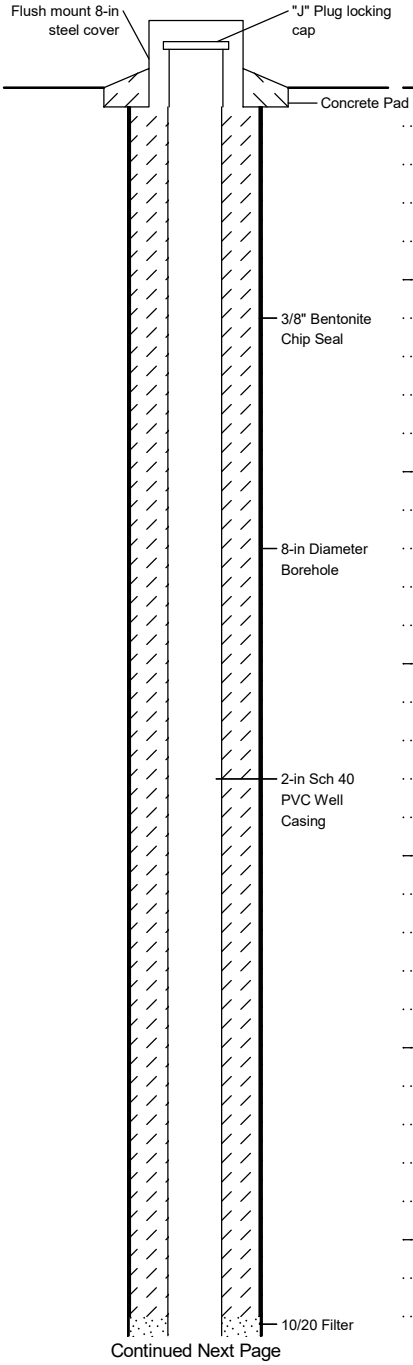
Well Log

Well: **NDD-MW-1**

Client: **Marathon Gallup Refinery**		
Date Started: **Aug 16, 2021**	Date Completed: **Aug 17, 2021**	Permit Number: **N/A**
Logged By: **Kara Hoppes**	Driller: **Jeff Cothron**	1/4, 1/4, S, T, R:
Drilling Co.: **Terracon**	Drilling Rig: **CME 55 (tracks)**	Borehole Diameter: **8.25**
Method: **HSA and Split Spoon**	Measuring Point Elev. (ft.-msl): **6179.6**	Sample Type: **Grab/4.5' Macro Sampler**
Total Depth (ft): **46**	Ground Surface Elev. (ft.-msl):	Location: **North Drainage Ditch Investigation**

N

CONSTRUCTION | **SAMPLING DATA** | **LITHOLOGY**



Depth, feet	Graphic Log	TOV Values (ppmv)	Blow Count/ Recovery (feet)	Visual Description
		0	5 6 5 4	brown, dry, gravelly (10%) - sandy (30%) - silt (60%), loose, soft; roots; sand VF, well-sorted
				light brown, loose, dry gravelly (20%) - silty (30%) - sand (50%), asphaltic & concrete debris
				Same as 0-1' but gravel up to 20%
		0	5 6 14 12	Same as 1.5-2'
				Whitish-grey concrete
		0	10 6 5 4	6" recovery; concrete blocked shoe; mostly concrete recovered; not enough recovery of soil to justify PID screening (will measure top of next section for 6' meas.)
5				5
		0	4 6 5 7	Same as 1-1.5'
				tan-brown @ top to grey-brown @ bottom; gravelly (10%) - sandy (10%) - clay (80%); cohesive, soft, mildly plastic; black asphaltic looking material; sand F, well-sorted, 95% quartz
				blackish-brown material SAA but stuck together w/ asphaltic material; slight hydrocarbon odor
		0	2 5 5 8	black tarry clay; strong hydrocarbon odor; tar saturated; chunks of concrete throughout; extremely cohesive (has to be pulled apart like taffy); moderate stiffness
				Same as above
10				10
		0	4 5 6 5	brownish-black tar-saturated gravelly (10%) - sand (90%); sand VF-F, well-sorted; same cohesive nature as above; moderately soft; strong hyrocarbon odor
				No odor; reddish-brown interbedded sand & sandy-clayey-silt sand intervals up to 4" thick & VF-F, well-sorted, 90-95% quartz; sandy (10%) - clayey - silt; moderate to high plasticity, cohesive, soft; damp @ bottom 6"
		0	3 5 6 9	reddish-brown, cohesive, no odor, highly plastic, soft, interbedded silty-clay & sandy (30%) -silty - clay; sand VF & well-sorted; bottom 6" contains blackish-brownish vegetation matter; damp
		0	4 7 12 12	reddish-brown silty-sandy (10% VF-F well-sorted)-clay; stiff, cohesive, damp, mild plasticity
15				15
				sandy-clayey-silt; sand VF-F, well-sorted; soft, moist, cohesive, moderate plasticity
		0	12	Stiff, brown, highly plastic & cohesive clay, lots of black org. matter &

Continued Next Page

Trihydro CORPORATION

Well Log

Well:**NDD-MW-1**

Client:

Marathon Gallup Refinery

CONSTRUCTION	SAMPLING DATA			LITHOLOGY
Depth, feet	Graphic Log	TOV Values (ppmv)	Blow Count/ Recovery (%)	Visual Description
Continued				
			17 20 15	small roots; no odor; moist to damp; occasional calcareous modules
10/20 Filter Pack				brown, interbedded sand & silty-clay; no odor, dry; clay is cohesive & stiff w/ high plasticity; sand is loose, VF-F, well-sorted, 95% quartz, 5% calcareous frags & lithics
		0	3 7 7 5	Same as above
20				20
		0	3 5 10 10	Same as above interbedded w/ silty-clay; bottom 6" are stiff and only mildly plastic
2-in I.D. (0.010-in Factory Slot)		0	11 12 11 12	SAA but entire section is soft & damp & highly plastic
		7.6	11 12 11 12	brown, damp, interbedded silty-clay (highly plastic, cohesive, soft) & silty-clayey sand (loose to mildly cohesive, VF-F, well-sorted); ~80% of the section is the silty-clay; sandy intervals up to 2" thick
25				25
		44.3	6 7 9 9	Slight hydrocarbon odor (gasoline) @ top of section getting stronger with depth; greyish-reddish brown sandy-silty-clay; soft, moderately plastic, cohesive; very damp; sand VF-F well-sorted
		830.9	3 6 6 6	Same as 24-26' but moist beginning @ 29' & a 1" thick saturated sand seam at 29.8' (moist below), slight hydrocarbon odor throughout which gets stronger in saturated seam
30				30
		470.7	5 8 10 11	Interbedded silty-clay (moderately stiff, plastic, damp to dry, rare calcareous fragments including a tiny snail shell) & sandy-clayey-silt (soft, damp, moderate plasticity, cohesive, sand VF-M, moderately sorted; rare black organic fragments); brown othe
		0.1	12 15	Same as 30-31.8'
4-in Threaded PVC Cap			15 21	Rusty-red silty-clay; moderately stiff to stiff, dry, rare calcareous modules & black organic fragments, highly plastic & cohesive; occasional root remnants
		0.7	13 17	Saturated @ 35'; reddish-brown interbedded gravelly (20%) - sandy - (10%) - clay (70%) (cohesive, soft; sand M-VC, poorly sorted; gravel up to 2" diam & mostly sandstone/chert chunks) & clayey (10%) - sandy (30%) - gravel (60%) (sand VF-VC, poorly sorted;
35 ▽		1.5	18 20	35
				Same as above; still saturated

Continued Next Page

Trihydro CORPORATION

Well Log

Well: **NDD-MW-1**

Client:

Marathon Gallup Refinery

CONSTRUCTION	SAMPLING DATA			LITHOLOGY
Depth, feet	Graphic Log	TOV Values (ppmv)	Blow Count/ Recovery (%)	Visual Description
Continued				
				light brown, dry, silty-clay with occasional greenish-white clay lenses up to 2" diam.; cohesive; non-plastic; somewhat stiff
				Interbedded same as above & sandy (50%) - silt; sand VF & well-sorted; loose to mildly cohesive, soft, dry; light brown
				rusty-brown clay with rare light green clay lenses up to 0.5 cm diameter, dry, cohesive but fissile, starting to resemble weathered shale
				dry, brown, VF sand, somewhat consolidated, likely to be weathered sandstone but can still break apart with fingers; rare whitish-tan clay lenses up to 3 mm diameter; well-sorted; breaks apart nearly in wafers
40				40
				reddish-brown VF-grained, well-sorted sandstone; damp
				reddish-brown sandy (VF) - siltstone
				unconsolidated clayey (10%) - silty (10%) - gravel; saturated; gravel up to 1" diameter & subround-angular
				red silty shale with occasional calcareous concretions; soft, damp
				Same as above
				dry light grey-tan VF-grained, highly consolidated sandstone; well-sorted; top foot of sampler filled with water --> good sign for well production
				Same as above but grain size up to VF-F; still well-sorted
				Same as above but grain size back down to VF
45				45
				brown silty-clay shale w/occ. white calcareous modules up to 4 cm diameter; consolidated, damp

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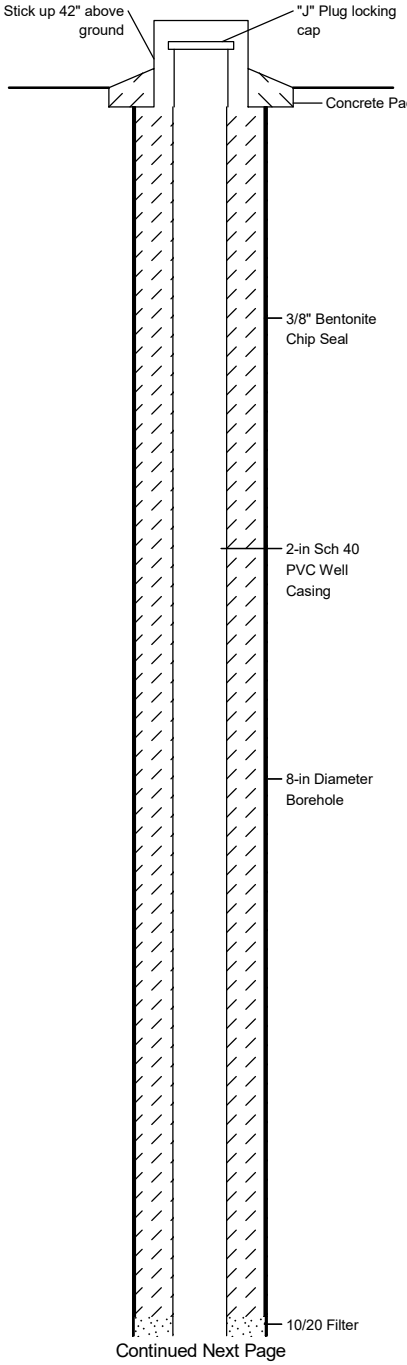
Well Log

Well: **NDD-MW-2**

Client: **Marathon Gallup Refinery**		
Date Started: **Aug 17, 2021**	Date Completed: **Aug 18, 2021**	Permit Number: **N/A**
Logged By: **Kara Hoppes**	Driller: **Jeff Cothron**	1/4, 1/4, S, T, R:
Drilling Co.: **Terracon**	Drilling Rig: **CME 55 (tracks)**	Borehole Diameter: **8.25**
Method: **HSA and Split Spoon**	Measuring Point Elev. (ft.-msl): **6179.6**	Sample Type: **Grab/4.5' Macro Sampler**
Total Depth (ft): **48**	Ground Surface Elev. (ft.-msl):	Location: **North Drainage Ditch Investigation**

N

CONSTRUCTION | **SAMPLING DATA** | **LITHOLOGY**



Depth, feet	Graphic Log	TOV Values (ppmv)	Blow Count/ Recovery (feet)	Visual Description
		0.1		loose, dry gravelly (10%) - clayey (10%) - sand (80%) & concrete chunks; sand VF or VC (no in between), poorly-sorted; brown
				firm, brown red-brown clay interbedded evenly with loose material same as above; damp; clay intervals are cohesive & non-plastic
		0.2		reddish-brown, damp, gravelly (15%) - silty (10%) - sand (75%); sand VF-F w/ regular VC grains; poorly-sorted; damp, loose
		0		brown, firm, silty (10%) - sandy (10%) - clay (80%); cohesive, non-plastic, dry; occasional black organic vegetative fragments & white clay lenses up to 3 mm
				brown, mildly plastic, moderately stiff clay with regular calcareous modules, roots, black org. frags & white clay lenses/streaking
		0		Same as above
5				5
		0		brown, gravelly (20%) - sandy (20%) - clay (60%); dry, stiff, cohesive, non-plastic; drilled through rock the same diam. or greater than split spoon; sand F-VC, poorly-sorted; gravel & sand ang-round
				Same as above; 7-8' brown, stiff, silty-clay with calcareous modules; non-plastic; dry
				Same as above
		0		
				Same as above with ~10% gravel & 10% sand (VF-VC, poorly-sorted); gravel up to size of modified split spoon core; rare black vegetative matter
10				10
		0.1		Same as above
				loose, clayey (10%) - gravelly (20% - up to 2" diameter) - sand (70%); sand VF-VC, poorly-sorted; sand & gravel round-angular; 10.5-11' damp; 11-11.5' moist
		0.1		same as 10-10.5', damp
				brown, damp, cohesive, soft clayey-silt
		0.1		brown sandy (10%) - gravelly (10%) - clay (80%); cohesive, soft; non-plastic; sand VF-F, well-sorted, gravel up to 1" diameter, round-ang
15				15
				damp to moist tannish-brown; material grades from gravelly (10%)-clayey (10%) - sand (80%) (sand VF-VC, poorly-sorted, round-subang.) @ top to F-M, well-sorted sand @ base; loose
		0.1		brown gravelly (10-20%) - clayey (10%) - sand (70-80%), damp;

Continued Next Page

Trihydro CORPORATION

Well Log

Well:**NDD-MW-2**

Client:

Marathon Gallup Refinery

CONSTRUCTION	SAMPLING DATA			LITHOLOGY
Depth, feet	Graphic Log	TOV Values (ppmv)	Blow Count/ Recovery (%)	Visual Description
Continued				angular-round, VF-VC, poorly-sorted; loose; gravel up to 3" diameter
10/20 Filter Pack				
		0		brown gravelly (30% - up to size of a core diameter) - clay; cohesive, moderately plastic, medium stiffness; dry; gravel includes petrified wood frags
				Same as above
				same as 16-17.5' but dry & gravel content up to 30%
20				same as 18-19'
		0		Same as above
2-in I.D. (0.010-in Factory Slot)				loose, damp, gravelly (30%) - sand; brown; sand VF-VC, poorly-sorted; gravel up to 2 cm diameter
				brown clayey (20%) - gravel (80%); gravel damp round-subang., up to 1" diameter
		0.1		brown sandy (30%) - clayey (20%) - silt (50%); sand VF & well-sorted; soft, damp, mildly cohesive
				1.5' recovery, brown interbedded sandy (20%, VF, well-sorted)-silty-clay & silty-clay; soft, cohesive, mildly plastic, dry to damp
		0.6		strong gasoline odor; gravelly (30%) - sand (70%); gravel up to 3" diameter; sand VF-VC, poorly-sorted; loose, damp
25				
		668		tan, damp gravelly (5%) - sand; sand mostly F-M, round-subround, moderate sorting; gravel up to 2 cm diameter; strong gasoline odor
				dry, brown, gravelly (10%) - sandy (20%) - silty (30%) - clay (40%); cohesive, non-plastic, moderately soft, no odor
				Same as above but slight hydrocarbon odor
				brown, very moist sand, gravel, silt & clay (~equal parts of each); strong gasoline odor; gravel up to size of core diameter; sand poorly-sorted in terms of size, angular & mineralogy
				brown sandy-silty (20%) - clay; dry, slight hydrocarbon odor; occasional gravel, cohesive, moderate plasticity, stiff
▽		14.9		brown gravelly (40%) - clayey (10%) - sand (50%); gravel > size of core diameter; sand VF-VC; poorly-sorted; mildly cohesive; no odor; saturated at 28.2
		103.2		
		4.2		moist to damp, gravelly (20%) - sandy (20%) - clay (60%); brown, cohesive non-plastic
30 ▽				brown, weathered silty shale; breaks apart easily with fingers; somewhat fissile; cohesive, damp
		0.2		Same as above
				reddish-brown weathered siltstone w/ greenish-white clay lenses up to 2 mm diameter, dry
		0.1		Same as above but with white calcareous streaking
4-in Threaded PVC Cap				
		0.3		Same as above but hard & with greenish-white clay lenses & streaking; up to diameter of core
35				
				Same as above but more fissile; can break apart easily with hands
		0.1		

Continued Next Page

Trihydro CORPORATION

Well Log

Well: **NDD-MW-2**

Client:

Marathon Gallup Refinery

CONSTRUCTION		SAMPLING DATA		LITHOLOGY	
Depth, feet	Continued	Graphic Log	TOV Values (ppmv)	Blow Count/ Recovery (%)	Visual Description
			0.1		reddish-brown, extremely fissile silty shale with whitish-green clay lenses; cohesive
					reddish-brown, damp; extremely weathered silty-claystone; cohesive but only moderately consolidated; greenish-white only streaking occasional
					silty-clay shale otherwise similar to 37-37.7'; dry
			0.1		Same as above but damp
40					40
					Same as above but 41-41.5'; smells of gasoline
			727		
					gasoline odor; same as above
			1434		Same as above
45			1136		Same as above but with lead-grey metallic faces on some of the shales broken pieces; hydrocarbon odor increasing with depth; lense of black asphaltic-looking material ~45.8' 45
					Same as above including metallic streaking, but dry & crumbles more easily than above section
			1042		

Appendix D – Well Development Logs

MONITORING WELL DEVELOPMENT LOG

Well ID NDD-MW-1

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel	Hilario Trejo	Measured Depth (pre-development)	47.70		
Date	9/8/2021	Static Water Level (ft)	3.41	Qty of Drilling Fluid Lost	N/A
Project	North Drainage Ditch Investigation	Standing Fluid Column (ft)	44.29	Development Method	bailer
Job Number	697-096-001	One Well Volume (gal)	7.22	Purging Equipment	bailer
Installation Date		One Annulus Volume (gal)		Water Level Equipment	fluid level probe
Well Diameter	2 inch	Minimum Gallons to Purge	72.19	pH/EC Meter	YSI
Borehole Diameter	8-in	Measured Depth (post-development)	47.7	Turbidity Meter	LaMotte, 2020we
Screen Length	20 ft	Water Level (ft) (post-development)	Dry	Other	TD of Installed well = 46 ft bgs

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (ºC)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
13:00	38							Purged Dry

FINAL FIELD PARAMETER MEASUREMENTS

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Well ID NDD-MW-2

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel Hilario Trejo
Date 9/8/2021
Project Additional Well Installations
Job Number 697-092-001
Installation Date
Well Diameter 2 inch
Borehole Diameter 8-in
Screen Length 20 ft

Measured Depth (pre-development) 35.50
Static Water Level (ft) DRY
Standing Fluid Column (ft) DRY
One Well Volume (gal)
One Annulus Volume (gal)
Minimum Gallons to Purge
Measured Depth (post-development)
Water Level (ft) (post-development)

Qty of Drilling Fluid Lost N/A
Development Method DRY
Purging Equipment DRY
Water Level Equipment fluid level probe
pH/EC Meter YSI
Turbidity Meter
Other TD of Installed well = 34 ft bgs

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (ºC)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
13:30	0							Dry Well

FINAL FIELD PARAMETER MEASUREMENTS										

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Well ID NDD-TW-1

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel Hilario Trejo
Date 9/8/2021
Project Additional Well Installations
Job Number 697-092-001
Installation Date
Well Diameter 2 inch
Borehole Diameter 8-in
Screen Length 15 ft

Measured Depth (pre-development) 35.00
Static Water Level (ft) DRY
Standing Fluid Column (ft) DRY
One Well Volume (gal)
One Annulus Volume (gal)
Minimum Gallons to Purge
Measured Depth (post-development)
Water Level (ft) (post-development)

Qty of Drilling Fluid Lost N/A
Development Method DRY
Purging Equipment DRY
Water Level Equipment fluid level probe
pH/EC Meter YSI
Turbidity Meter LaMotte, 2020we
Other TD of Installed well = 34 ft bgs

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (ºC)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
13:40	0							Dry Well

FINAL FIELD PARAMETER MEASUREMENTS										

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Well ID NDD-TW-2

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel	Hilario Trejo	Measured Depth (pre-development)	35.09		
Date	9/8/2021	Static Water Level (ft)	23.15	Qty of Drilling Fluid Lost	N/A
Project	North Drainage Ditch Investigation	Standing Fluid Column (ft)	11.94	Development Method	bailer
Job Number	697-096-001	One Well Volume (gal)	1.95	Purging Equipment	bailer
Installation Date		One Annulus Volume (gal)		Water Level Equipment	fluid level probe
Well Diameter	2 inch	Minimum Gallons to Purge	19.46	pH/EC Meter	YSI
Borehole Diameter	8-in	Measured Depth (post-development)	35.09	Turbidity Meter	LaMotte, 2020we
Screen Length	15 ft	Water Level (ft) (post-development)	Dry	Other	TD of Installed well = 34 ft bgs

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (ºC)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
18:55	7.5							Purged Dry

FINAL FIELD PARAMETER MEASUREMENTS										

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Well ID NDD-TW-4

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel Hilario Trejo
Date 9/8/2021
Project Additional Well Installations
Job Number 697-092-001
Installation Date
Well Diameter 2 inch
Borehole Diameter 8-in
Screen Length 15 ft

Measured Depth (pre-development) 25.47
Static Water Level (ft) DRY
Standing Fluid Column (ft) DRY
One Well Volume (gal)
One Annulus Volume (gal)
Minimum Gallons to Purge
Measured Depth (post-development)
Water Level (ft) (post-development)

Qty of Drilling Fluid Lost N/A
Development Method DRY
Purging Equipment DRY
Water Level Equipment fluid level probe
pH/EC Meter YSI
Turbidity Meter LaMotte, 2020we
Other TD of Installed well = 25 ft bgs

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (ºC)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
14:45	0							Dry Well

FINAL FIELD PARAMETER MEASUREMENTS										

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Well ID NDD-TW-5

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel	Hilario Trejo	Measured Depth (pre-development)	30.50		
Date	9/8/2021	Static Water Level (ft)	19.33	Qty of Drilling Fluid Lost	N/A
Project	North Drainage Ditch Investigation	Standing Fluid Column (ft)	11.17	Development Method	bailer
Job Number	697-096-001	One Well Volume (gal)	1.82	Purging Equipment	bailer
Installation Date		One Annulus Volume (gal)		Water Level Equipment	fluid level probe
Well Diameter	2 inch	Minimum Gallons to Purge	18.21	pH/EC Meter	YSI
Borehole Diameter	8-in	Measured Depth (post-development)	35.09	Turbidity Meter	LaMotte, 2020we
Screen Length	15 ft	Water Level (ft) (post-development)	17.55	Other	TD of Installed well = 31 ft bgs

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (ºC)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
14:30	18	1.98	6.82	16.8	31.2	0.81	1.01	
14:36	18.5	1.95	6.86	16.5	30.9	0.82	1.00	
14:44	19	1.99	6.86	16.5	30.7	0.77	1.02	
FINAL FIELD PARAMETER MEASUREMENTS								
		1.99	6.86	16.5	307	0.77	1.02	

Appendix E – Laboratory Analytical Reports

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

September 14, 2021

Caitlin Fields

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX:

RE: North Drainage Ditch Area OrderNo.: 2108A32

Dear Caitlin Fields:

Hall Environmental Analysis Laboratory received 15 sample(s) on 8/19/2021 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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:41:00 PM
Lab ID: 2108A32-001 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.6	9.3		mg/Kg	1	8/25/2021 5:25:26 PM	62109
Motor Oil Range Organics (MRO)	130	47	47		mg/Kg	1	8/25/2021 5:25:26 PM	62109
Surr: DNOP	125	0	70-130		%Rec	1	8/25/2021 5:25:26 PM	62109
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.089	0.0028	0.035		mg/Kg	1	9/1/2021 11:28:08 AM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	1.6	2.5		mg/Kg	1	8/31/2021 4:00:34 PM	62280
Arsenic	1.6	1.4	2.5	J	mg/Kg	1	8/31/2021 7:26:17 PM	62280
Barium	380	0.12	0.20		mg/Kg	2	8/31/2021 4:02:28 PM	62280
Beryllium	0.93	0.029	0.15		mg/Kg	1	8/31/2021 4:00:34 PM	62280
Cadmium	ND	0.050	0.099		mg/Kg	1	8/31/2021 4:00:34 PM	62280
Chromium	12	0.15	0.30		mg/Kg	1	8/31/2021 4:00:34 PM	62280
Cobalt	4.6	0.060	0.30		mg/Kg	1	8/31/2021 4:00:34 PM	62280
Iron	16000	250	250		mg/Kg	100	8/31/2021 4:04:15 PM	62280
Lead	5.3	0.27	0.30		mg/Kg	1	8/31/2021 4:00:34 PM	62280
Manganese	380	0.33	0.40		mg/Kg	2	8/31/2021 4:02:28 PM	62280
Nickel	11	0.20	0.50		mg/Kg	1	8/31/2021 4:00:34 PM	62280
Selenium	ND	2.2	2.5		mg/Kg	1	8/31/2021 4:00:34 PM	62280
Silver	ND	0.14	0.25		mg/Kg	1	8/31/2021 4:00:34 PM	62280
Vanadium	19	0.11	2.5		mg/Kg	1	9/1/2021 1:50:22 PM	62280
Zinc	23	1.3	2.5		mg/Kg	1	8/31/2021 4:00:34 PM	62280
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.87	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Acenaphthylene	ND	0.88	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Aniline	ND	0.67	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Anthracene	ND	0.88	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Azobenzene	ND	0.97	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Benz(a)anthracene	ND	0.63	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Benzo(a)pyrene	ND	0.92	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Benzo(g,h,i)perylene	ND	0.99	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Benzo(k)fluoranthene	ND	0.73	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Benzoic acid	ND	1.2	9.7	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Benzyl alcohol	ND	0.80	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Bis(2-chloroethoxy)methane	ND	0.75	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Bis(2-chloroethyl)ether	ND	1.0	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Bis(2-chloroisopropyl)ether	ND	0.99	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:41:00 PM
Lab ID: 2108A32-001 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Butyl benzyl phthalate	ND	0.59	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Carbazole	ND	0.86	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
4-Chloro-3-methylphenol	ND	0.82	4.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
4-Chloroaniline	ND	0.95	4.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2-Chloronaphthalene	ND	0.92	2.4	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
4-Chlorophenyl phenyl ether	ND	0.83	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Chrysene	ND	0.86	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Di-n-octyl phthalate	ND	1.3	3.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Dibenz(a,h)anthracene	ND	1.0	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Dibenzofuran	ND	1.0	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
1,2-Dichlorobenzene	ND	0.79	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
1,3-Dichlorobenzene	ND	0.69	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
1,4-Dichlorobenzene	ND	0.83	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
3,3´-Dichlorobenzidine	ND	1.5	2.4	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Dimethyl phthalate	ND	0.90	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2,4-Dichlorophenol	ND	0.79	3.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2,4-Dimethylphenol	ND	0.69	2.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.82	3.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2,4-Dinitrophenol	ND	0.49	4.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2,6-Dinitrotoluene	ND	0.99	4.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Fluoranthene	ND	0.79	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Fluorene	ND	0.87	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Hexachlorobenzene	ND	0.87	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Hexachlorobutadiene	ND	0.91	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Hexachloroethane	ND	0.86	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Isophorone	ND	0.80	3.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
1-Methylnaphthalene	ND	0.90	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2-Methylnaphthalene	ND	0.80	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2-Methylphenol	ND	0.82	3.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
3+4-Methylphenol	ND	0.80	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
N-Nitrosodi-n-propylamine	ND	0.90	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
N-Nitrosodimethylamine	ND	1.4	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272

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		

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:41:00 PM
Lab ID: 2108A32-001 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Naphthalene	ND	0.92	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2-Nitroaniline	ND	1.0	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
4-Nitroaniline	ND	1.3	3.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Nitrobenzene	ND	0.80	3.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2-Nitrophenol	ND	0.84	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
4-Nitrophenol	ND	0.80	2.4	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Pentachlorophenol	ND	0.84	3.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Phenanthrene	ND	0.99	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Phenol	ND	0.75	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Pyrene	ND	0.74	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Pyridine	ND	1.6	3.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
1,2,4-Trichlorobenzene	ND	0.89	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2,4,5-Trichlorophenol	ND	0.62	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
2,4,6-Trichlorophenol	ND	0.84	1.9	D	mg/Kg	10	9/1/2021 6:46:11 PM	62272
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/1/2021 6:46:11 PM	62272
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/1/2021 6:46:11 PM	62272
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/1/2021 6:46:11 PM	62272
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/1/2021 6:46:11 PM	62272
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/1/2021 6:46:11 PM	62272
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/1/2021 6:46:11 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0066	0.017		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Toluene	ND	0.0044	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Ethylbenzene	ND	0.0084	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Methyl tert-butyl ether (MTBE)	ND	0.020	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,2,4-Trimethylbenzene	ND	0.0049	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,3,5-Trimethylbenzene	ND	0.0078	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,2-Dichloroethane (EDC)	ND	0.0079	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,2-Dibromoethane (EDB)	ND	0.014	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Naphthalene	ND	0.013	0.069		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1-Methylnaphthalene	ND	0.040	0.14		mg/Kg	1	8/25/2021 3:45:11 AM	62086
2-Methylnaphthalene	ND	0.032	0.14		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Acetone	ND	0.11	0.52		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Bromobenzene	ND	0.0073	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Bromodichloromethane	ND	0.0044	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Bromoform	ND	0.0083	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Bromomethane	ND	0.057	0.10		mg/Kg	1	8/25/2021 3:45:11 AM	62086

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:41:00 PM
Lab ID: 2108A32-001 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	0.18	0.15	0.35	J	mg/Kg	1	8/25/2021 3:45:11 AM	62086
Carbon disulfide	ND	0.014	0.35		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Carbon tetrachloride	ND	0.0038	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Chlorobenzene	ND	0.0062	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Chloroethane	ND	0.013	0.069		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Chloroform	ND	0.0049	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Chloromethane	ND	0.012	0.10		mg/Kg	1	8/25/2021 3:45:11 AM	62086
2-Chlorotoluene	ND	0.0046	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
4-Chlorotoluene	ND	0.018	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
cis-1,2-DCE	ND	0.017	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
cis-1,3-Dichloropropene	ND	0.0051	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,2-Dibromo-3-chloropropane	ND	0.015	0.069		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Dibromochloromethane	ND	0.0055	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Dibromomethane	ND	0.0081	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,2-Dichlorobenzene	ND	0.0072	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,3-Dichlorobenzene	ND	0.0065	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,4-Dichlorobenzene	ND	0.0092	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Dichlorodifluoromethane	ND	0.013	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,1-Dichloroethane	ND	0.010	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,1-Dichloroethene	ND	0.0074	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,2-Dichloropropane	ND	0.0067	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,3-Dichloropropane	ND	0.0076	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
2,2-Dichloropropane	ND	0.0049	0.069		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,1-Dichloropropene	ND	0.0042	0.069		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Hexachlorobutadiene	ND	0.023	0.069		mg/Kg	1	8/25/2021 3:45:11 AM	62086
2-Hexanone	0.022	0.015	0.35	J	mg/Kg	1	8/25/2021 3:45:11 AM	62086
Isopropylbenzene	ND	0.0064	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
4-Isopropyltoluene	ND	0.0089	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
4-Methyl-2-pentanone	ND	0.040	0.35		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Methylene chloride	ND	0.025	0.10		mg/Kg	1	8/25/2021 3:45:11 AM	62086
n-Butylbenzene	ND	0.0092	0.10		mg/Kg	1	8/25/2021 3:45:11 AM	62086
n-Propylbenzene	ND	0.0056	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
sec-Butylbenzene	ND	0.028	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Styrene	ND	0.0047	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
tert-Butylbenzene	ND	0.0080	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,1,1,2-Tetrachloroethane	ND	0.0051	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,1,2,2-Tetrachloroethane	ND	0.011	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Tetrachloroethene (PCE)	ND	0.0095	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
trans-1,2-DCE	ND	0.0067	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:41:00 PM
Lab ID: 2108A32-001 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0081	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,2,3-Trichlorobenzene	ND	0.0053	0.069		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,2,4-Trichlorobenzene	ND	0.012	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,1,1-Trichloroethane	ND	0.0076	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,1,2-Trichloroethane	ND	0.0086	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Trichloroethene (TCE)	ND	0.0068	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Trichlorofluoromethane	ND	0.0078	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
1,2,3-Trichloropropane	ND	0.015	0.069		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Vinyl chloride	ND	0.0066	0.035		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Xylenes, Total	ND	0.018	0.069		mg/Kg	1	8/25/2021 3:45:11 AM	62086
Surr: Dibromofluoromethane	101		70-130		%Rec	1	8/25/2021 3:45:11 AM	62086
Surr: 1,2-Dichloroethane-d4	109		70-130		%Rec	1	8/25/2021 3:45:11 AM	62086
Surr: Toluene-d8	99.8		70-130		%Rec	1	8/25/2021 3:45:11 AM	62086
Surr: 4-Bromofluorobenzene	102		70-130		%Rec	1	8/25/2021 3:45:11 AM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1.1	0.96	3.5	J	mg/Kg	1	8/25/2021 3:45:11 AM	62086
Surr: BFB	97.0	0	70-130		%Rec	1	8/25/2021 3:45:11 AM	62086

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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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:55:00 PM
Lab ID: 2108A32-002 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	27	4.6	9.3		mg/Kg	1	8/25/2021 5:00:00 PM	62109
Motor Oil Range Organics (MRO)	200	47	47		mg/Kg	1	8/25/2021 5:00:00 PM	62109
Surr: DNOP	121	0	70-130		%Rec	1	8/25/2021 5:00:00 PM	62109
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.26	0.0024	0.031		mg/Kg	1	9/1/2021 11:30:17 AM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	4.9		mg/Kg	2	8/26/2021 6:18:44 PM	62201
Arsenic	ND	2.8	4.9		mg/Kg	2	8/26/2021 6:18:44 PM	62201
Barium	710	6.0	9.9		mg/Kg	100	8/26/2021 6:20:52 PM	62201
Beryllium	0.83	0.058	0.30		mg/Kg	2	8/26/2021 6:18:44 PM	62201
Cadmium	ND	0.099	0.20		mg/Kg	2	8/26/2021 6:18:44 PM	62201
Chromium	22	0.30	0.59		mg/Kg	2	8/26/2021 6:18:44 PM	62201
Cobalt	5.3	0.12	0.59		mg/Kg	2	8/26/2021 6:18:44 PM	62201
Iron	14000	250	250		mg/Kg	100	8/26/2021 6:20:52 PM	62201
Lead	16	0.53	0.59		mg/Kg	2	8/30/2021 1:59:06 PM	62201
Manganese	450	0.33	0.40		mg/Kg	2	8/26/2021 6:18:44 PM	62201
Nickel	16	0.39	0.99		mg/Kg	2	8/26/2021 6:18:44 PM	62201
Selenium	ND	4.3	4.9		mg/Kg	2	8/26/2021 6:18:44 PM	62201
Silver	ND	0.29	0.49		mg/Kg	2	8/26/2021 6:18:44 PM	62201
Vanadium	24	0.22	4.9		mg/Kg	2	8/26/2021 6:18:44 PM	62201
Zinc	54	2.7	4.9		mg/Kg	2	8/26/2021 6:18:44 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Acenaphthylene	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Aniline	ND	1.3	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Anthracene	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Azobenzene	ND	1.9	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Benz(a)anthracene	ND	1.2	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Benzo(a)pyrene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Benzo(b)fluoranthene	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Benzo(g,h,i)perylene	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Benzo(k)fluoranthene	ND	1.4	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Benzoic acid	ND	2.4	19	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Benzyl alcohol	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Bis(2-chloroethoxy)methane	ND	1.5	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Bis(2-chloroethyl)ether	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Bis(2-chloroisopropyl)ether	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Bis(2-ethylhexyl)phthalate	ND	4.1	9.6	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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
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J	Analyte detected below quantitation limits
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RL	Reporting Limit

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:55:00 PM
Lab ID: 2108A32-002 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Butyl benzyl phthalate	ND	1.2	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Carbazole	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
4-Chloro-3-methylphenol	ND	1.6	9.6	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
4-Chloroaniline	ND	1.9	9.6	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2-Chloronaphthalene	ND	1.8	4.8	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2-Chlorophenol	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
4-Chlorophenyl phenyl ether	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Chrysene	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Di-n-butyl phthalate	ND	5.4	7.7	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Di-n-octyl phthalate	ND	2.5	7.7	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Dibenz(a,h)anthracene	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Dibenzofuran	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
1,2-Dichlorobenzene	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
1,3-Dichlorobenzene	ND	1.4	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
1,4-Dichlorobenzene	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
3,3´-Dichlorobenzidine	ND	2.9	4.8	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Diethyl phthalate	ND	6.3	9.6	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Dimethyl phthalate	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2,4-Dichlorophenol	ND	1.6	7.7	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2,4-Dimethylphenol	ND	1.4	5.8	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
4,6-Dinitro-2-methylphenol	ND	1.6	7.7	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2,4-Dinitrophenol	ND	0.97	9.6	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2,4-Dinitrotoluene	ND	2.3	9.6	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2,6-Dinitrotoluene	ND	2.0	9.6	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Fluoranthene	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Fluorene	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Hexachlorobenzene	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Hexachlorobutadiene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Hexachlorocyclopentadiene	ND	2.2	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Hexachloroethane	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Indeno(1,2,3-cd)pyrene	ND	2.2	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Isophorone	ND	1.6	7.7	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
1-Methylnaphthalene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2-Methylnaphthalene	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2-Methylphenol	ND	1.6	7.7	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
3+4-Methylphenol	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
N-Nitrosodi-n-propylamine	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
N-Nitrosodimethylamine	ND	2.9	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:55:00 PM
Lab ID: 2108A32-002 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Naphthalene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2-Nitroaniline	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
3-Nitroaniline	ND	2.2	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
4-Nitroaniline	ND	2.5	7.7	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Nitrobenzene	ND	1.6	7.7	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2-Nitrophenol	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
4-Nitrophenol	ND	1.6	4.8	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Pentachlorophenol	ND	1.7	7.7	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Phenanthrene	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Phenol	ND	1.5	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Pyrene	ND	1.5	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Pyridine	ND	3.1	7.7	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
1,2,4-Trichlorobenzene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2,4,5-Trichlorophenol	ND	1.2	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
2,4,6-Trichlorophenol	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 10:30:45 AM	62216
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	20	9/2/2021 10:30:45 AM	62216
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	20	9/2/2021 10:30:45 AM	62216
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	20	9/2/2021 10:30:45 AM	62216
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	20	9/2/2021 10:30:45 AM	62216
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	20	9/2/2021 10:30:45 AM	62216
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	20	9/2/2021 10:30:45 AM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0070	0.018		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Toluene	0.0088	0.0047	0.036	J	mg/Kg	1	8/25/2021 4:12:20 AM	62086
Ethylbenzene	ND	0.0088	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Methyl tert-butyl ether (MTBE)	ND	0.020	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,2,4-Trimethylbenzene	ND	0.0051	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,3,5-Trimethylbenzene	ND	0.0081	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,2-Dichloroethane (EDC)	ND	0.0082	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,2-Dibromoethane (EDB)	ND	0.014	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Naphthalene	0.016	0.013	0.072	J	mg/Kg	1	8/25/2021 4:12:20 AM	62086
1-Methylnaphthalene	0.092	0.041	0.14	J	mg/Kg	1	8/25/2021 4:12:20 AM	62086
2-Methylnaphthalene	0.078	0.033	0.14	J	mg/Kg	1	8/25/2021 4:12:20 AM	62086
Acetone	ND	0.12	0.54		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Bromobenzene	ND	0.0077	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Bromodichloromethane	ND	0.0046	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Bromoform	ND	0.0087	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Bromomethane	ND	0.060	0.11		mg/Kg	1	8/25/2021 4:12:20 AM	62086

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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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:55:00 PM
Lab ID: 2108A32-002 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	0.21	0.16	0.36	J	mg/Kg	1	8/25/2021 4:12:20 AM	62086
Carbon disulfide	ND	0.015	0.36		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Carbon tetrachloride	ND	0.0040	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Chlorobenzene	ND	0.0065	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Chloroethane	ND	0.014	0.072		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Chloroform	ND	0.0051	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Chloromethane	ND	0.013	0.11		mg/Kg	1	8/25/2021 4:12:20 AM	62086
2-Chlorotoluene	ND	0.0048	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
4-Chlorotoluene	ND	0.019	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
cis-1,2-DCE	ND	0.018	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
cis-1,3-Dichloropropene	ND	0.0054	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,2-Dibromo-3-chloropropane	ND	0.016	0.072		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Dibromochloromethane	ND	0.0058	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Dibromomethane	ND	0.0084	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,2-Dichlorobenzene	ND	0.0075	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,3-Dichlorobenzene	ND	0.0068	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,4-Dichlorobenzene	ND	0.0097	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Dichlorodifluoromethane	ND	0.014	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,1-Dichloroethane	ND	0.011	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,1-Dichloroethene	ND	0.0078	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,2-Dichloropropane	ND	0.0070	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,3-Dichloropropane	ND	0.0079	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
2,2-Dichloropropane	ND	0.0051	0.072		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,1-Dichloropropene	ND	0.0044	0.072		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Hexachlorobutadiene	ND	0.025	0.072		mg/Kg	1	8/25/2021 4:12:20 AM	62086
2-Hexanone	0.044	0.016	0.36	J	mg/Kg	1	8/25/2021 4:12:20 AM	62086
Isopropylbenzene	ND	0.0067	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
4-Isopropyltoluene	ND	0.0093	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
4-Methyl-2-pentanone	ND	0.042	0.36		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Methylene chloride	ND	0.026	0.11		mg/Kg	1	8/25/2021 4:12:20 AM	62086
n-Butylbenzene	ND	0.0097	0.11		mg/Kg	1	8/25/2021 4:12:20 AM	62086
n-Propylbenzene	ND	0.0058	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
sec-Butylbenzene	ND	0.030	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Styrene	ND	0.0049	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
tert-Butylbenzene	ND	0.0084	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,1,1,2-Tetrachloroethane	ND	0.0053	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,1,2,2-Tetrachloroethane	ND	0.012	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Tetrachloroethene (PCE)	ND	0.0099	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
trans-1,2-DCE	ND	0.0070	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086

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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
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E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:55:00 PM
Lab ID: 2108A32-002 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0085	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,2,3-Trichlorobenzene	ND	0.0056	0.072		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,2,4-Trichlorobenzene	ND	0.013	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,1,1-Trichloroethane	ND	0.0080	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,1,2-Trichloroethane	ND	0.0090	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Trichloroethene (TCE)	ND	0.0071	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Trichlorofluoromethane	ND	0.0082	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
1,2,3-Trichloropropane	ND	0.015	0.072		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Vinyl chloride	ND	0.0069	0.036		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Xylenes, Total	ND	0.019	0.072		mg/Kg	1	8/25/2021 4:12:20 AM	62086
Surr: Dibromofluoromethane	103		70-130		%Rec	1	8/25/2021 4:12:20 AM	62086
Surr: 1,2-Dichloroethane-d4	114		70-130		%Rec	1	8/25/2021 4:12:20 AM	62086
Surr: Toluene-d8	103		70-130		%Rec	1	8/25/2021 4:12:20 AM	62086
Surr: 4-Bromofluorobenzene	103		70-130		%Rec	1	8/25/2021 4:12:20 AM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1.4	1.0	3.6	J	mg/Kg	1	8/25/2021 4:12:20 AM	62086
Surr: BFB	98.9	0	70-130		%Rec	1	8/25/2021 4:12:20 AM	62086

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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD2
Project: North Drainage Ditch Area **Collection Date:** 8/16/2021
Lab ID: 2108A32-003 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	35	4.8	9.7		mg/Kg	1	8/25/2021 4:34:05 PM	62109
Motor Oil Range Organics (MRO)	140	48	48		mg/Kg	1	8/25/2021 4:34:05 PM	62109
Surr: DNOP	123	0	70-130		%Rec	1	8/25/2021 4:34:05 PM	62109
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.52	0.014	0.18		mg/Kg	5	9/1/2021 1:15:58 PM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.8		mg/Kg	2	8/26/2021 6:23:11 PM	62201
Arsenic	ND	2.7	4.8		mg/Kg	2	8/26/2021 6:23:11 PM	62201
Barium	730	5.8	9.7		mg/Kg	100	8/26/2021 6:25:14 PM	62201
Beryllium	0.83	0.057	0.29		mg/Kg	2	8/26/2021 6:23:11 PM	62201
Cadmium	ND	0.097	0.19		mg/Kg	2	8/26/2021 6:23:11 PM	62201
Chromium	22	0.29	0.58		mg/Kg	2	8/26/2021 6:23:11 PM	62201
Cobalt	4.9	0.12	0.58		mg/Kg	2	8/26/2021 6:23:11 PM	62201
Iron	13000	240	240		mg/Kg	100	8/26/2021 6:25:14 PM	62201
Lead	16	0.52	0.58		mg/Kg	2	8/30/2021 2:09:38 PM	62201
Manganese	480	0.32	0.39		mg/Kg	2	8/26/2021 6:23:11 PM	62201
Nickel	17	0.38	0.97		mg/Kg	2	8/26/2021 6:23:11 PM	62201
Selenium	ND	4.3	4.8		mg/Kg	2	8/26/2021 6:23:11 PM	62201
Silver	ND	0.28	0.48		mg/Kg	2	8/26/2021 6:23:11 PM	62201
Vanadium	24	0.22	4.8		mg/Kg	2	8/26/2021 6:23:11 PM	62201
Zinc	53	2.6	4.8		mg/Kg	2	8/26/2021 6:23:11 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Acenaphthylene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Aniline	ND	1.4	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Anthracene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Azobenzene	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Benz(a)anthracene	ND	1.3	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Benzo(a)pyrene	ND	1.9	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Benzo(b)fluoranthene	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Benzo(g,h,i)perylene	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Benzo(k)fluoranthene	ND	1.5	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Benzoic acid	ND	2.5	20	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Benzyl alcohol	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Bis(2-chloroethoxy)methane	ND	1.5	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Bis(2-chloroethyl)ether	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Bis(2-chloroisopropyl)ether	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Bis(2-ethylhexyl)phthalate	ND	4.2	9.8	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD2
Project: North Drainage Ditch Area **Collection Date:** 8/16/2021
Lab ID: 2108A32-003 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Butyl benzyl phthalate	ND	1.2	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Carbazole	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
4-Chloro-3-methylphenol	ND	1.7	9.8	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
4-Chloroaniline	ND	1.9	9.8	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2-Chloronaphthalene	ND	1.9	4.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2-Chlorophenol	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
4-Chlorophenyl phenyl ether	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Chrysene	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Di-n-butyl phthalate	ND	5.5	7.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Di-n-octyl phthalate	ND	2.5	7.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Dibenz(a,h)anthracene	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Dibenzofuran	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
1,2-Dichlorobenzene	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
1,3-Dichlorobenzene	ND	1.4	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
1,4-Dichlorobenzene	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
3,3´-Dichlorobenzidine	ND	3.0	4.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Diethyl phthalate	ND	6.4	9.8	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Dimethyl phthalate	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2,4-Dichlorophenol	ND	1.6	7.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2,4-Dimethylphenol	ND	1.4	5.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
4,6-Dinitro-2-methylphenol	ND	1.7	7.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2,4-Dinitrophenol	ND	0.99	9.8	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2,4-Dinitrotoluene	ND	2.4	9.8	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2,6-Dinitrotoluene	ND	2.0	9.8	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Fluoranthene	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Fluorene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Hexachlorobenzene	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Hexachlorobutadiene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Hexachlorocyclopentadiene	ND	2.2	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Hexachloroethane	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Indeno(1,2,3-cd)pyrene	ND	2.3	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Isophorone	ND	1.6	7.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
1-Methylnaphthalene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2-Methylnaphthalene	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2-Methylphenol	ND	1.7	7.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
3+4-Methylphenol	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
N-Nitrosodi-n-propylamine	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
N-Nitrosodimethylamine	ND	2.9	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD2
Project: North Drainage Ditch Area **Collection Date:** 8/16/2021
Lab ID: 2108A32-003 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Naphthalene	ND	1.9	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2-Nitroaniline	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
3-Nitroaniline	ND	2.3	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
4-Nitroaniline	ND	2.5	7.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Nitrobenzene	ND	1.6	7.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2-Nitrophenol	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
4-Nitrophenol	ND	1.6	4.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Pentachlorophenol	ND	1.7	7.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Phenanthrene	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Phenol	ND	1.5	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Pyrene	ND	1.5	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Pyridine	ND	3.2	7.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
1,2,4-Trichlorobenzene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2,4,5-Trichlorophenol	ND	1.3	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
2,4,6-Trichlorophenol	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:12:13 AM	62216
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	20	9/2/2021 11:12:13 AM	62216
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	20	9/2/2021 11:12:13 AM	62216
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	20	9/2/2021 11:12:13 AM	62216
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	20	9/2/2021 11:12:13 AM	62216
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	20	9/2/2021 11:12:13 AM	62216
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	20	9/2/2021 11:12:13 AM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0074	0.019		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Toluene	ND	0.0050	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Ethylbenzene	ND	0.0094	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Methyl tert-butyl ether (MTBE)	ND	0.022	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,2,4-Trimethylbenzene	ND	0.0055	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,3,5-Trimethylbenzene	ND	0.0087	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,2-Dichloroethane (EDC)	ND	0.0088	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,2-Dibromoethane (EDB)	ND	0.015	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Naphthalene	ND	0.014	0.077		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1-Methylnaphthalene	ND	0.044	0.15		mg/Kg	1	8/25/2021 4:39:29 AM	62086
2-Methylnaphthalene	ND	0.036	0.15		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Acetone	ND	0.13	0.58		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Bromobenzene	ND	0.0082	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Bromodichloromethane	ND	0.0049	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Bromoform	ND	0.0093	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Bromomethane	ND	0.064	0.12		mg/Kg	1	8/25/2021 4:39:29 AM	62086

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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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-BD2
Project: North Drainage Ditch Area
Collection Date: 8/16/2021
Lab ID: 2108A32-003
Matrix: SOIL
Received Date: 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	0.21	0.17	0.39	J	mg/Kg	1	8/25/2021 4:39:29 AM	62086
Carbon disulfide	ND	0.016	0.39		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Carbon tetrachloride	ND	0.0043	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Chlorobenzene	ND	0.0070	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Chloroethane	ND	0.014	0.077		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Chloroform	ND	0.0055	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Chloromethane	ND	0.014	0.12		mg/Kg	1	8/25/2021 4:39:29 AM	62086
2-Chlorotoluene	ND	0.0052	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
4-Chlorotoluene	ND	0.020	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
cis-1,2-DCE	ND	0.019	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
cis-1,3-Dichloropropene	ND	0.0058	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,2-Dibromo-3-chloropropane	ND	0.017	0.077		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Dibromochloromethane	ND	0.0062	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Dibromomethane	ND	0.0090	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,2-Dichlorobenzene	ND	0.0080	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,3-Dichlorobenzene	ND	0.0073	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,4-Dichlorobenzene	ND	0.010	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Dichlorodifluoromethane	ND	0.015	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,1-Dichloroethane	ND	0.011	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,1-Dichloroethene	ND	0.0083	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,2-Dichloropropane	ND	0.0075	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,3-Dichloropropane	ND	0.0085	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
2,2-Dichloropropane	ND	0.0055	0.077		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,1-Dichloropropene	ND	0.0047	0.077		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Hexachlorobutadiene	ND	0.026	0.077		mg/Kg	1	8/25/2021 4:39:29 AM	62086
2-Hexanone	ND	0.017	0.39		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Isopropylbenzene	ND	0.0072	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
4-Isopropyltoluene	ND	0.010	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
4-Methyl-2-pentanone	ND	0.045	0.39		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Methylene chloride	ND	0.028	0.12		mg/Kg	1	8/25/2021 4:39:29 AM	62086
n-Butylbenzene	ND	0.010	0.12		mg/Kg	1	8/25/2021 4:39:29 AM	62086
n-Propylbenzene	ND	0.0062	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
sec-Butylbenzene	ND	0.032	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Styrene	ND	0.0053	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
tert-Butylbenzene	ND	0.0090	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,1,1,2-Tetrachloroethane	ND	0.0057	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,1,2,2-Tetrachloroethane	ND	0.013	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Tetrachloroethene (PCE)	ND	0.011	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
trans-1,2-DCE	ND	0.0075	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086

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Qualifiers:

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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
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S	% Recovery outside of range due to dilution or matrix

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-BD2
Project: North Drainage Ditch Area
Collection Date: 8/16/2021
Lab ID: 2108A32-003
Matrix: SOIL
Received Date: 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0091	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,2,3-Trichlorobenzene	ND	0.0060	0.077		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,2,4-Trichlorobenzene	ND	0.013	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,1,1-Trichloroethane	ND	0.0085	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,1,2-Trichloroethane	ND	0.0097	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Trichloroethene (TCE)	ND	0.0076	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Trichlorofluoromethane	ND	0.0088	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
1,2,3-Trichloropropane	ND	0.016	0.077		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Vinyl chloride	ND	0.0074	0.039		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Xylenes, Total	ND	0.020	0.077		mg/Kg	1	8/25/2021 4:39:29 AM	62086
Surr: Dibromofluoromethane	100		70-130		%Rec	1	8/25/2021 4:39:29 AM	62086
Surr: 1,2-Dichloroethane-d4	113		70-130		%Rec	1	8/25/2021 4:39:29 AM	62086
Surr: Toluene-d8	101		70-130		%Rec	1	8/25/2021 4:39:29 AM	62086
Surr: 4-Bromofluorobenzene	107		70-130		%Rec	1	8/25/2021 4:39:29 AM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1.3	1.1	3.9	J	mg/Kg	1	8/25/2021 4:39:29 AM	62086
Surr: BFB	98.0	0	70-130		%Rec	1	8/25/2021 4:39:29 AM	62086

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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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P	Sample pH Not In Range
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Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (7.5-8')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 9:25:00 AM
Lab ID: 2108A32-004 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	5400	470	950		mg/Kg	100	8/24/2021 3:08:16 PM	62109
Motor Oil Range Organics (MRO)	12000	4800	4800		mg/Kg	100	8/24/2021 3:08:16 PM	62109
Surr: DNOP	0	0	70-130	S	%Rec	100	8/24/2021 3:08:16 PM	62109
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.21	0.0026	0.033		mg/Kg	1	9/1/2021 11:39:09 AM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/26/2021 6:34:03 PM	62201
Arsenic	6.2	2.8	4.9		mg/Kg	2	8/26/2021 6:34:03 PM	62201
Barium	760	5.9	9.8		mg/Kg	100	8/26/2021 6:36:20 PM	62201
Beryllium	0.77	0.057	0.29		mg/Kg	2	8/26/2021 6:34:03 PM	62201
Cadmium	ND	0.098	0.20		mg/Kg	2	8/26/2021 6:34:03 PM	62201
Chromium	21	0.29	0.59		mg/Kg	2	8/26/2021 6:34:03 PM	62201
Cobalt	3.7	0.12	0.59		mg/Kg	2	8/26/2021 6:34:03 PM	62201
Iron	13000	240	240		mg/Kg	100	8/26/2021 6:36:20 PM	62201
Lead	15	0.52	0.59		mg/Kg	2	8/30/2021 2:11:20 PM	62201
Manganese	400	0.32	0.39		mg/Kg	2	8/26/2021 6:34:03 PM	62201
Nickel	23	0.39	0.98		mg/Kg	2	8/26/2021 6:34:03 PM	62201
Selenium	ND	4.3	4.9		mg/Kg	2	8/26/2021 6:34:03 PM	62201
Silver	ND	0.28	0.49		mg/Kg	2	8/26/2021 6:34:03 PM	62201
Vanadium	29	0.22	4.9		mg/Kg	2	8/26/2021 6:34:03 PM	62201
Zinc	93	2.6	4.9		mg/Kg	2	8/26/2021 6:34:03 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Acenaphthylene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Aniline	ND	1.4	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Anthracene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Azobenzene	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Benz(a)anthracene	ND	1.3	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Benzo(a)pyrene	ND	1.9	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Benzo(b)fluoranthene	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Benzo(g,h,i)perylene	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Benzo(k)fluoranthene	ND	1.5	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Benzoic acid	ND	2.5	20	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Benzyl alcohol	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Bis(2-chloroethoxy)methane	ND	1.5	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Bis(2-chloroethyl)ether	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Bis(2-chloroisopropyl)ether	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Bis(2-ethylhexyl)phthalate	ND	4.2	9.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216

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Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (7.5-8')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 9:25:00 AM
Lab ID: 2108A32-004 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Butyl benzyl phthalate	ND	1.2	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Carbazole	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
4-Chloro-3-methylphenol	ND	1.7	9.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
4-Chloroaniline	ND	1.9	9.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2-Chloronaphthalene	ND	1.9	4.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2-Chlorophenol	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
4-Chlorophenyl phenyl ether	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Chrysene	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Di-n-butyl phthalate	ND	5.5	7.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Di-n-octyl phthalate	ND	2.5	7.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Dibenz(a,h)anthracene	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Dibenzofuran	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
1,2-Dichlorobenzene	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
1,3-Dichlorobenzene	ND	1.4	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
1,4-Dichlorobenzene	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
3,3´-Dichlorobenzidine	ND	3.0	4.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Diethyl phthalate	ND	6.4	9.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Dimethyl phthalate	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2,4-Dichlorophenol	ND	1.6	7.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2,4-Dimethylphenol	ND	1.4	5.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
4,6-Dinitro-2-methylphenol	ND	1.7	7.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2,4-Dinitrophenol	ND	0.99	9.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2,4-Dinitrotoluene	ND	2.4	9.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2,6-Dinitrotoluene	ND	2.0	9.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Fluoranthene	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Fluorene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Hexachlorobenzene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Hexachlorobutadiene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Hexachlorocyclopentadiene	ND	2.2	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Hexachloroethane	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Indeno(1,2,3-cd)pyrene	ND	2.3	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Isophorone	ND	1.6	7.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
1-Methylnaphthalene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2-Methylnaphthalene	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2-Methylphenol	ND	1.7	7.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
3+4-Methylphenol	ND	1.6	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
N-Nitrosodi-n-propylamine	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
N-Nitrosodimethylamine	ND	2.9	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (7.5-8')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 9:25:00 AM
Lab ID: 2108A32-004 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	2.1	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Naphthalene	ND	1.9	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2-Nitroaniline	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
3-Nitroaniline	ND	2.3	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
4-Nitroaniline	ND	2.5	7.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Nitrobenzene	ND	1.6	7.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2-Nitrophenol	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
4-Nitrophenol	ND	1.6	4.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Pentachlorophenol	ND	1.7	7.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Phenanthrene	ND	2.0	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Phenol	ND	1.5	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Pyrene	ND	1.5	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Pyridine	ND	3.2	7.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
1,2,4-Trichlorobenzene	ND	1.8	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2,4,5-Trichlorophenol	ND	1.3	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
2,4,6-Trichlorophenol	ND	1.7	3.9	D	mg/Kg	20	9/2/2021 11:53:43 AM	62216
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	20	9/2/2021 11:53:43 AM	62216
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	20	9/2/2021 11:53:43 AM	62216
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	20	9/2/2021 11:53:43 AM	62216
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	20	9/2/2021 11:53:43 AM	62216
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	20	9/2/2021 11:53:43 AM	62216
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	20	9/2/2021 11:53:43 AM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	0.0051	0.0051	0.013	J	mg/Kg	1	8/25/2021 5:34:12 PM	62086
Toluene	0.0041	0.0034	0.026	J	mg/Kg	1	8/25/2021 5:34:12 PM	62086
Ethylbenzene	0.0070	0.0064	0.026	J	mg/Kg	1	8/25/2021 5:34:12 PM	62086
Methyl tert-butyl ether (MTBE)	ND	0.015	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,2,4-Trimethylbenzene	0.010	0.0037	0.026	J	mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,3,5-Trimethylbenzene	ND	0.0059	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,2-Dichloroethane (EDC)	ND	0.0060	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,2-Dibromoethane (EDB)	ND	0.010	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Naphthalene	0.024	0.0098	0.053	J	mg/Kg	1	8/25/2021 5:34:12 PM	62086
1-Methylnaphthalene	0.066	0.030	0.11	J	mg/Kg	1	8/25/2021 5:34:12 PM	62086
2-Methylnaphthalene	0.097	0.024	0.11	J	mg/Kg	1	8/25/2021 5:34:12 PM	62086
Acetone	ND	0.086	0.40		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Bromobenzene	ND	0.0056	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Bromodichloromethane	ND	0.0034	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Bromoform	ND	0.0064	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Bromomethane	ND	0.044	0.079		mg/Kg	1	8/25/2021 5:34:12 PM	62086

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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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (7.5-8')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 9:25:00 AM
Lab ID: 2108A32-004 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.11	0.26		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Carbon disulfide	ND	0.011	0.26		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Carbon tetrachloride	ND	0.0029	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Chlorobenzene	ND	0.0047	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Chloroethane	ND	0.0099	0.053		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Chloroform	ND	0.0037	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Chloromethane	ND	0.0092	0.079		mg/Kg	1	8/25/2021 5:34:12 PM	62086
2-Chlorotoluene	ND	0.0035	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
4-Chlorotoluene	ND	0.014	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
cis-1,2-DCE	ND	0.013	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
cis-1,3-Dichloropropene	ND	0.0039	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,2-Dibromo-3-chloropropane	ND	0.011	0.053		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Dibromochloromethane	ND	0.0042	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Dibromomethane	ND	0.0062	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,2-Dichlorobenzene	ND	0.0055	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,3-Dichlorobenzene	ND	0.0050	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,4-Dichlorobenzene	ND	0.0070	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Dichlorodifluoromethane	ND	0.010	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,1-Dichloroethane	ND	0.0077	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,1-Dichloroethene	ND	0.0057	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,2-Dichloropropane	ND	0.0051	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,3-Dichloropropane	ND	0.0058	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
2,2-Dichloropropane	ND	0.0037	0.053		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,1-Dichloropropene	ND	0.0032	0.053		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Hexachlorobutadiene	ND	0.018	0.053		mg/Kg	1	8/25/2021 5:34:12 PM	62086
2-Hexanone	ND	0.012	0.26		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Isopropylbenzene	ND	0.0049	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
4-Isopropyltoluene	ND	0.0068	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
4-Methyl-2-pentanone	0.032	0.031	0.26	J	mg/Kg	1	8/25/2021 5:34:12 PM	62086
Methylene chloride	ND	0.019	0.079		mg/Kg	1	8/25/2021 5:34:12 PM	62086
n-Butylbenzene	ND	0.0070	0.079		mg/Kg	1	8/25/2021 5:34:12 PM	62086
n-Propylbenzene	ND	0.0043	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
sec-Butylbenzene	ND	0.022	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Styrene	ND	0.0036	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
tert-Butylbenzene	ND	0.0061	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,1,1,2-Tetrachloroethane	ND	0.0039	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,1,2,2-Tetrachloroethane	ND	0.0085	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Tetrachloroethene (PCE)	ND	0.0072	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
trans-1,2-DCE	ND	0.0051	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086

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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
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E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (7.5-8')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 9:25:00 AM
Lab ID: 2108A32-004 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0062	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,2,3-Trichlorobenzene	ND	0.0041	0.053		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,2,4-Trichlorobenzene	ND	0.0092	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,1,1-Trichloroethane	ND	0.0058	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,1,2-Trichloroethane	ND	0.0066	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Trichloroethene (TCE)	ND	0.0052	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Trichlorofluoromethane	ND	0.0060	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
1,2,3-Trichloropropane	ND	0.011	0.053		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Vinyl chloride	ND	0.0050	0.026		mg/Kg	1	8/25/2021 5:34:12 PM	62086
Xylenes, Total	0.031	0.014	0.053	J	mg/Kg	1	8/25/2021 5:34:12 PM	62086
Surr: Dibromofluoromethane	114		70-130		%Rec	1	8/25/2021 5:34:12 PM	62086
Surr: 1,2-Dichloroethane-d4	124		70-130		%Rec	1	8/25/2021 5:34:12 PM	62086
Surr: Toluene-d8	103		70-130		%Rec	1	8/25/2021 5:34:12 PM	62086
Surr: 4-Bromofluorobenzene	110		70-130		%Rec	1	8/25/2021 5:34:12 PM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1.2	0.73	2.6	J	mg/Kg	1	8/25/2021 5:34:12 PM	62086
Surr: BFB	101	0	70-130		%Rec	1	8/25/2021 5:34:12 PM	62086

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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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (27.5-28')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 10:20:00 AM
Lab ID: 2108A32-005 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	27	4.8	9.8		mg/Kg	1	8/24/2021 11:34:48 AM	62109
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	8/24/2021 11:34:48 AM	62109
Surr: DNOP	135	0	70-130	S	%Rec	1	8/24/2021 11:34:48 AM	62109
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0026	0.033		mg/Kg	1	9/2/2021 9:05:19 AM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Arsenic	ND	2.8	5.0		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Barium	310	0.12	0.20		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Beryllium	0.96	0.059	0.30		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Cadmium	ND	0.10	0.20		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Chromium	8.4	0.30	0.60		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Cobalt	4.3	0.12	0.60		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Iron	13000	250	250		mg/Kg	100	8/26/2021 6:40:32 PM	62201
Lead	4.0	0.54	0.60		mg/Kg	2	8/30/2021 2:13:00 PM	62201
Manganese	320	0.33	0.40		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Nickel	8.0	0.40	1.0		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Selenium	ND	4.4	5.0		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Silver	ND	0.29	0.50		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Vanadium	17	0.23	5.0		mg/Kg	2	8/26/2021 6:38:24 PM	62201
Zinc	13	2.7	5.0		mg/Kg	2	8/26/2021 6:38:24 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.89	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Acenaphthylene	ND	0.90	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Aniline	ND	0.69	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Anthracene	ND	0.90	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Azobenzene	ND	0.99	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Benz(a)anthracene	ND	0.64	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Benzo(a)pyrene	ND	0.93	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Benzo(b)fluoranthene	ND	1.1	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Benzo(k)fluoranthene	ND	0.75	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Benzoic acid	ND	1.2	9.9	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Benzyl alcohol	ND	0.81	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Bis(2-chloroethoxy)methane	ND	0.76	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Bis(2-ethylhexyl)phthalate	ND	2.1	5.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (27.5-28')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 10:20:00 AM
Lab ID: 2108A32-005 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Butyl benzyl phthalate	ND	0.60	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Carbazole	ND	0.87	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
4-Chloro-3-methylphenol	ND	0.84	5.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
4-Chloroaniline	ND	0.96	5.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2-Chloronaphthalene	ND	0.94	2.5	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
4-Chlorophenyl phenyl ether	ND	0.84	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Chrysene	ND	0.88	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Di-n-butyl phthalate	ND	2.8	4.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Di-n-octyl phthalate	ND	1.3	4.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
1,2-Dichlorobenzene	ND	0.80	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
1,3-Dichlorobenzene	ND	0.71	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
1,4-Dichlorobenzene	ND	0.84	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Diethyl phthalate	ND	3.2	5.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Dimethyl phthalate	ND	0.92	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2,4-Dichlorophenol	ND	0.81	4.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2,4-Dimethylphenol	ND	0.71	3.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
4,6-Dinitro-2-methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2,4-Dinitrophenol	ND	0.50	5.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2,4-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2,6-Dinitrotoluene	ND	1.0	5.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Fluoranthene	ND	0.80	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Fluorene	ND	0.88	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Hexachlorobenzene	ND	0.88	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Hexachlorobutadiene	ND	0.93	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Hexachloroethane	ND	0.88	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Isophorone	ND	0.81	4.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
1-Methylnaphthalene	ND	0.91	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2-Methylnaphthalene	ND	0.82	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2-Methylphenol	ND	0.83	4.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
3+4-Methylphenol	ND	0.82	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
N-Nitrosodi-n-propylamine	ND	0.92	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216

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		

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (27.5-28')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 10:20:00 AM
Lab ID: 2108A32-005 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Naphthalene	ND	0.93	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
3-Nitroaniline	ND	1.2	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Nitrobenzene	ND	0.81	4.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2-Nitrophenol	ND	0.85	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
4-Nitrophenol	ND	0.81	2.5	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Pentachlorophenol	ND	0.86	4.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Phenol	ND	0.76	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Pyrene	ND	0.75	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Pyridine	ND	1.6	4.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
1,2,4-Trichlorobenzene	ND	0.91	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2,4,5-Trichlorophenol	ND	0.63	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
2,4,6-Trichlorophenol	ND	0.85	2.0	D	mg/Kg	10	9/2/2021 12:35:01 PM	62216
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/2/2021 12:35:01 PM	62216
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/2/2021 12:35:01 PM	62216
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/2/2021 12:35:01 PM	62216
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/2/2021 12:35:01 PM	62216
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/2/2021 12:35:01 PM	62216
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/2/2021 12:35:01 PM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	0.58	0.023	0.061		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Toluene	0.044	0.016	0.12	J	mg/Kg	5	8/25/2021 5:33:32 AM	62086
Ethylbenzene	1.1	0.030	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Methyl tert-butyl ether (MTBE)	ND	0.069	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,2,4-Trimethylbenzene	2.1	0.017	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,3,5-Trimethylbenzene	0.72	0.027	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,2-Dichloroethane (EDC)	ND	0.028	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,2-Dibromoethane (EDB)	ND	0.048	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Naphthalene	0.34	0.045	0.24		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1-Methylnaphthalene	0.32	0.14	0.49	J	mg/Kg	5	8/25/2021 5:33:32 AM	62086
2-Methylnaphthalene	0.54	0.11	0.49		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Acetone	ND	0.40	1.8		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Bromobenzene	ND	0.026	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Bromodichloromethane	ND	0.016	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Bromoform	ND	0.029	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Bromomethane	ND	0.20	0.37		mg/Kg	5	8/25/2021 5:33:32 AM	62086

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (27.5-28')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 10:20:00 AM
Lab ID: 2108A32-005 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.53	1.2		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Carbon disulfide	ND	0.050	1.2		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Carbon tetrachloride	ND	0.014	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Chlorobenzene	0.049	0.022	0.12	J	mg/Kg	5	8/25/2021 5:33:32 AM	62086
Chloroethane	ND	0.046	0.24		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Chloroform	0.11	0.017	0.12	J	mg/Kg	5	8/25/2021 5:33:32 AM	62086
Chloromethane	ND	0.043	0.37		mg/Kg	5	8/25/2021 5:33:32 AM	62086
2-Chlorotoluene	ND	0.016	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
4-Chlorotoluene	ND	0.064	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
cis-1,2-DCE	ND	0.061	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
cis-1,3-Dichloropropene	ND	0.018	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,2-Dibromo-3-chloropropane	ND	0.053	0.24		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Dibromochloromethane	ND	0.020	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Dibromomethane	ND	0.029	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,2-Dichlorobenzene	ND	0.025	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,3-Dichlorobenzene	ND	0.023	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,4-Dichlorobenzene	ND	0.033	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Dichlorodifluoromethane	ND	0.047	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,1-Dichloroethane	ND	0.036	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,1-Dichloroethene	ND	0.026	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,2-Dichloropropane	ND	0.024	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,3-Dichloropropane	ND	0.027	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
2,2-Dichloropropane	ND	0.017	0.24		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,1-Dichloropropene	ND	0.015	0.24		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Hexachlorobutadiene	ND	0.083	0.24		mg/Kg	5	8/25/2021 5:33:32 AM	62086
2-Hexanone	ND	0.053	1.2		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Isopropylbenzene	0.19	0.023	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
4-Isopropyltoluene	0.080	0.031	0.12	J	mg/Kg	5	8/25/2021 5:33:32 AM	62086
4-Methyl-2-pentanone	ND	0.14	1.2		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Methylene chloride	ND	0.088	0.37		mg/Kg	5	8/25/2021 5:33:32 AM	62086
n-Butylbenzene	0.19	0.033	0.37	J	mg/Kg	5	8/25/2021 5:33:32 AM	62086
n-Propylbenzene	0.44	0.020	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
sec-Butylbenzene	0.12	0.10	0.12	J	mg/Kg	5	8/25/2021 5:33:32 AM	62086
Styrene	ND	0.017	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
tert-Butylbenzene	ND	0.028	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,1,1,2-Tetrachloroethane	ND	0.018	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,1,2,2-Tetrachloroethane	ND	0.039	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Tetrachloroethene (PCE)	ND	0.033	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
trans-1,2-DCE	ND	0.024	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (27.5-28')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 10:20:00 AM
Lab ID: 2108A32-005 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.029	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,2,3-Trichlorobenzene	ND	0.019	0.24		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,2,4-Trichlorobenzene	ND	0.042	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,1,1-Trichloroethane	ND	0.027	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,1,2-Trichloroethane	ND	0.031	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Trichloroethene (TCE)	ND	0.024	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Trichlorofluoromethane	ND	0.028	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
1,2,3-Trichloropropane	ND	0.051	0.24		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Vinyl chloride	ND	0.023	0.12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Xylenes, Total	5.6	0.064	0.24		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Surr: Dibromofluoromethane	83.3		70-130		%Rec	5	8/25/2021 5:33:32 AM	62086
Surr: 1,2-Dichloroethane-d4	95.1		70-130		%Rec	5	8/25/2021 5:33:32 AM	62086
Surr: Toluene-d8	104		70-130		%Rec	5	8/25/2021 5:33:32 AM	62086
Surr: 4-Bromofluorobenzene	106		70-130		%Rec	5	8/25/2021 5:33:32 AM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	230	3.4	12		mg/Kg	5	8/25/2021 5:33:32 AM	62086
Surr: BFB	108	0	70-130		%Rec	5	8/25/2021 5:33:32 AM	62086

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (35-35.5')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 8:30:00 AM
Lab ID: 2108A32-006 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.8	9.7		mg/Kg	1	8/23/2021 3:22:12 PM	62109
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/23/2021 3:22:12 PM	62109
Surr: DNOP	152	0	70-130	S	%Rec	1	8/23/2021 3:22:12 PM	62109
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0026	0.033		mg/Kg	1	9/2/2021 9:07:29 AM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/26/2021 6:42:33 PM	62201
Arsenic	ND	2.8	4.9		mg/Kg	2	8/26/2021 6:42:33 PM	62201
Barium	700	5.8	9.7		mg/Kg	100	8/26/2021 6:44:49 PM	62201
Beryllium	0.62	0.057	0.29		mg/Kg	2	8/26/2021 6:42:33 PM	62201
Cadmium	ND	0.097	0.19		mg/Kg	2	8/26/2021 6:42:33 PM	62201
Chromium	5.4	0.29	0.58		mg/Kg	2	8/26/2021 6:42:33 PM	62201
Cobalt	3.0	0.12	0.58		mg/Kg	2	8/26/2021 6:42:33 PM	62201
Iron	9400	240	240		mg/Kg	100	8/26/2021 6:44:49 PM	62201
Lead	1.4	0.52	0.58		mg/Kg	2	8/30/2021 2:14:38 PM	62201
Manganese	1500	16	19		mg/Kg	100	8/26/2021 6:44:49 PM	62201
Nickel	5.3	0.38	0.97		mg/Kg	2	8/26/2021 6:42:33 PM	62201
Selenium	ND	4.3	4.9		mg/Kg	2	8/26/2021 6:42:33 PM	62201
Silver	ND	0.28	0.49		mg/Kg	2	8/26/2021 6:42:33 PM	62201
Vanadium	14	0.22	4.9		mg/Kg	2	8/26/2021 6:42:33 PM	62201
Zinc	10	2.6	4.9		mg/Kg	2	8/26/2021 6:42:33 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.89	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Acenaphthylene	ND	0.90	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Aniline	ND	0.69	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Anthracene	ND	0.90	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Azobenzene	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Benz(a)anthracene	ND	0.64	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Benzo(a)pyrene	ND	0.94	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Benzo(b)fluoranthene	ND	1.1	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Benzo(k)fluoranthene	ND	0.75	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Benzoic acid	ND	1.2	10	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Benzyl alcohol	ND	0.82	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Bis(2-chloroethoxy)methane	ND	0.76	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Bis(2-ethylhexyl)phthalate	ND	2.1	5.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (35-35.5')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 8:30:00 AM
Lab ID: 2108A32-006 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Butyl benzyl phthalate	ND	0.61	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Carbazole	ND	0.88	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
4-Chloro-3-methylphenol	ND	0.84	5.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
4-Chloroaniline	ND	0.97	5.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2-Chloronaphthalene	ND	0.95	2.5	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
4-Chlorophenyl phenyl ether	ND	0.85	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Chrysene	ND	0.88	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Di-n-butyl phthalate	ND	2.8	4.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Di-n-octyl phthalate	ND	1.3	4.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
1,2-Dichlorobenzene	ND	0.81	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
1,3-Dichlorobenzene	ND	0.71	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
1,4-Dichlorobenzene	ND	0.85	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Diethyl phthalate	ND	3.3	5.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Dimethyl phthalate	ND	0.92	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2,4-Dichlorophenol	ND	0.81	4.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2,4-Dimethylphenol	ND	0.71	3.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
4,6-Dinitro-2-methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2,4-Dinitrophenol	ND	0.50	5.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2,4-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2,6-Dinitrotoluene	ND	1.0	5.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Fluoranthene	ND	0.81	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Fluorene	ND	0.89	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Hexachlorobenzene	ND	0.89	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Hexachlorobutadiene	ND	0.94	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Hexachloroethane	ND	0.88	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Indeno(1,2,3-cd)pyrene	ND	1.2	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Isophorone	ND	0.82	4.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
1-Methylnaphthalene	ND	0.92	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2-Methylnaphthalene	ND	0.82	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2-Methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
3+4-Methylphenol	ND	0.82	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
N-Nitrosodi-n-propylamine	ND	0.92	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216

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		

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (35-35.5')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 8:30:00 AM
Lab ID: 2108A32-006 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Naphthalene	ND	0.94	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
3-Nitroaniline	ND	1.2	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Nitrobenzene	ND	0.82	4.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2-Nitrophenol	ND	0.86	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
4-Nitrophenol	ND	0.82	2.5	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Pentachlorophenol	ND	0.86	4.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Phenol	ND	0.77	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Pyrene	ND	0.76	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Pyridine	ND	1.6	4.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
1,2,4-Trichlorobenzene	ND	0.92	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2,4,5-Trichlorophenol	ND	0.64	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
2,4,6-Trichlorophenol	ND	0.86	2.0	D	mg/Kg	10	9/2/2021 1:16:22 PM	62216
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/2/2021 1:16:22 PM	62216
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/2/2021 1:16:22 PM	62216
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/2/2021 1:16:22 PM	62216
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/2/2021 1:16:22 PM	62216
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/2/2021 1:16:22 PM	62216
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/2/2021 1:16:22 PM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0053	0.014		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Toluene	ND	0.0035	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Ethylbenzene	ND	0.0067	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Methyl tert-butyl ether (MTBE)	0.016	0.016	0.027	J	mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,2,4-Trimethylbenzene	ND	0.0039	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,3,5-Trimethylbenzene	ND	0.0062	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,2-Dichloroethane (EDC)	ND	0.0063	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,2-Dibromoethane (EDB)	ND	0.011	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Naphthalene	ND	0.010	0.055		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1-Methylnaphthalene	ND	0.031	0.11		mg/Kg	1	8/25/2021 6:00:47 AM	62086
2-Methylnaphthalene	ND	0.025	0.11		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Acetone	ND	0.090	0.41		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Bromobenzene	ND	0.0058	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Bromodichloromethane	ND	0.0035	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Bromoform	ND	0.0066	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Bromomethane	ND	0.045	0.082		mg/Kg	1	8/25/2021 6:00:47 AM	62086

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (35-35.5')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 8:30:00 AM
Lab ID: 2108A32-006 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.12	0.27		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Carbon disulfide	ND	0.011	0.27		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Carbon tetrachloride	ND	0.0031	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Chlorobenzene	ND	0.0049	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Chloroethane	ND	0.010	0.055		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Chloroform	ND	0.0039	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Chloromethane	ND	0.0096	0.082		mg/Kg	1	8/25/2021 6:00:47 AM	62086
2-Chlorotoluene	ND	0.0037	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
4-Chlorotoluene	ND	0.014	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
cis-1,2-DCE	ND	0.014	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
cis-1,3-Dichloropropene	ND	0.0041	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,2-Dibromo-3-chloropropane	ND	0.012	0.055		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Dibromochloromethane	ND	0.0044	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Dibromomethane	ND	0.0064	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,2-Dichlorobenzene	ND	0.0057	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,3-Dichlorobenzene	ND	0.0052	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,4-Dichlorobenzene	ND	0.0073	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Dichlorodifluoromethane	ND	0.011	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,1-Dichloroethane	ND	0.0080	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,1-Dichloroethene	ND	0.0059	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,2-Dichloropropane	ND	0.0054	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,3-Dichloropropane	ND	0.0060	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
2,2-Dichloropropane	ND	0.0039	0.055		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,1-Dichloropropene	ND	0.0033	0.055		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Hexachlorobutadiene	ND	0.019	0.055		mg/Kg	1	8/25/2021 6:00:47 AM	62086
2-Hexanone	0.019	0.012	0.27	J	mg/Kg	1	8/25/2021 6:00:47 AM	62086
Isopropylbenzene	ND	0.0051	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
4-Isopropyltoluene	ND	0.0071	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
4-Methyl-2-pentanone	ND	0.032	0.27		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Methylene chloride	ND	0.020	0.082		mg/Kg	1	8/25/2021 6:00:47 AM	62086
n-Butylbenzene	ND	0.0073	0.082		mg/Kg	1	8/25/2021 6:00:47 AM	62086
n-Propylbenzene	ND	0.0044	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
sec-Butylbenzene	ND	0.023	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Styrene	ND	0.0037	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
tert-Butylbenzene	ND	0.0064	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,1,1,2-Tetrachloroethane	ND	0.0040	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,1,2,2-Tetrachloroethane	ND	0.0089	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Tetrachloroethene (PCE)	ND	0.0075	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
trans-1,2-DCE	ND	0.0053	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (35-35.5')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 8:30:00 AM
Lab ID: 2108A32-006 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0064	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,2,3-Trichlorobenzene	ND	0.0042	0.055		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,2,4-Trichlorobenzene	ND	0.0096	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,1,1-Trichloroethane	ND	0.0061	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,1,2-Trichloroethane	ND	0.0069	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Trichloroethene (TCE)	ND	0.0054	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Trichlorofluoromethane	ND	0.0062	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
1,2,3-Trichloropropane	ND	0.012	0.055		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Vinyl chloride	ND	0.0052	0.027		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Xylenes, Total	ND	0.014	0.055		mg/Kg	1	8/25/2021 6:00:47 AM	62086
Surr: Dibromofluoromethane	98.3		70-130		%Rec	1	8/25/2021 6:00:47 AM	62086
Surr: 1,2-Dichloroethane-d4	106		70-130		%Rec	1	8/25/2021 6:00:47 AM	62086
Surr: Toluene-d8	105		70-130		%Rec	1	8/25/2021 6:00:47 AM	62086
Surr: 4-Bromofluorobenzene	103		70-130		%Rec	1	8/25/2021 6:00:47 AM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	0.94	0.76	2.7	J	mg/Kg	1	8/25/2021 6:00:47 AM	62086
Surr: BFB	100	0	70-130		%Rec	1	8/25/2021 6:00:47 AM	62086

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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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (45.5-46')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 10:30:00 AM
Lab ID: 2108A32-007 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.7	9.5		mg/Kg	1	8/23/2021 3:32:10 PM	62109
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/23/2021 3:32:10 PM	62109
Surr: DNOP	138	0	70-130	S	%Rec	1	8/23/2021 3:32:10 PM	62109
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0026	0.033		mg/Kg	1	9/2/2021 9:09:39 AM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/26/2021 6:46:57 PM	62201
Arsenic	ND	2.8	4.9		mg/Kg	2	8/26/2021 6:46:57 PM	62201
Barium	610	5.9	9.8		mg/Kg	100	8/26/2021 6:49:07 PM	62201
Beryllium	1.3	0.057	0.29		mg/Kg	2	8/26/2021 6:46:57 PM	62201
Cadmium	ND	0.098	0.20		mg/Kg	2	8/26/2021 6:46:57 PM	62201
Chromium	10	0.29	0.59		mg/Kg	2	8/26/2021 6:46:57 PM	62201
Cobalt	5.3	0.12	0.59		mg/Kg	2	8/26/2021 6:46:57 PM	62201
Iron	22000	240	240		mg/Kg	100	8/26/2021 6:49:07 PM	62201
Lead	4.2	0.52	0.59		mg/Kg	2	8/30/2021 2:16:26 PM	62201
Manganese	190	0.32	0.39		mg/Kg	2	8/26/2021 6:46:57 PM	62201
Nickel	12	0.39	0.98		mg/Kg	2	8/26/2021 6:46:57 PM	62201
Selenium	ND	4.3	4.9		mg/Kg	2	8/26/2021 6:46:57 PM	62201
Silver	ND	0.28	0.49		mg/Kg	2	8/26/2021 6:46:57 PM	62201
Vanadium	18	0.22	4.9		mg/Kg	2	8/26/2021 6:46:57 PM	62201
Zinc	23	2.6	4.9		mg/Kg	2	8/26/2021 6:46:57 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.86	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Acenaphthylene	ND	0.87	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Aniline	ND	0.67	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Anthracene	ND	0.87	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Azobenzene	ND	0.96	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Benz(a)anthracene	ND	0.62	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Benzo(a)pyrene	ND	0.91	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Benzo(g,h,i)perylene	ND	0.98	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Benzo(k)fluoranthene	ND	0.73	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Benzoic acid	ND	1.2	9.6	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Benzyl alcohol	ND	0.79	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Bis(2-chloroethoxy)methane	ND	0.74	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Bis(2-chloroethyl)ether	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Bis(2-chloroisopropyl)ether	ND	0.98	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Bis(2-ethylhexyl)phthalate	ND	2.1	4.8	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216

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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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (45.5-46')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 10:30:00 AM
Lab ID: 2108A32-007 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Butyl benzyl phthalate	ND	0.59	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Carbazole	ND	0.85	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
4-Chloro-3-methylphenol	ND	0.81	4.8	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
4-Chloroaniline	ND	0.94	4.8	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2-Chloronaphthalene	ND	0.91	2.4	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
4-Chlorophenyl phenyl ether	ND	0.82	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Chrysene	ND	0.85	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Di-n-octyl phthalate	ND	1.2	3.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Dibenz(a,h)anthracene	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Dibenzofuran	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
1,2-Dichlorobenzene	ND	0.78	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
1,3-Dichlorobenzene	ND	0.69	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
1,4-Dichlorobenzene	ND	0.82	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
3,3´-Dichlorobenzidine	ND	1.5	2.4	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Diethyl phthalate	ND	3.1	4.8	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Dimethyl phthalate	ND	0.89	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2,4-Dichlorophenol	ND	0.78	3.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2,4-Dimethylphenol	ND	0.69	2.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
4,6-Dinitro-2-methylphenol	ND	0.81	3.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2,4-Dinitrophenol	ND	0.49	4.8	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2,4-Dinitrotoluene	ND	1.2	4.8	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2,6-Dinitrotoluene	ND	0.98	4.8	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Fluoranthene	ND	0.78	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Fluorene	ND	0.86	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Hexachlorobenzene	ND	0.86	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Hexachlorobutadiene	ND	0.91	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Hexachloroethane	ND	0.85	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Isophorone	ND	0.79	3.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
1-Methylnaphthalene	ND	0.89	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2-Methylnaphthalene	ND	0.80	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2-Methylphenol	ND	0.81	3.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
3+4-Methylphenol	ND	0.80	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
N-Nitrosodi-n-propylamine	ND	0.89	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
N-Nitrosodimethylamine	ND	1.4	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216

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PQL	Practical Quanitative Limit
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (45.5-46')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 10:30:00 AM
Lab ID: 2108A32-007 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Naphthalene	ND	0.91	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2-Nitroaniline	ND	0.99	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
4-Nitroaniline	ND	1.2	3.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Nitrobenzene	ND	0.79	3.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2-Nitrophenol	ND	0.83	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
4-Nitrophenol	ND	0.79	2.4	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Pentachlorophenol	ND	0.83	3.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Phenanthrene	ND	0.99	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Phenol	ND	0.74	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Pyrene	ND	0.73	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Pyridine	ND	1.6	3.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
1,2,4-Trichlorobenzene	ND	0.89	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2,4,5-Trichlorophenol	ND	0.61	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
2,4,6-Trichlorophenol	ND	0.83	1.9	D	mg/Kg	10	9/2/2021 1:58:16 PM	62216
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/2/2021 1:58:16 PM	62216
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/2/2021 1:58:16 PM	62216
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/2/2021 1:58:16 PM	62216
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/2/2021 1:58:16 PM	62216
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/2/2021 1:58:16 PM	62216
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/2/2021 1:58:16 PM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0063	0.016		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Toluene	ND	0.0042	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Ethylbenzene	ND	0.0079	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Methyl tert-butyl ether (MTBE)	ND	0.018	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,2,4-Trimethylbenzene	ND	0.0046	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,3,5-Trimethylbenzene	ND	0.0073	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,2-Dichloroethane (EDC)	ND	0.0074	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,2-Dibromoethane (EDB)	ND	0.013	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Naphthalene	ND	0.012	0.065		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1-Methylnaphthalene	ND	0.037	0.13		mg/Kg	1	8/25/2021 8:18:13 PM	62159
2-Methylnaphthalene	ND	0.030	0.13		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Acetone	ND	0.11	0.49		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Bromobenzene	ND	0.0069	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Bromodichloromethane	ND	0.0041	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Bromoform	ND	0.0078	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Bromomethane	ND	0.054	0.098		mg/Kg	1	8/25/2021 8:18:13 PM	62159

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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E	Value above quantitation range
J	Analyte detected below quantitation limits
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Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (45.5-46')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 10:30:00 AM
Lab ID: 2108A32-007 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.14	0.33		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Carbon disulfide	ND	0.013	0.33		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Carbon tetrachloride	ND	0.0036	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Chlorobenzene	ND	0.0059	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Chloroethane	ND	0.012	0.065		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Chloroform	ND	0.0046	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Chloromethane	ND	0.011	0.098		mg/Kg	1	8/25/2021 8:18:13 PM	62159
2-Chlorotoluene	ND	0.0044	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
4-Chlorotoluene	ND	0.017	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
cis-1,2-DCE	ND	0.016	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
cis-1,3-Dichloropropene	ND	0.0048	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,2-Dibromo-3-chloropropane	ND	0.014	0.065		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Dibromochloromethane	ND	0.0052	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Dibromomethane	ND	0.0076	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,2-Dichlorobenzene	ND	0.0068	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,3-Dichlorobenzene	ND	0.0061	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,4-Dichlorobenzene	ND	0.0087	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Dichlorodifluoromethane	ND	0.013	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,1-Dichloroethane	ND	0.0095	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,1-Dichloroethene	ND	0.0070	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,2-Dichloropropane	ND	0.0063	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,3-Dichloropropane	ND	0.0072	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
2,2-Dichloropropane	ND	0.0046	0.065		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,1-Dichloropropene	ND	0.0039	0.065		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Hexachlorobutadiene	ND	0.022	0.065		mg/Kg	1	8/25/2021 8:18:13 PM	62159
2-Hexanone	ND	0.014	0.33		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Isopropylbenzene	ND	0.0060	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
4-Isopropyltoluene	ND	0.0084	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
4-Methyl-2-pentanone	ND	0.038	0.33		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Methylene chloride	ND	0.024	0.098		mg/Kg	1	8/25/2021 8:18:13 PM	62159
n-Butylbenzene	ND	0.0087	0.098		mg/Kg	1	8/25/2021 8:18:13 PM	62159
n-Propylbenzene	ND	0.0053	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
sec-Butylbenzene	ND	0.027	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Styrene	ND	0.0044	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
tert-Butylbenzene	ND	0.0075	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,1,1,2-Tetrachloroethane	ND	0.0048	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,1,2,2-Tetrachloroethane	ND	0.011	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Tetrachloroethene (PCE)	ND	0.0089	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
trans-1,2-DCE	ND	0.0063	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-1 (45.5-46')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 10:30:00 AM
Lab ID: 2108A32-007 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0076	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,2,3-Trichlorobenzene	ND	0.0050	0.065		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,2,4-Trichlorobenzene	ND	0.011	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,1,1-Trichloroethane	ND	0.0072	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,1,2-Trichloroethane	ND	0.0081	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Trichloroethene (TCE)	ND	0.0064	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Trichlorofluoromethane	ND	0.0074	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
1,2,3-Trichloropropane	ND	0.014	0.065		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Vinyl chloride	ND	0.0062	0.033		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Xylenes, Total	ND	0.017	0.065		mg/Kg	1	8/25/2021 8:18:13 PM	62159
Surr: Dibromofluoromethane	105		70-130		%Rec	1	8/25/2021 8:18:13 PM	62159
Surr: 1,2-Dichloroethane-d4	119		70-130		%Rec	1	8/25/2021 8:18:13 PM	62159
Surr: Toluene-d8	107		70-130		%Rec	1	8/25/2021 8:18:13 PM	62159
Surr: 4-Bromofluorobenzene	111		70-130		%Rec	1	8/25/2021 8:18:13 PM	62159
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1.1	0.90	3.3	J	mg/Kg	1	8/25/2021 8:18:13 PM	62159
Surr: BFB	105	0	70-130		%Rec	1	8/25/2021 8:18:13 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 2:10:00 PM
Lab ID: 2108A32-008 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	4.9	4.6	9.3	J	mg/Kg	1	8/24/2021 12:45:41 PM	62109
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/24/2021 12:45:41 PM	62109
Surr: DNOP	109	0	70-130		%Rec	1	8/24/2021 12:45:41 PM	62109
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.019	0.0026	0.033	J	mg/Kg	1	9/1/2021 12:58:33 PM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/26/2021 6:51:09 PM	62201
Arsenic	ND	2.8	5.0		mg/Kg	2	8/26/2021 6:51:09 PM	62201
Barium	470	0.12	0.20		mg/Kg	2	8/26/2021 6:51:09 PM	62201
Beryllium	0.57	0.058	0.30		mg/Kg	2	8/26/2021 6:51:09 PM	62201
Cadmium	ND	0.099	0.20		mg/Kg	2	8/26/2021 6:51:09 PM	62201
Chromium	86	0.30	0.59		mg/Kg	2	8/26/2021 6:51:09 PM	62201
Cobalt	3.6	0.12	0.59		mg/Kg	2	8/26/2021 6:51:09 PM	62201
Iron	14000	250	250		mg/Kg	100	8/26/2021 6:53:17 PM	62201
Lead	3.9	0.53	0.59		mg/Kg	2	8/30/2021 2:18:12 PM	62201
Manganese	710	16	20		mg/Kg	100	8/26/2021 6:53:17 PM	62201
Nickel	76	0.39	0.99		mg/Kg	2	8/26/2021 6:51:09 PM	62201
Selenium	ND	4.4	5.0		mg/Kg	2	8/26/2021 6:51:09 PM	62201
Silver	0.64	0.29	0.50		mg/Kg	2	8/26/2021 6:51:09 PM	62201
Vanadium	17	0.22	5.0		mg/Kg	2	8/26/2021 6:51:09 PM	62201
Zinc	32	2.7	5.0		mg/Kg	2	8/26/2021 6:51:09 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Acenaphthylene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Aniline	ND	1.4	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Anthracene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Azobenzene	ND	2.0	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Benz(a)anthracene	ND	1.3	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Benzo(a)pyrene	ND	1.9	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Benzo(b)fluoranthene	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Benzo(g,h,i)perylene	ND	2.0	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Benzo(k)fluoranthene	ND	1.5	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Benzoic acid	ND	2.5	20	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Benzyl alcohol	ND	1.6	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Bis(2-chloroethoxy)methane	ND	1.5	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Bis(2-chloroethyl)ether	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Bis(2-chloroisopropyl)ether	ND	2.0	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Bis(2-ethylhexyl)phthalate	ND	4.3	10	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 2:10:00 PM
Lab ID: 2108A32-008 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Butyl benzyl phthalate	ND	1.2	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Carbazole	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
4-Chloro-3-methylphenol	ND	1.7	10	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
4-Chloroaniline	ND	1.9	10	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2-Chloronaphthalene	ND	1.9	5.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2-Chlorophenol	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
4-Chlorophenyl phenyl ether	ND	1.7	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Chrysene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Di-n-butyl phthalate	ND	5.6	8.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Di-n-octyl phthalate	ND	2.6	8.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Dibenz(a,h)anthracene	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Dibenzofuran	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
1,2-Dichlorobenzene	ND	1.6	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
1,3-Dichlorobenzene	ND	1.4	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
1,4-Dichlorobenzene	ND	1.7	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
3,3´-Dichlorobenzidine	ND	3.0	5.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Diethyl phthalate	ND	6.5	10	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Dimethyl phthalate	ND	1.9	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2,4-Dichlorophenol	ND	1.6	8.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2,4-Dimethylphenol	ND	1.4	6.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
4,6-Dinitro-2-methylphenol	ND	1.7	8.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2,4-Dinitrophenol	ND	1.0	10	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2,4-Dinitrotoluene	ND	2.4	10	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2,6-Dinitrotoluene	ND	2.0	10	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Fluoranthene	ND	1.6	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Fluorene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Hexachlorobenzene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Hexachlorobutadiene	ND	1.9	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Hexachlorocyclopentadiene	ND	2.3	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Hexachloroethane	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Indeno(1,2,3-cd)pyrene	ND	2.3	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Isophorone	ND	1.6	8.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
1-Methylnaphthalene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2-Methylnaphthalene	ND	1.7	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2-Methylphenol	ND	1.7	8.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
3+4-Methylphenol	ND	1.7	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
N-Nitrosodi-n-propylamine	ND	1.9	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
N-Nitrosodimethylamine	ND	3.0	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 2:10:00 PM
Lab ID: 2108A32-008 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Naphthalene	ND	1.9	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2-Nitroaniline	ND	2.0	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
3-Nitroaniline	ND	2.3	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
4-Nitroaniline	ND	2.6	8.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Nitrobenzene	ND	1.6	8.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2-Nitrophenol	ND	1.7	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
4-Nitrophenol	ND	1.6	5.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Pentachlorophenol	ND	1.7	8.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Phenanthrene	ND	2.0	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Phenol	ND	1.5	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Pyrene	ND	1.5	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Pyridine	ND	3.2	8.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
1,2,4-Trichlorobenzene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2,4,5-Trichlorophenol	ND	1.3	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
2,4,6-Trichlorophenol	ND	1.7	4.0	D	mg/Kg	20	9/2/2021 2:39:35 PM	62216
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	20	9/2/2021 2:39:35 PM	62216
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	20	9/2/2021 2:39:35 PM	62216
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	20	9/2/2021 2:39:35 PM	62216
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	20	9/2/2021 2:39:35 PM	62216
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	20	9/2/2021 2:39:35 PM	62216
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	20	9/2/2021 2:39:35 PM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0059	0.015		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Toluene	ND	0.0039	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Ethylbenzene	ND	0.0074	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Methyl tert-butyl ether (MTBE)	ND	0.017	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,2,4-Trimethylbenzene	ND	0.0043	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,3,5-Trimethylbenzene	ND	0.0068	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,2-Dichloroethane (EDC)	ND	0.0069	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,2-Dibromoethane (EDB)	ND	0.012	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Naphthalene	ND	0.011	0.061		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1-Methylnaphthalene	ND	0.035	0.12		mg/Kg	1	8/25/2021 8:45:23 PM	62159
2-Methylnaphthalene	ND	0.028	0.12		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Acetone	ND	0.099	0.46		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Bromobenzene	ND	0.0065	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Bromodichloromethane	ND	0.0039	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Bromoform	ND	0.0073	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Bromomethane	ND	0.050	0.091		mg/Kg	1	8/25/2021 8:45:23 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 2:10:00 PM
Lab ID: 2108A32-008 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	0.14	0.13	0.30	J	mg/Kg	1	8/25/2021 8:45:23 PM	62159
Carbon disulfide	ND	0.013	0.30		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Carbon tetrachloride	ND	0.0034	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Chlorobenzene	ND	0.0055	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Chloroethane	ND	0.011	0.061		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Chloroform	ND	0.0043	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Chloromethane	ND	0.011	0.091		mg/Kg	1	8/25/2021 8:45:23 PM	62159
2-Chlorotoluene	ND	0.0041	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
4-Chlorotoluene	ND	0.016	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
cis-1,2-DCE	ND	0.015	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
cis-1,3-Dichloropropene	ND	0.0045	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,2-Dibromo-3-chloropropane	ND	0.013	0.061		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Dibromochloromethane	ND	0.0049	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Dibromomethane	ND	0.0071	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,2-Dichlorobenzene	ND	0.0063	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,3-Dichlorobenzene	ND	0.0057	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,4-Dichlorobenzene	ND	0.0081	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Dichlorodifluoromethane	ND	0.012	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,1-Dichloroethane	ND	0.0089	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,1-Dichloroethene	ND	0.0065	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,2-Dichloropropane	ND	0.0059	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,3-Dichloropropane	ND	0.0067	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
2,2-Dichloropropane	ND	0.0043	0.061		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,1-Dichloropropene	ND	0.0037	0.061		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Hexachlorobutadiene	ND	0.021	0.061		mg/Kg	1	8/25/2021 8:45:23 PM	62159
2-Hexanone	0.018	0.013	0.30	J	mg/Kg	1	8/25/2021 8:45:23 PM	62159
Isopropylbenzene	ND	0.0056	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
4-Isopropyltoluene	ND	0.0078	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
4-Methyl-2-pentanone	ND	0.035	0.30		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Methylene chloride	ND	0.022	0.091		mg/Kg	1	8/25/2021 8:45:23 PM	62159
n-Butylbenzene	ND	0.0081	0.091		mg/Kg	1	8/25/2021 8:45:23 PM	62159
n-Propylbenzene	ND	0.0049	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
sec-Butylbenzene	ND	0.025	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Styrene	ND	0.0041	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
tert-Butylbenzene	ND	0.0070	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,1,1,2-Tetrachloroethane	ND	0.0045	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,1,2,2-Tetrachloroethane	ND	0.0098	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Tetrachloroethene (PCE)	ND	0.0083	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
trans-1,2-DCE	ND	0.0059	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 2:10:00 PM
Lab ID: 2108A32-008 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0071	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,2,3-Trichlorobenzene	ND	0.0047	0.061		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,2,4-Trichlorobenzene	ND	0.011	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,1,1-Trichloroethane	ND	0.0067	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,1,2-Trichloroethane	ND	0.0076	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Trichloroethene (TCE)	ND	0.0060	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Trichlorofluoromethane	ND	0.0069	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
1,2,3-Trichloropropane	ND	0.013	0.061		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Vinyl chloride	ND	0.0058	0.030		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Xylenes, Total	ND	0.016	0.061		mg/Kg	1	8/25/2021 8:45:23 PM	62159
Surr: Dibromofluoromethane	110		70-130		%Rec	1	8/25/2021 8:45:23 PM	62159
Surr: 1,2-Dichloroethane-d4	120		70-130		%Rec	1	8/25/2021 8:45:23 PM	62159
Surr: Toluene-d8	110		70-130		%Rec	1	8/25/2021 8:45:23 PM	62159
Surr: 4-Bromofluorobenzene	104		70-130		%Rec	1	8/25/2021 8:45:23 PM	62159
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	0.97	0.85	3.0	J	mg/Kg	1	8/25/2021 8:45:23 PM	62159
Surr: BFB	101	0	70-130		%Rec	1	8/25/2021 8:45:23 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 2:20:00 PM
Lab ID: 2108A32-009 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	9.5	4.8	9.6	J	mg/Kg	1	8/24/2021 11:58:23 AM	62109
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/24/2021 11:58:23 AM	62109
Surr: DNOP	115	0	70-130		%Rec	1	8/24/2021 11:58:23 AM	62109
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.037	0.0025	0.032		mg/Kg	1	9/1/2021 1:00:43 PM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.1		mg/Kg	2	8/26/2021 7:02:09 PM	62201
Arsenic	4.7	2.9	5.1	J	mg/Kg	2	8/26/2021 7:02:09 PM	62201
Barium	640	6.1	10		mg/Kg	100	8/26/2021 7:04:19 PM	62201
Beryllium	0.59	0.059	0.30		mg/Kg	2	8/26/2021 7:02:09 PM	62201
Cadmium	ND	0.10	0.20		mg/Kg	2	8/26/2021 7:02:09 PM	62201
Chromium	20	0.30	0.61		mg/Kg	2	8/26/2021 7:02:09 PM	62201
Cobalt	3.4	0.12	0.61		mg/Kg	2	8/26/2021 7:02:09 PM	62201
Iron	16000	250	250		mg/Kg	100	8/26/2021 7:04:19 PM	62201
Lead	13	0.54	0.61		mg/Kg	2	8/30/2021 2:19:53 PM	62201
Manganese	720	17	20		mg/Kg	100	8/26/2021 7:04:19 PM	62201
Nickel	48	0.40	1.0		mg/Kg	2	8/26/2021 7:02:09 PM	62201
Selenium	ND	4.5	5.1		mg/Kg	2	8/30/2021 2:19:53 PM	62201
Silver	ND	0.29	0.51		mg/Kg	2	8/26/2021 7:02:09 PM	62201
Vanadium	19	0.23	5.1		mg/Kg	2	8/26/2021 7:02:09 PM	62201
Zinc	61	2.7	5.1		mg/Kg	2	8/26/2021 7:02:09 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Acenaphthylene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Aniline	ND	1.4	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Anthracene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Azobenzene	ND	2.0	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Benz(a)anthracene	ND	1.3	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Benzo(a)pyrene	ND	1.9	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Benzo(b)fluoranthene	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Benzo(g,h,i)perylene	ND	2.0	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Benzo(k)fluoranthene	ND	1.5	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Benzoic acid	ND	2.5	20	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Benzyl alcohol	ND	1.6	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Bis(2-chloroethoxy)methane	ND	1.5	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Bis(2-chloroethyl)ether	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Bis(2-chloroisopropyl)ether	ND	2.0	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Bis(2-ethylhexyl)phthalate	ND	4.3	9.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 2:20:00 PM
Lab ID: 2108A32-009 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Butyl benzyl phthalate	ND	1.2	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Carbazole	ND	1.7	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
4-Chloro-3-methylphenol	ND	1.7	9.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
4-Chloroaniline	ND	1.9	9.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2-Chloronaphthalene	ND	1.9	5.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2-Chlorophenol	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
4-Chlorophenyl phenyl ether	ND	1.7	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Chrysene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Di-n-butyl phthalate	ND	5.5	7.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Di-n-octyl phthalate	ND	2.6	7.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Dibenz(a,h)anthracene	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Dibenzofuran	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
1,2-Dichlorobenzene	ND	1.6	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
1,3-Dichlorobenzene	ND	1.4	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
1,4-Dichlorobenzene	ND	1.7	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
3,3´-Dichlorobenzidine	ND	3.0	5.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Diethyl phthalate	ND	6.5	9.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Dimethyl phthalate	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2,4-Dichlorophenol	ND	1.6	7.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2,4-Dimethylphenol	ND	1.4	6.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
4,6-Dinitro-2-methylphenol	ND	1.7	7.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2,4-Dinitrophenol	ND	1.0	9.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2,4-Dinitrotoluene	ND	2.4	9.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2,6-Dinitrotoluene	ND	2.0	9.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Fluoranthene	ND	1.6	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Fluorene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Hexachlorobenzene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Hexachlorobutadiene	ND	1.9	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Hexachlorocyclopentadiene	ND	2.2	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Hexachloroethane	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Indeno(1,2,3-cd)pyrene	ND	2.3	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Isophorone	ND	1.6	7.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
1-Methylnaphthalene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2-Methylnaphthalene	ND	1.6	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2-Methylphenol	ND	1.7	7.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
3+4-Methylphenol	ND	1.6	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
N-Nitrosodi-n-propylamine	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
N-Nitrosodimethylamine	ND	3.0	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 2:20:00 PM
Lab ID: 2108A32-009 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	2.1	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Naphthalene	ND	1.9	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2-Nitroaniline	ND	2.0	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
3-Nitroaniline	ND	2.3	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
4-Nitroaniline	ND	2.5	7.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Nitrobenzene	ND	1.6	7.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2-Nitrophenol	ND	1.7	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
4-Nitrophenol	ND	1.6	5.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Pentachlorophenol	ND	1.7	7.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Phenanthrene	ND	2.0	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Phenol	ND	1.5	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Pyrene	ND	1.5	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Pyridine	ND	3.2	7.9	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
1,2,4-Trichlorobenzene	ND	1.8	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2,4,5-Trichlorophenol	ND	1.3	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
2,4,6-Trichlorophenol	ND	1.7	4.0	D	mg/Kg	20	9/2/2021 3:21:15 PM	62216
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	20	9/2/2021 3:21:15 PM	62216
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	20	9/2/2021 3:21:15 PM	62216
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	20	9/2/2021 3:21:15 PM	62216
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	20	9/2/2021 3:21:15 PM	62216
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	20	9/2/2021 3:21:15 PM	62216
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	20	9/2/2021 3:21:15 PM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0060	0.016		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Toluene	0.25	0.0040	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Ethylbenzene	0.11	0.0076	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Methyl tert-butyl ether (MTBE)	ND	0.018	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,2,4-Trimethylbenzene	0.013	0.0044	0.031	J	mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,3,5-Trimethylbenzene	ND	0.0070	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,2-Dichloroethane (EDC)	ND	0.0071	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,2-Dibromoethane (EDB)	ND	0.012	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Naphthalene	ND	0.012	0.062		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1-Methylnaphthalene	ND	0.036	0.12		mg/Kg	1	8/25/2021 9:12:33 PM	62159
2-Methylnaphthalene	ND	0.029	0.12		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Acetone	ND	0.10	0.47		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Bromobenzene	ND	0.0066	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Bromodichloromethane	0.0061	0.0039	0.031	J	mg/Kg	1	8/25/2021 9:12:33 PM	62159
Bromoform	ND	0.0075	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Bromomethane	ND	0.051	0.093		mg/Kg	1	8/25/2021 9:12:33 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 2:20:00 PM
Lab ID: 2108A32-009 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.13	0.31		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Carbon disulfide	ND	0.013	0.31		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Carbon tetrachloride	ND	0.0035	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Chlorobenzene	ND	0.0056	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Chloroethane	ND	0.012	0.062		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Chloroform	ND	0.0044	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Chloromethane	ND	0.011	0.093		mg/Kg	1	8/25/2021 9:12:33 PM	62159
2-Chlorotoluene	ND	0.0042	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
4-Chlorotoluene	ND	0.016	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
cis-1,2-DCE	ND	0.015	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
cis-1,3-Dichloropropene	ND	0.0046	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,2-Dibromo-3-chloropropane	ND	0.013	0.062		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Dibromochloromethane	ND	0.0050	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Dibromomethane	ND	0.0073	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,2-Dichlorobenzene	ND	0.0065	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,3-Dichlorobenzene	ND	0.0059	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,4-Dichlorobenzene	ND	0.0083	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Dichlorodifluoromethane	ND	0.012	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,1-Dichloroethane	ND	0.0090	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,1-Dichloroethene	ND	0.0067	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,2-Dichloropropane	ND	0.0060	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,3-Dichloropropane	ND	0.0068	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
2,2-Dichloropropane	ND	0.0044	0.062		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,1-Dichloropropene	ND	0.0037	0.062		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Hexachlorobutadiene	ND	0.021	0.062		mg/Kg	1	8/25/2021 9:12:33 PM	62159
2-Hexanone	ND	0.014	0.31		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Isopropylbenzene	ND	0.0058	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
4-Isopropyltoluene	ND	0.0080	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
4-Methyl-2-pentanone	2.2	0.036	0.31		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Methylene chloride	ND	0.022	0.093		mg/Kg	1	8/25/2021 9:12:33 PM	62159
n-Butylbenzene	ND	0.0083	0.093		mg/Kg	1	8/25/2021 9:12:33 PM	62159
n-Propylbenzene	ND	0.0050	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
sec-Butylbenzene	ND	0.026	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Styrene	ND	0.0042	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
tert-Butylbenzene	ND	0.0072	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,1,1,2-Tetrachloroethane	ND	0.0046	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,1,2,2-Tetrachloroethane	ND	0.010	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Tetrachloroethene (PCE)	ND	0.0085	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
trans-1,2-DCE	ND	0.0060	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 2:20:00 PM
Lab ID: 2108A32-009 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0073	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,2,3-Trichlorobenzene	ND	0.0048	0.062		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,2,4-Trichlorobenzene	ND	0.011	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,1,1-Trichloroethane	ND	0.0068	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,1,2-Trichloroethane	ND	0.0078	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Trichloroethene (TCE)	ND	0.0061	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Trichlorofluoromethane	ND	0.0070	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
1,2,3-Trichloropropane	ND	0.013	0.062		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Vinyl chloride	ND	0.0059	0.031		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Xylenes, Total	0.76	0.016	0.062		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Surr: Dibromofluoromethane	105		70-130		%Rec	1	8/25/2021 9:12:33 PM	62159
Surr: 1,2-Dichloroethane-d4	120		70-130		%Rec	1	8/25/2021 9:12:33 PM	62159
Surr: Toluene-d8	106		70-130		%Rec	1	8/25/2021 9:12:33 PM	62159
Surr: 4-Bromofluorobenzene	105		70-130		%Rec	1	8/25/2021 9:12:33 PM	62159
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	5.2	0.86	3.1		mg/Kg	1	8/25/2021 9:12:33 PM	62159
Surr: BFB	98.9	0	70-130		%Rec	1	8/25/2021 9:12:33 PM	62159

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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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (28.2-28.7)
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 4:22:00 PM
Lab ID: 2108A32-010 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.6	9.3		mg/Kg	1	8/24/2021 11:02:51 AM	62132
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/24/2021 11:02:51 AM	62132
Surr: DNOP	131	0	70-130	S	%Rec	1	8/24/2021 11:02:51 AM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0040	0.0026	0.033	J	mg/Kg	1	9/1/2021 1:02:54 PM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	8.0	12		mg/Kg	5	8/30/2021 2:21:33 PM	62201
Arsenic	ND	6.9	12		mg/Kg	5	8/31/2021 7:08:56 PM	62201
Barium	250	0.29	0.48		mg/Kg	5	8/30/2021 2:21:33 PM	62201
Beryllium	0.95	0.14	0.73		mg/Kg	5	8/30/2021 2:21:33 PM	62201
Cadmium	ND	0.24	0.48		mg/Kg	5	8/30/2021 2:21:33 PM	62201
Chromium	6.4	0.73	1.5		mg/Kg	5	8/30/2021 2:21:33 PM	62201
Cobalt	3.9	0.29	1.5		mg/Kg	5	8/30/2021 2:21:33 PM	62201
Iron	11000	240	240		mg/Kg	100	8/26/2021 7:08:46 PM	62201
Lead	4.1	1.3	1.5		mg/Kg	5	8/30/2021 2:21:33 PM	62201
Manganese	1900	16	19		mg/Kg	100	8/26/2021 7:08:46 PM	62201
Nickel	6.3	0.96	2.4		mg/Kg	5	8/30/2021 2:21:33 PM	62201
Selenium	ND	11	12		mg/Kg	5	8/30/2021 2:21:33 PM	62201
Silver	1.1	0.70	1.2	J	mg/Kg	5	8/30/2021 2:21:33 PM	62201
Vanadium	17	0.55	12		mg/Kg	5	9/8/2021 12:00:15 PM	62201
Zinc	13	6.5	12		mg/Kg	5	8/30/2021 2:21:33 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.88	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Acenaphthylene	ND	0.90	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Aniline	ND	0.68	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Anthracene	ND	0.89	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Azobenzene	ND	0.99	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Benz(a)anthracene	ND	0.64	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Benzo(a)pyrene	ND	0.93	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Benzo(b)fluoranthene	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Benzo(k)fluoranthene	ND	0.74	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Benzoic acid	ND	1.2	9.9	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Benzyl alcohol	ND	0.81	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Bis(2-chloroethoxy)methane	ND	0.76	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (28.2-28.7)
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 4:22:00 PM
Lab ID: 2108A32-010 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Butyl benzyl phthalate	ND	0.60	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Carbazole	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
4-Chloro-3-methylphenol	ND	0.83	4.9	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
4-Chloroaniline	ND	0.96	4.9	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2-Chloronaphthalene	ND	0.94	2.5	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
4-Chlorophenyl phenyl ether	ND	0.84	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Chrysene	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Di-n-butyl phthalate	ND	2.8	4.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Di-n-octyl phthalate	ND	1.3	4.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
1,2-Dichlorobenzene	ND	0.80	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
1,3-Dichlorobenzene	ND	0.70	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
1,4-Dichlorobenzene	ND	0.84	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Dimethyl phthalate	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2,4-Dichlorophenol	ND	0.80	4.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2,4-Dimethylphenol	ND	0.70	3.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
4,6-Dinitro-2-methylphenol	ND	0.83	4.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2,4-Dinitrophenol	ND	0.50	4.9	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2,6-Dinitrotoluene	ND	1.0	4.9	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Fluoranthene	ND	0.80	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Fluorene	ND	0.88	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Hexachlorobenzene	ND	0.88	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Hexachlorobutadiene	ND	0.93	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Hexachloroethane	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Isophorone	ND	0.81	4.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
1-Methylnaphthalene	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2-Methylnaphthalene	ND	0.82	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2-Methylphenol	ND	0.83	4.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
3+4-Methylphenol	ND	0.82	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
N-Nitrosodi-n-propylamine	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187

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		

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (28.2-28.7)
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 4:22:00 PM
Lab ID: 2108A32-010 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Naphthalene	ND	0.93	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
3-Nitroaniline	ND	1.2	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Nitrobenzene	ND	0.81	4.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2-Nitrophenol	ND	0.85	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
4-Nitrophenol	ND	0.81	2.5	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Pentachlorophenol	ND	0.85	4.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Phenol	ND	0.76	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Pyrene	ND	0.75	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Pyridine	ND	1.6	4.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
1,2,4-Trichlorobenzene	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2,4,5-Trichlorophenol	ND	0.63	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
2,4,6-Trichlorophenol	ND	0.85	2.0	D	mg/Kg	10	8/27/2021 5:05:11 PM	62187
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	8/27/2021 5:05:11 PM	62187
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	8/27/2021 5:05:11 PM	62187
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	8/27/2021 5:05:11 PM	62187
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	8/27/2021 5:05:11 PM	62187
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	8/27/2021 5:05:11 PM	62187
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	8/27/2021 5:05:11 PM	62187
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0054	0.014		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Toluene	ND	0.0036	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Ethylbenzene	ND	0.0069	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Methyl tert-butyl ether (MTBE)	ND	0.016	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,2,4-Trimethylbenzene	ND	0.0040	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,3,5-Trimethylbenzene	ND	0.0064	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,2-Dichloroethane (EDC)	ND	0.0065	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,2-Dibromoethane (EDB)	ND	0.011	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Naphthalene	ND	0.011	0.057		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1-Methylnaphthalene	ND	0.032	0.11		mg/Kg	1	8/25/2021 9:39:40 PM	62159
2-Methylnaphthalene	ND	0.026	0.11		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Acetone	ND	0.092	0.42		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Bromobenzene	ND	0.0060	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Bromodichloromethane	ND	0.0036	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Bromoform	ND	0.0068	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Bromomethane	ND	0.047	0.085		mg/Kg	1	8/25/2021 9:39:40 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (28.2-28.7)
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 4:22:00 PM
Lab ID: 2108A32-010 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.12	0.28		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Carbon disulfide	ND	0.012	0.28		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Carbon tetrachloride	ND	0.0032	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Chlorobenzene	ND	0.0051	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Chloroethane	ND	0.011	0.057		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Chloroform	ND	0.0040	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Chloromethane	ND	0.0099	0.085		mg/Kg	1	8/25/2021 9:39:40 PM	62159
2-Chlorotoluene	ND	0.0038	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
4-Chlorotoluene	ND	0.015	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
cis-1,2-DCE	ND	0.014	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
cis-1,3-Dichloropropene	ND	0.0042	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,2-Dibromo-3-chloropropane	ND	0.012	0.057		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Dibromochloromethane	ND	0.0045	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Dibromomethane	ND	0.0066	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,2-Dichlorobenzene	ND	0.0059	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,3-Dichlorobenzene	ND	0.0053	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,4-Dichlorobenzene	ND	0.0076	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Dichlorodifluoromethane	ND	0.011	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,1-Dichloroethane	ND	0.0082	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,1-Dichloroethene	ND	0.0061	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,2-Dichloropropane	ND	0.0055	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,3-Dichloropropane	ND	0.0062	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
2,2-Dichloropropane	ND	0.0040	0.057		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,1-Dichloropropene	ND	0.0034	0.057		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Hexachlorobutadiene	ND	0.019	0.057		mg/Kg	1	8/25/2021 9:39:40 PM	62159
2-Hexanone	ND	0.012	0.28		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Isopropylbenzene	ND	0.0052	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
4-Isopropyltoluene	ND	0.0073	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
4-Methyl-2-pentanone	ND	0.033	0.28		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Methylene chloride	ND	0.021	0.085		mg/Kg	1	8/25/2021 9:39:40 PM	62159
n-Butylbenzene	ND	0.0076	0.085		mg/Kg	1	8/25/2021 9:39:40 PM	62159
n-Propylbenzene	ND	0.0046	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
sec-Butylbenzene	ND	0.023	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Styrene	ND	0.0039	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
tert-Butylbenzene	ND	0.0065	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,1,1,2-Tetrachloroethane	ND	0.0042	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,1,2,2-Tetrachloroethane	ND	0.0092	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Tetrachloroethene (PCE)	ND	0.0078	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
trans-1,2-DCE	ND	0.0055	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (28.2-28.7)
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 4:22:00 PM
Lab ID: 2108A32-010 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0066	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,2,3-Trichlorobenzene	ND	0.0044	0.057		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,2,4-Trichlorobenzene	ND	0.0098	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,1,1-Trichloroethane	ND	0.0062	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,1,2-Trichloroethane	ND	0.0071	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Trichloroethene (TCE)	ND	0.0055	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Trichlorofluoromethane	ND	0.0064	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
1,2,3-Trichloropropane	ND	0.012	0.057		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Vinyl chloride	ND	0.0054	0.028		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Xylenes, Total	ND	0.015	0.057		mg/Kg	1	8/25/2021 9:39:40 PM	62159
Surr: Dibromofluoromethane	101		70-130		%Rec	1	8/25/2021 9:39:40 PM	62159
Surr: 1,2-Dichloroethane-d4	111		70-130		%Rec	1	8/25/2021 9:39:40 PM	62159
Surr: Toluene-d8	103		70-130		%Rec	1	8/25/2021 9:39:40 PM	62159
Surr: 4-Bromofluorobenzene	103		70-130		%Rec	1	8/25/2021 9:39:40 PM	62159
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	0.90	0.79	2.8	J	mg/Kg	1	8/25/2021 9:39:40 PM	62159
Surr: BFB	98.7	0	70-130		%Rec	1	8/25/2021 9:39:40 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB3
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:55:00 PM
Lab ID: 2108A32-011
Matrix: AQUEOUS
Received Date: 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Benzene	ND	0.23	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Toluene	ND	0.20	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Ethylbenzene	ND	0.21	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Naphthalene	ND	0.50	2.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Acetone	ND	2.5	10		µg/L	1	8/20/2021 7:05:00 PM	R80688
Bromobenzene	ND	0.28	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Bromodichloromethane	ND	0.20	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Bromoform	ND	0.31	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Bromomethane	ND	0.85	3.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
2-Butanone	ND	2.0	10		µg/L	1	8/20/2021 7:05:00 PM	R80688
Carbon disulfide	ND	0.59	10		µg/L	1	8/20/2021 7:05:00 PM	R80688
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Chlorobenzene	ND	0.16	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Chloroethane	ND	0.38	2.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Chloroform	ND	0.13	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Chloromethane	ND	0.41	3.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Dibromochloromethane	ND	0.28	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Dibromomethane	ND	0.31	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	8/20/2021 7:05:00 PM	R80688

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB3
Project: North Drainage Ditch Area
Collection Date: 8/16/2021 2:55:00 PM
Lab ID: 2108A32-011
Matrix: AQUEOUS
Received Date: 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
2-Hexanone	ND	1.8	10		µg/L	1	8/20/2021 7:05:00 PM	R80688
Isopropylbenzene	ND	0.18	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	8/20/2021 7:05:00 PM	R80688
Methylene Chloride	ND	0.50	3.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
n-Butylbenzene	ND	0.25	3.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
n-Propylbenzene	ND	0.18	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Styrene	ND	0.14	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Vinyl chloride	ND	0.32	1.0		µg/L	1	8/20/2021 7:05:00 PM	R80688
Xylenes, Total	ND	0.37	1.5		µg/L	1	8/20/2021 7:05:00 PM	R80688
Surr: 1,2-Dichloroethane-d4	81.2	0	70-130		%Rec	1	8/20/2021 7:05:00 PM	R80688
Surr: 4-Bromofluorobenzene	98.4	0	70-130		%Rec	1	8/20/2021 7:05:00 PM	R80688
Surr: Dibromofluoromethane	83.6	0	70-130		%Rec	1	8/20/2021 7:05:00 PM	R80688
Surr: Toluene-d8	98.9	0	70-130		%Rec	1	8/20/2021 7:05:00 PM	R80688

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB4
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 4:22:00 PM
Lab ID: 2108A32-012
Matrix: AQUEOUS
Received Date: 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Benzene	ND	0.23	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Toluene	ND	0.20	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Ethylbenzene	ND	0.21	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Naphthalene	ND	0.50	2.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Acetone	ND	2.5	10		µg/L	1	8/20/2021 7:28:00 PM	R80688
Bromobenzene	ND	0.28	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Bromodichloromethane	ND	0.20	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Bromoform	ND	0.31	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Bromomethane	ND	0.85	3.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
2-Butanone	ND	2.0	10		µg/L	1	8/20/2021 7:28:00 PM	R80688
Carbon disulfide	ND	0.59	10		µg/L	1	8/20/2021 7:28:00 PM	R80688
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Chlorobenzene	ND	0.16	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Chloroethane	ND	0.38	2.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Chloroform	ND	0.13	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Chloromethane	ND	0.41	3.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Dibromochloromethane	ND	0.28	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Dibromomethane	ND	0.31	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	8/20/2021 7:28:00 PM	R80688

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB4
Project: North Drainage Ditch Area
Collection Date: 8/17/2021 4:22:00 PM
Lab ID: 2108A32-012
Matrix: AQUEOUS
Received Date: 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
2-Hexanone	ND	1.8	10		µg/L	1	8/20/2021 7:28:00 PM	R80688
Isopropylbenzene	ND	0.18	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	8/20/2021 7:28:00 PM	R80688
Methylene Chloride	ND	0.50	3.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
n-Butylbenzene	ND	0.25	3.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
n-Propylbenzene	ND	0.18	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Styrene	ND	0.14	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Vinyl chloride	ND	0.32	1.0		µg/L	1	8/20/2021 7:28:00 PM	R80688
Xylenes, Total	ND	0.37	1.5		µg/L	1	8/20/2021 7:28:00 PM	R80688
Surr: 1,2-Dichloroethane-d4	86.2	0	70-130		%Rec	1	8/20/2021 7:28:00 PM	R80688
Surr: 4-Bromofluorobenzene	98.9	0	70-130		%Rec	1	8/20/2021 7:28:00 PM	R80688
Surr: Dibromofluoromethane	82.7	0	70-130		%Rec	1	8/20/2021 7:28:00 PM	R80688
Surr: Toluene-d8	99.9	0	70-130		%Rec	1	8/20/2021 7:28:00 PM	R80688

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (42.5-43')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 10:25:00 AM
Lab ID: 2108A32-013 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	89	4.7	9.5		mg/Kg	1	8/31/2021 12:09:07 PM	62277
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/31/2021 12:09:07 PM	62277
Surr: DNOP	115	0	70-130		%Rec	1	8/31/2021 12:09:07 PM	62277
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0026	0.033		mg/Kg	1	9/2/2021 9:11:49 AM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/26/2021 7:10:54 PM	62201
Arsenic	ND	2.7	4.9		mg/Kg	2	8/26/2021 7:10:54 PM	62201
Barium	3000	5.8	9.7		mg/Kg	100	8/26/2021 7:13:11 PM	62201
Beryllium	1.4	0.057	0.29		mg/Kg	2	8/26/2021 7:10:54 PM	62201
Cadmium	ND	0.097	0.19		mg/Kg	2	8/26/2021 7:10:54 PM	62201
Chromium	17	0.29	0.58		mg/Kg	2	8/26/2021 7:10:54 PM	62201
Cobalt	6.2	0.12	0.58		mg/Kg	2	8/26/2021 7:10:54 PM	62201
Iron	24000	240	240		mg/Kg	100	8/26/2021 7:13:11 PM	62201
Lead	2.0	0.52	0.58		mg/Kg	2	8/30/2021 2:23:14 PM	62201
Manganese	1200	16	19		mg/Kg	100	8/26/2021 7:13:11 PM	62201
Nickel	17	0.38	0.97		mg/Kg	2	8/26/2021 7:10:54 PM	62201
Selenium	ND	4.3	4.9		mg/Kg	2	8/30/2021 2:23:14 PM	62201
Silver	ND	0.28	0.49		mg/Kg	2	8/26/2021 7:10:54 PM	62201
Vanadium	27	0.22	4.9		mg/Kg	2	8/26/2021 7:10:54 PM	62201
Zinc	25	2.6	4.9		mg/Kg	2	8/26/2021 7:10:54 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.88	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Acenaphthylene	ND	0.89	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Aniline	ND	0.68	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Anthracene	ND	0.89	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Azobenzene	ND	0.98	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Benz(a)anthracene	ND	0.63	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Benzo(a)pyrene	ND	0.93	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Benzo(b)fluoranthene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Benzo(k)fluoranthene	ND	0.74	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Benzoic acid	ND	1.2	9.8	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Benzyl alcohol	ND	0.81	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Bis(2-chloroethoxy)methane	ND	0.75	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (42.5-43')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 10:25:00 AM
Lab ID: 2108A32-013 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Butyl benzyl phthalate	ND	0.60	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Carbazole	ND	0.86	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
4-Chloro-3-methylphenol	ND	0.83	4.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
4-Chloroaniline	ND	0.96	4.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2-Chloronaphthalene	ND	0.93	2.5	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
4-Chlorophenyl phenyl ether	ND	0.83	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Chrysene	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Di-n-octyl phthalate	ND	1.3	3.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
1,2-Dichlorobenzene	ND	0.80	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
1,3-Dichlorobenzene	ND	0.70	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
1,4-Dichlorobenzene	ND	0.83	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Dimethyl phthalate	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2,4-Dichlorophenol	ND	0.80	3.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2,4-Dimethylphenol	ND	0.70	2.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
4,6-Dinitro-2-methylphenol	ND	0.83	3.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2,4-Dinitrophenol	ND	0.49	4.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2,6-Dinitrotoluene	ND	1.0	4.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Fluoranthene	ND	0.79	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Fluorene	ND	0.88	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Hexachlorobenzene	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Hexachlorobutadiene	ND	0.92	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Hexachloroethane	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Isophorone	ND	0.80	3.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
1-Methylnaphthalene	ND	0.90	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2-Methylnaphthalene	ND	0.81	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2-Methylphenol	ND	0.83	3.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
3+4-Methylphenol	ND	0.81	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
N-Nitrosodi-n-propylamine	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128

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		

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (42.5-43')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 10:25:00 AM
Lab ID: 2108A32-013 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Naphthalene	ND	0.93	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
3-Nitroaniline	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
4-Nitroaniline	ND	1.3	3.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Nitrobenzene	ND	0.81	3.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2-Nitrophenol	ND	0.85	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
4-Nitrophenol	ND	0.81	2.5	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Pentachlorophenol	ND	0.85	3.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Phenol	ND	0.76	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Pyrene	ND	0.75	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Pyridine	ND	1.6	3.9	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
1,2,4-Trichlorobenzene	ND	0.90	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2,4,5-Trichlorophenol	ND	0.63	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
2,4,6-Trichlorophenol	ND	0.85	2.0	D	mg/Kg	10	8/27/2021 5:05:24 AM	62128
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	8/27/2021 5:05:24 AM	62128
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	8/27/2021 5:05:24 AM	62128
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	8/27/2021 5:05:24 AM	62128
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	8/27/2021 5:05:24 AM	62128
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	8/27/2021 5:05:24 AM	62128
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	8/27/2021 5:05:24 AM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	0.012	0.0071	0.018	J	mg/Kg	1	8/25/2021 10:06:45 PM	62159
Toluene	0.14	0.0047	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Ethylbenzene	0.087	0.0089	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Methyl tert-butyl ether (MTBE)	ND	0.021	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,2,4-Trimethylbenzene	0.20	0.0052	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,3,5-Trimethylbenzene	0.073	0.0082	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,2-Dichloroethane (EDC)	0.020	0.0084	0.037	J	mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,2-Dibromoethane (EDB)	0.026	0.014	0.037	J	mg/Kg	1	8/25/2021 10:06:45 PM	62159
Naphthalene	0.018	0.014	0.073	J	mg/Kg	1	8/25/2021 10:06:45 PM	62159
1-Methylnaphthalene	ND	0.042	0.15		mg/Kg	1	8/25/2021 10:06:45 PM	62159
2-Methylnaphthalene	ND	0.034	0.15		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Acetone	ND	0.12	0.55		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Bromobenzene	ND	0.0078	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Bromodichloromethane	0.024	0.0047	0.037	J	mg/Kg	1	8/25/2021 10:06:45 PM	62159
Bromoform	ND	0.0088	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Bromomethane	ND	0.061	0.11		mg/Kg	1	8/25/2021 10:06:45 PM	62159

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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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (42.5-43')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 10:25:00 AM
Lab ID: 2108A32-013 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.16	0.37		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Carbon disulfide	ND	0.015	0.37		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Carbon tetrachloride	ND	0.0041	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Chlorobenzene	0.010	0.0066	0.037	J	mg/Kg	1	8/25/2021 10:06:45 PM	62159
Chloroethane	ND	0.014	0.073		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Chloroform	0.022	0.0052	0.037	J	mg/Kg	1	8/25/2021 10:06:45 PM	62159
Chloromethane	ND	0.013	0.11		mg/Kg	1	8/25/2021 10:06:45 PM	62159
2-Chlorotoluene	ND	0.0049	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
4-Chlorotoluene	ND	0.019	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
cis-1,2-DCE	ND	0.018	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
cis-1,3-Dichloropropene	ND	0.0054	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,2-Dibromo-3-chloropropane	ND	0.016	0.073		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Dibromochloromethane	ND	0.0059	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Dibromomethane	ND	0.0086	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,2-Dichlorobenzene	ND	0.0076	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,3-Dichlorobenzene	ND	0.0069	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,4-Dichlorobenzene	ND	0.0098	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Dichlorodifluoromethane	ND	0.014	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,1-Dichloroethane	ND	0.011	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,1-Dichloroethene	ND	0.0079	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,2-Dichloropropane	ND	0.0071	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,3-Dichloropropane	ND	0.0081	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
2,2-Dichloropropane	ND	0.0052	0.073		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,1-Dichloropropene	ND	0.0044	0.073		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Hexachlorobutadiene	ND	0.025	0.073		mg/Kg	1	8/25/2021 10:06:45 PM	62159
2-Hexanone	ND	0.016	0.37		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Isopropylbenzene	0.032	0.0068	0.037	J	mg/Kg	1	8/25/2021 10:06:45 PM	62159
4-Isopropyltoluene	0.014	0.0094	0.037	J	mg/Kg	1	8/25/2021 10:06:45 PM	62159
4-Methyl-2-pentanone	ND	0.043	0.37		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Methylene chloride	ND	0.027	0.11		mg/Kg	1	8/25/2021 10:06:45 PM	62159
n-Butylbenzene	0.022	0.0098	0.11	J	mg/Kg	1	8/25/2021 10:06:45 PM	62159
n-Propylbenzene	0.051	0.0059	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
sec-Butylbenzene	ND	0.030	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Styrene	ND	0.0050	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
tert-Butylbenzene	ND	0.0085	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,1,1,2-Tetrachloroethane	ND	0.0054	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,1,2,2-Tetrachloroethane	ND	0.012	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Tetrachloroethene (PCE)	ND	0.010	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
trans-1,2-DCE	ND	0.0071	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159

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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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (42.5-43')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 10:25:00 AM
Lab ID: 2108A32-013 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0086	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,2,3-Trichlorobenzene	ND	0.0057	0.073		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,2,4-Trichlorobenzene	ND	0.013	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,1,1-Trichloroethane	ND	0.0081	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,1,2-Trichloroethane	ND	0.0092	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Trichloroethene (TCE)	ND	0.0072	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Trichlorofluoromethane	ND	0.0083	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
1,2,3-Trichloropropane	ND	0.015	0.073		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Vinyl chloride	ND	0.0070	0.037		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Xylenes, Total	0.48	0.019	0.073		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Surr: Dibromofluoromethane	93.6		70-130		%Rec	1	8/25/2021 10:06:45 PM	62159
Surr: 1,2-Dichloroethane-d4	103		70-130		%Rec	1	8/25/2021 10:06:45 PM	62159
Surr: Toluene-d8	105		70-130		%Rec	1	8/25/2021 10:06:45 PM	62159
Surr: 4-Bromofluorobenzene	104		70-130		%Rec	1	8/25/2021 10:06:45 PM	62159
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	34	1.0	3.7		mg/Kg	1	8/25/2021 10:06:45 PM	62159
Surr: BFB	100	0	70-130		%Rec	1	8/25/2021 10:06:45 PM	62159

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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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (47.5-48')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 10:35:00 AM
Lab ID: 2108A32-014 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	45	4.7	9.6		mg/Kg	1	8/31/2021 12:33:13 PM	62277
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/31/2021 12:33:13 PM	62277
Surr: DNOP	119	0	70-130		%Rec	1	8/31/2021 12:33:13 PM	62277
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0028	0.035		mg/Kg	1	9/2/2021 9:13:58 AM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.8		mg/Kg	2	8/26/2021 7:15:12 PM	62201
Arsenic	ND	2.7	4.8		mg/Kg	2	8/26/2021 7:15:12 PM	62201
Barium	160	0.12	0.19		mg/Kg	2	8/26/2021 7:15:12 PM	62201
Beryllium	1.6	0.056	0.29		mg/Kg	2	8/26/2021 7:15:12 PM	62201
Cadmium	ND	0.097	0.19		mg/Kg	2	8/26/2021 7:15:12 PM	62201
Chromium	19	0.29	0.58		mg/Kg	2	8/26/2021 7:15:12 PM	62201
Cobalt	7.0	0.12	0.58		mg/Kg	2	8/26/2021 7:15:12 PM	62201
Iron	28000	480	480		mg/Kg	200	8/30/2021 3:20:08 PM	62201
Lead	2.2	0.52	0.58		mg/Kg	2	8/30/2021 2:25:05 PM	62201
Manganese	320	0.32	0.39		mg/Kg	2	8/26/2021 7:15:12 PM	62201
Nickel	19	0.38	0.97		mg/Kg	2	8/26/2021 7:15:12 PM	62201
Selenium	ND	4.2	4.8		mg/Kg	2	8/30/2021 2:25:05 PM	62201
Silver	ND	0.28	0.48		mg/Kg	2	8/26/2021 7:15:12 PM	62201
Vanadium	21	0.22	4.8		mg/Kg	2	8/26/2021 7:15:12 PM	62201
Zinc	29	2.6	4.8		mg/Kg	2	8/26/2021 7:15:12 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.87	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Acenaphthylene	ND	0.88	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Aniline	ND	0.67	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Anthracene	ND	0.88	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Azobenzene	ND	0.97	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Benz(a)anthracene	ND	0.63	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Benzo(a)pyrene	ND	0.92	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Benzo(g,h,i)perylene	ND	0.99	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Benzo(k)fluoranthene	ND	0.73	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Benzoic acid	ND	1.2	9.7	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Benzyl alcohol	ND	0.80	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Bis(2-chloroethoxy)methane	ND	0.74	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Bis(2-chloroethyl)ether	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Bis(2-chloroisopropyl)ether	ND	0.99	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128

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Qualifiers:

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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (47.5-48')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 10:35:00 AM
Lab ID: 2108A32-014 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Butyl benzyl phthalate	ND	0.59	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Carbazole	ND	0.86	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
4-Chloro-3-methylphenol	ND	0.82	4.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
4-Chloroaniline	ND	0.95	4.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2-Chloronaphthalene	ND	0.92	2.4	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
4-Chlorophenyl phenyl ether	ND	0.83	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Chrysene	ND	0.86	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Di-n-octyl phthalate	ND	1.3	3.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Dibenz(a,h)anthracene	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Dibenzofuran	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
1,2-Dichlorobenzene	ND	0.79	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
1,3-Dichlorobenzene	ND	0.69	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
1,4-Dichlorobenzene	ND	0.82	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
3,3´-Dichlorobenzidine	ND	1.5	2.4	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Dimethyl phthalate	ND	0.90	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2,4-Dichlorophenol	ND	0.79	3.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2,4-Dimethylphenol	ND	0.69	2.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
4,6-Dinitro-2-methylphenol	ND	0.82	3.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2,4-Dinitrophenol	ND	0.49	4.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2,6-Dinitrotoluene	ND	0.99	4.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Fluoranthene	ND	0.79	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Fluorene	ND	0.87	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Hexachlorobenzene	ND	0.87	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Hexachlorobutadiene	ND	0.91	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Hexachloroethane	ND	0.86	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Isophorone	ND	0.79	3.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
1-Methylnaphthalene	ND	0.90	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2-Methylnaphthalene	ND	0.80	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2-Methylphenol	ND	0.82	3.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
3+4-Methylphenol	ND	0.80	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
N-Nitrosodi-n-propylamine	ND	0.90	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
N-Nitrosodimethylamine	ND	1.4	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128

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		

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (47.5-48')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 10:35:00 AM
Lab ID: 2108A32-014 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Naphthalene	ND	0.92	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2-Nitroaniline	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
4-Nitroaniline	ND	1.2	3.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Nitrobenzene	ND	0.80	3.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2-Nitrophenol	ND	0.84	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
4-Nitrophenol	ND	0.80	2.4	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Pentachlorophenol	ND	0.84	3.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Phenanthrene	ND	0.99	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Phenol	ND	0.75	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Pyrene	ND	0.74	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Pyridine	ND	1.6	3.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
1,2,4-Trichlorobenzene	ND	0.89	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2,4,5-Trichlorophenol	ND	0.62	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
2,4,6-Trichlorophenol	ND	0.84	1.9	D	mg/Kg	10	8/27/2021 5:46:44 AM	62128
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	8/27/2021 5:46:44 AM	62128
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	8/27/2021 5:46:44 AM	62128
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	8/27/2021 5:46:44 AM	62128
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	8/27/2021 5:46:44 AM	62128
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	8/27/2021 5:46:44 AM	62128
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	8/27/2021 5:46:44 AM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	0.065	0.039	0.10	J	mg/Kg	5	8/25/2021 10:33:50 PM	62159
Toluene	0.24	0.026	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Ethylbenzene	0.35	0.049	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Methyl tert-butyl ether (MTBE)	ND	0.11	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,2,4-Trimethylbenzene	1.7	0.028	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,3,5-Trimethylbenzene	0.61	0.045	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,2-Dichloroethane (EDC)	0.10	0.046	0.20	J	mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,2-Dibromoethane (EDB)	ND	0.079	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Naphthalene	0.19	0.075	0.40	J	mg/Kg	5	8/25/2021 10:33:50 PM	62159
1-Methylnaphthalene	ND	0.23	0.80		mg/Kg	5	8/25/2021 10:33:50 PM	62159
2-Methylnaphthalene	0.34	0.19	0.80	J	mg/Kg	5	8/25/2021 10:33:50 PM	62159
Acetone	ND	0.66	3.0		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Bromobenzene	ND	0.043	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Bromodichloromethane	0.092	0.026	0.20	J	mg/Kg	5	8/25/2021 10:33:50 PM	62159
Bromoform	ND	0.048	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Bromomethane	ND	0.33	0.60		mg/Kg	5	8/25/2021 10:33:50 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (47.5-48')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 10:35:00 AM
Lab ID: 2108A32-014 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.87	2.0		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Carbon disulfide	ND	0.083	2.0		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Carbon tetrachloride	ND	0.022	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Chlorobenzene	0.078	0.036	0.20	J	mg/Kg	5	8/25/2021 10:33:50 PM	62159
Chloroethane	ND	0.075	0.40		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Chloroform	0.090	0.029	0.20	J	mg/Kg	5	8/25/2021 10:33:50 PM	62159
Chloromethane	ND	0.070	0.60		mg/Kg	5	8/25/2021 10:33:50 PM	62159
2-Chlorotoluene	ND	0.027	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
4-Chlorotoluene	ND	0.11	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
cis-1,2-DCE	ND	0.10	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
cis-1,3-Dichloropropene	ND	0.030	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,2-Dibromo-3-chloropropane	ND	0.087	0.40		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Dibromochloromethane	ND	0.032	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Dibromomethane	ND	0.047	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,2-Dichlorobenzene	ND	0.042	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,3-Dichlorobenzene	ND	0.038	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,4-Dichlorobenzene	ND	0.054	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Dichlorodifluoromethane	ND	0.078	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,1-Dichloroethane	ND	0.059	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,1-Dichloroethene	ND	0.043	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,2-Dichloropropane	ND	0.039	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,3-Dichloropropane	ND	0.044	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
2,2-Dichloropropane	ND	0.029	0.40		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,1-Dichloropropene	ND	0.024	0.40		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Hexachlorobutadiene	ND	0.14	0.40		mg/Kg	5	8/25/2021 10:33:50 PM	62159
2-Hexanone	1.4	0.088	2.0	J	mg/Kg	5	8/25/2021 10:33:50 PM	62159
Isopropylbenzene	0.20	0.037	0.20	J	mg/Kg	5	8/25/2021 10:33:50 PM	62159
4-Isopropyltoluene	0.11	0.052	0.20	J	mg/Kg	5	8/25/2021 10:33:50 PM	62159
4-Methyl-2-pentanone	ND	0.23	2.0		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Methylene chloride	ND	0.15	0.60		mg/Kg	5	8/25/2021 10:33:50 PM	62159
n-Butylbenzene	0.19	0.054	0.60	J	mg/Kg	5	8/25/2021 10:33:50 PM	62159
n-Propylbenzene	0.35	0.032	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
sec-Butylbenzene	ND	0.17	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Styrene	ND	0.027	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
tert-Butylbenzene	ND	0.047	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,1,1,2-Tetrachloroethane	ND	0.030	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,1,2,2-Tetrachloroethane	ND	0.065	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Tetrachloroethene (PCE)	ND	0.055	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
trans-1,2-DCE	ND	0.039	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-MW-2 (47.5-48')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 10:35:00 AM
Lab ID: 2108A32-014 **Matrix:** SOIL **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.047	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,2,3-Trichlorobenzene	ND	0.031	0.40		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,2,4-Trichlorobenzene	ND	0.070	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,1,1-Trichloroethane	ND	0.044	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,1,2-Trichloroethane	ND	0.050	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Trichloroethene (TCE)	ND	0.039	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Trichlorofluoromethane	ND	0.046	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
1,2,3-Trichloropropane	ND	0.085	0.40		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Vinyl chloride	ND	0.038	0.20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Xylenes, Total	2.3	0.11	0.40		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Surr: Dibromofluoromethane	93.9		70-130		%Rec	5	8/25/2021 10:33:50 PM	62159
Surr: 1,2-Dichloroethane-d4	106		70-130		%Rec	5	8/25/2021 10:33:50 PM	62159
Surr: Toluene-d8	103		70-130		%Rec	5	8/25/2021 10:33:50 PM	62159
Surr: 4-Bromofluorobenzene	101		70-130		%Rec	5	8/25/2021 10:33:50 PM	62159
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	150	5.6	20		mg/Kg	5	8/25/2021 10:33:50 PM	62159
Surr: BFB	101	0	70-130		%Rec	5	8/25/2021 10:33:50 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MeOH Blank
Project: North Drainage Ditch Area **Collection Date:**
Lab ID: 2108A32-015 **Matrix:** MEOH BLAN **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0096	0.025		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Toluene	ND	0.0064	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Ethylbenzene	ND	0.012	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Methyl tert-butyl ether (MTBE)	ND	0.028	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,2,4-Trimethylbenzene	ND	0.0071	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,3,5-Trimethylbenzene	ND	0.011	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,2-Dichloroethane (EDC)	ND	0.011	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,2-Dibromoethane (EDB)	ND	0.020	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Naphthalene	ND	0.019	0.10		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1-Methylnaphthalene	ND	0.057	0.20		mg/Kg	1	8/25/2021 11:00:52 PM	62159
2-Methylnaphthalene	ND	0.046	0.20		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Acetone	ND	0.16	0.75		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Bromobenzene	ND	0.011	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Bromodichloromethane	ND	0.0064	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Bromoform	ND	0.012	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Bromomethane	ND	0.083	0.15		mg/Kg	1	8/25/2021 11:00:52 PM	62159
2-Butanone	ND	0.22	0.50		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Carbon disulfide	ND	0.021	0.50		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Carbon tetrachloride	ND	0.0056	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Chlorobenzene	ND	0.0090	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Chloroethane	ND	0.019	0.10		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Chloroform	ND	0.0071	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Chloromethane	ND	0.018	0.15		mg/Kg	1	8/25/2021 11:00:52 PM	62159
2-Chlorotoluene	ND	0.0067	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
4-Chlorotoluene	ND	0.026	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
cis-1,2-DCE	ND	0.025	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
cis-1,3-Dichloropropene	ND	0.0074	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,2-Dibromo-3-chloropropane	ND	0.022	0.10		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Dibromochloromethane	ND	0.0080	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Dibromomethane	ND	0.012	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,2-Dichlorobenzene	ND	0.010	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,3-Dichlorobenzene	ND	0.0094	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,4-Dichlorobenzene	ND	0.013	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Dichlorodifluoromethane	ND	0.019	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,1-Dichloroethane	ND	0.015	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,1-Dichloroethene	ND	0.011	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,2-Dichloropropane	ND	0.0097	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,3-Dichloropropane	ND	0.011	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
2,2-Dichloropropane	ND	0.0071	0.10		mg/Kg	1	8/25/2021 11:00:52 PM	62159

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

Analytical Report
Lab Order **2108A32**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MeOH Blank
Project: North Drainage Ditch Area **Collection Date:**
Lab ID: 2108A32-015 **Matrix:** MEOH BLAN **Received Date:** 8/19/2021 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,1-Dichloropropene	ND	0.0060	0.10		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Hexachlorobutadiene	ND	0.034	0.10		mg/Kg	1	8/25/2021 11:00:52 PM	62159
2-Hexanone	ND	0.022	0.50		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Isopropylbenzene	ND	0.0093	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
4-Isopropyltoluene	ND	0.013	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
4-Methyl-2-pentanone	ND	0.058	0.50		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Methylene chloride	ND	0.036	0.15		mg/Kg	1	8/25/2021 11:00:52 PM	62159
n-Butylbenzene	ND	0.013	0.15		mg/Kg	1	8/25/2021 11:00:52 PM	62159
n-Propylbenzene	ND	0.0081	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
sec-Butylbenzene	ND	0.041	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Styrene	ND	0.0068	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
tert-Butylbenzene	ND	0.012	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,1,1,2-Tetrachloroethane	ND	0.0073	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,1,2,2-Tetrachloroethane	ND	0.016	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Tetrachloroethene (PCE)	ND	0.014	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
trans-1,2-DCE	ND	0.0097	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
trans-1,3-Dichloropropene	ND	0.012	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,2,3-Trichlorobenzene	ND	0.0077	0.10		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,2,4-Trichlorobenzene	ND	0.017	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,1,1-Trichloroethane	ND	0.011	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,1,2-Trichloroethane	ND	0.013	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Trichloroethene (TCE)	ND	0.0098	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Trichlorofluoromethane	ND	0.011	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
1,2,3-Trichloropropane	ND	0.021	0.10		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Vinyl chloride	ND	0.0095	0.050		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Xylenes, Total	ND	0.026	0.10		mg/Kg	1	8/25/2021 11:00:52 PM	62159
Surr: Dibromofluoromethane	103		70-130		%Rec	1	8/25/2021 11:00:52 PM	62159
Surr: 1,2-Dichloroethane-d4	117		70-130		%Rec	1	8/25/2021 11:00:52 PM	62159
Surr: Toluene-d8	101		70-130		%Rec	1	8/25/2021 11:00:52 PM	62159
Surr: 4-Bromofluorobenzene	104		70-130		%Rec	1	8/25/2021 11:00:52 PM	62159

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®

ANALYTICAL REPORT

September 03, 2021

Hall Environmental Analysis Laboratory

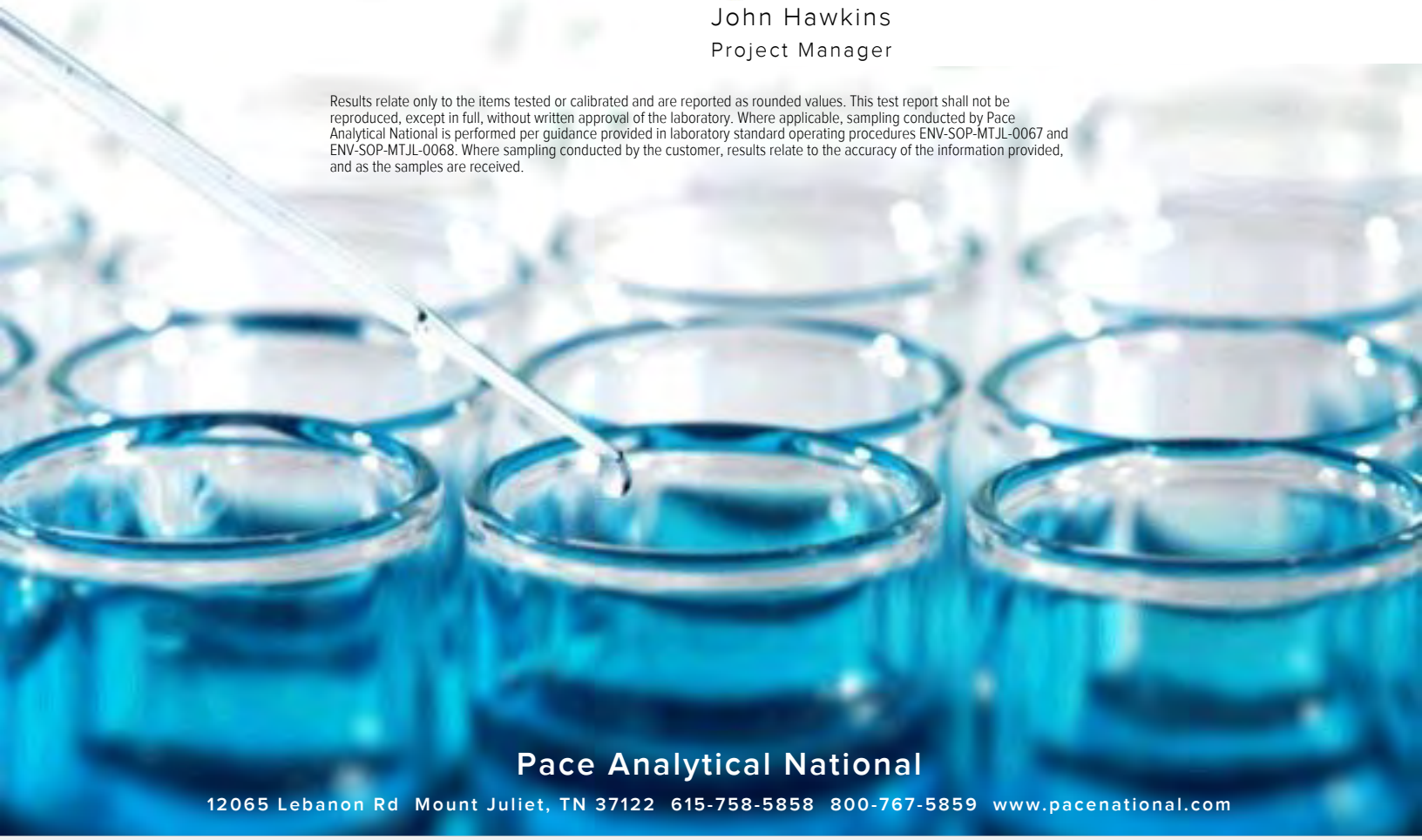
Sample Delivery Group:	L1394443
Samples Received:	08/25/2021
Project Number:	
Description:	

Report To: Jackie Bolte
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

2108A32-001B NDD-MW-1 (0-0.5') L1394443-01 Solid

Collected by	Collected date/time	Received date/time
	08/16/21 14:41	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730156	1	08/27/21 09:54	08/27/21 19:24	SDL	Mt. Juliet, TN

2108A32-002B NDD-MW-1 (1.5-2') L1394443-02 Solid

Collected by	Collected date/time	Received date/time
	08/16/21 14:55	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731390	1	08/29/21 17:02	08/30/21 15:48	KEG	Mt. Juliet, TN

2108A32-003B NDD-BD2 L1394443-03 Solid

Collected by	Collected date/time	Received date/time
	08/16/21 00:00	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731390	1	08/29/21 17:02	08/30/21 15:49	KEG	Mt. Juliet, TN

2108A32-004B NDD-MW-1 (7.5-8') L1394443-04 Solid

Collected by	Collected date/time	Received date/time
	08/17/21 09:25	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731390	1	08/29/21 17:02	08/30/21 15:50	KEG	Mt. Juliet, TN

2108A32-005B NDD-MW-1 (27.5-28') L1394443-05 Solid

Collected by	Collected date/time	Received date/time
	08/17/21 10:20	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731390	1	08/29/21 17:02	08/30/21 15:51	KEG	Mt. Juliet, TN

2108A32-006B NDD-MW-1 (35-35.5') L1394443-06 Solid

Collected by	Collected date/time	Received date/time
	08/17/21 08:30	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731390	1	08/29/21 17:02	08/30/21 15:55	KEG	Mt. Juliet, TN

2108A32-007B NDD-MW-1 (45.5-46') L1394443-07 Solid

Collected by	Collected date/time	Received date/time
	08/17/21 10:30	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731390	1	08/29/21 17:02	08/30/21 15:56	KEG	Mt. Juliet, TN

2108A32-008B NDD-MW-2 (0-0.5') L1394443-08 Solid

Collected by	Collected date/time	Received date/time
	08/17/21 14:10	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731390	1	08/29/21 17:02	08/30/21 15:57	KEG	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

SAMPLE SUMMARY

2108A32-009B NDD-MW-2 (1.5-2') L1394443-09 Solid

Collected by	Collected date/time	Received date/time
	08/17/21 14:20	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731390	1	08/29/21 17:02	08/30/21 15:58	KEG	Mt. Juliet, TN

2108A32-010B NDD-MW-2 (28.2-28.7') L1394443-10 Solid

Collected by	Collected date/time	Received date/time
	08/17/21 16:22	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731390	1	08/29/21 17:02	08/30/21 16:01	KEG	Mt. Juliet, TN

2108A32-011B NDD-MW-2 (42.5-43') L1394443-11 Solid

Collected by	Collected date/time	Received date/time
	08/18/21 10:25	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731390	1	08/29/21 17:02	08/30/21 16:03	KEG	Mt. Juliet, TN

2108A32-012B NDD-MW-2 (47.5-48') L1394443-12 Solid

Collected by	Collected date/time	Received date/time
	08/18/21 10:35	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731390	1	08/29/21 17:02	08/30/21 16:04	KEG	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

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.

John Hawkins
Project Manager

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND	J4 J5	0.250	1	08/27/2021 19:24	WG1730156

Sample Narrative:

L1394443-01 WG1730156: Qualifiers due to low LCS, results valid with passing alternate secondary standard.

Received by OCD: 9/19/2022 12:31:41 PM

SAMPLE RESULTS - 02

Collected date/time: 08/16/21 14:55

L1394443

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	0.884		0.250	1	08/30/2021 15:48	WG1731390

Released to Imaging: 11/23/2022 1:30:09 PM

Received by OCD: 9/19/2022 12:31:41 PM

Collected date/time: 08/16/21 00:00
L1394443

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	0.690		0.250	1	08/30/2021 15:49	WG1731390

Released to Imaging: 11/23/2022 1:30:09 PM

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	0.258		0.250	1	08/30/2021 15:50	WG1731390

Received by OCD: 9/19/2022 12:31:41 PM

Collected date/time: 08/17/21 10:20

L1394443

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	08/30/2021 15:51	WG1731390

Released to Imaging: 11/23/2022 1:30:09 PM

Received by OCD: 9/19/2022 12:31:41 PM

Collected date/time: 08/17/21 08:30

L1394443

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	08/30/2021 15:55	WG1731390

Released to Imaging: 11/23/2022 1:30:09 PM

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	08/30/2021 15:56	WG1731390

Received by OCD: 9/19/2022 12:31:41 PM

SAMPLE RESULTS - 08

Collected date/time: 08/17/21 14:10

L1394443

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	08/30/2021 15:57	WG1731390

Released to Imaging: 11/23/2022 1:30:09 PM

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND	J5	0.250	1	08/30/2021 15:58	WG1731390

Received by OCD: 9/19/2022 12:31:41 PM

Collected date/time: 08/17/21 16:22

L1394443

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	08/30/2021 16:01	WG1731390

Released to Imaging: 11/23/2022 1:30:09 PM

Received by OCD: 9/19/2022 12:31:41 PM

Collected date/time: 08/18/21 10:25

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	08/30/2021 16:03	WG1731390

Released to Imaging: 11/23/2022 1:30:09 PM

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	08/30/2021 16:04	WG1731390

Method Blank (MB)

(MB) R3697534-1 08/27/21 19:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0733	0.250

L1394443-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1394443-01 08/27/21 19:24 • (DUP) R3697534-4 08/27/21 19:25

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

Sample Narrative:

OS: Qualifiers due to low LCS, results valid with passing alternate secondary standard.

L1394443-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1394443-07 08/27/21 20:34 • (DUP) R3697534-7 08/27/21 20:35

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3697534-3 08/27/21 19:11

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	1.84	73.5	85.0-115	J4

L1394443-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1394443-01 08/27/21 19:24 • (MS) R3697534-5 08/27/21 19:26 • (MSD) R3697534-6 08/27/21 19:27

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	2.43	2.26	146	136	1	75.0-125	J5	J5	6.97	20

Sample Narrative:

OS: Qualifiers due to low LCS, results valid with passing alternate secondary standard.

Received by OCD: 9/19/2022 12:31:41 PM

L1394443-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1394443-07 08/27/21 20:34 • (MS) R3697534-8 08/27/21 20:36 • (MSD) R3697534-9 08/27/21 20:37

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	2.48	2.39	149	143	1	75.0-125	J5	J5	3.69	20

Released to Imaging: 11/23/2022 1:30:09 PM

Method Blank (MB)

(MB) R3698197-1 08/30/21 15:31

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0733	0.250

L1393759-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1393759-06 08/30/21 15:38 • (DUP) R3698197-9 08/30/21 15:39

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

L1394443-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1394443-05 08/30/21 15:51 • (DUP) R3698197-10 08/30/21 15:52

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3698197-2 08/30/21 15:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.55	102	85.0-115	

L1393738-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1393738-02 08/30/21 15:35 • (MS) R3698197-5 08/30/21 15:36 • (MSD) R3698197-6 08/30/21 15:37

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	2.08	1.85	116	102	1	75.0-125			11.8	20

L1394443-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1394443-09 08/30/21 15:58 • (MS) R3698197-11 08/30/21 15:59 • (MSD) R3698197-12 08/30/21 16:00

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	2.48	2.59	149	156	1	75.0-125	J5	J5	4.59	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
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
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]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.

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: clients.hallenvironmental.com

SUB CONTRATOR:	Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859	
ADDRESS:	12065 Lebanon Rd		ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP:	Mt. Juliet, TN 37122				

U394443

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	2108A32-001B	NDD-MW-1 (0-0.5')	4OZGU	Soil	8/16/2021 2:41:00 PM	1	Total Cyanide	-01
2	2108A32-002B	NDD-MW-1 (1.5-2')	4OZGU	Soil	8/16/2021 2:55:00 PM	1	Total Cyanide	-02
3	2108A32-003B	NDD-BD2	4OZGU	Soil	8/16/2021	1	Total Cyanide	-03
4	2108A32-004B	NDD-MW-1 (7.5-8')	4OZGU	Soil	8/17/2021 9:25:00 AM	1	Total Cyanide	-04
5	2108A32-005B	NDD-MW-1 (27.5-28')	4OZGU	Soil	8/17/2021 10:20:00 AM	1	Total Cyanide	-05
6	2108A32-006B	NDD-MW-1 (35-35.5')	4OZGU	Soil	8/17/2021 8:30:00 AM	1	Total Cyanide	-06
7	2108A32-007B	NDD-MW-1 (45.5-46')	4OZGU	Soil	8/17/2021 10:30:00 AM	1	Total Cyanide	-07
8	2108A32-008B	NDD-MW-2 (0-0.5')	4OZGU	Soil	8/17/2021 2:10:00 PM	1	Total Cyanide	-08
9	2108A32-009B	NDD-MW-2 (1.5-2')	4OZGU	Soil	8/17/2021 2:20:00 PM	1	Total Cyanide	-09
10	2108A32-010B	NDD-MW-2 (28.2-28.7)	4OZGU	Soil	8/17/2021 4:22:00 PM	1	Total Cyanide	-10
11	2108A32-013B	NDD-MW-2 (42.5-43')	4OZGU	Soil	8/18/2021 10:25:00 AM	1	Total Cyanide	-11
12	2108A32-014B	NDD-MW-2 (47.5-48')	4OZGU	Soil	8/18/2021 10:35:00 AM	1	Total Cyanide	-12

D124

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 ret

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

Relinquished By:	Date: 8/23/2021	Time: 9:36 AM	Received By:	Date: 8-25-21	Time: 0907
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard X RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples: AVG 3.8+1-3.9 °C Attempt to Cool ?

Comments: COC S1

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **LCS-62109** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **62109** RunNo: **80736**
Prep Date: **8/21/2021** Analysis Date: **8/23/2021** SeqNo: **2848315** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	56	10	50.00	0	112	68.9	141			
Surr: DNOP	5.9		5.000		118	70	130			

Sample ID: **MB-62109** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **62109** RunNo: **80736**
Prep Date: **8/21/2021** Analysis Date: **8/23/2021** SeqNo: **2848316** 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	15		10.00		148	70	130			S

Sample ID: **LCS-62132** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **62132** RunNo: **80756**
Prep Date: **8/23/2021** Analysis Date: **8/24/2021** SeqNo: **2849223** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	105	68.9	141			
Surr: DNOP	5.4		5.000		108	70	130			

Sample ID: **MB-62132** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **62132** RunNo: **80756**
Prep Date: **8/23/2021** Analysis Date: **8/24/2021** SeqNo: **2849224** 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		122	70	130			

Sample ID: **MB-62277** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **62277** RunNo: **80913**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857110** 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		113	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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **LCS-62277** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **62277** RunNo: **80945**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857252** 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	91.1	68.9	135			
Surr: DNOP	4.8		5.000		95.1	70	130			

Sample ID: **MB-62277** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **62277** RunNo: **80945**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857253** 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: **MB-62277** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **62277** RunNo: **80946**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857452** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	11	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		104	70	130			

Sample ID: **MB-62277** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **62277** RunNo: **80965**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857551** 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		108	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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **lcs-62086** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS** Batch ID: **62086** RunNo: **80755**
Prep Date: **8/19/2021** Analysis Date: **8/24/2021** SeqNo: **2850035** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	107	70	130			
Toluene	1.1	0.050	1.000	0	105	70	130			
Chlorobenzene	1.0	0.050	1.000	0	103	70	130			
1,1-Dichloroethene	1.0	0.050	1.000	0	102	70	130			
Trichloroethene (TCE)	0.97	0.050	1.000	0	97.4	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		105	70	130			
Surr: 1,2-Dichloroethane-d4	0.57		0.5000		114	70	130			
Surr: Toluene-d8	0.53		0.5000		105	70	130			
Surr: 4-Bromofluorobenzene	0.56		0.5000		112	70	130			

Sample ID: **mb-62086** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **62086** RunNo: **80755**
Prep Date: **8/19/2021** Analysis Date: **8/24/2021** SeqNo: **2850036** 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								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62086** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **62086** RunNo: **80755**
Prep Date: **8/19/2021** Analysis Date: **8/24/2021** SeqNo: **2850036** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62086**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **62086**	RunNo: **80755**
Prep Date: **8/19/2021**	Analysis Date: **8/24/2021**	SeqNo: **2850036** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.50		0.5000		99.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.55		0.5000		110	70	130			
Surr: Toluene-d8	0.53		0.5000		106	70	130			
Surr: 4-Bromofluorobenzene	0.54		0.5000		108	70	130			

Sample ID: **lcs-62159**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **62159**	RunNo: **80831**
Prep Date: **8/24/2021**	Analysis Date: **8/25/2021**	SeqNo: **2851925** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	106	70	130			
Toluene	1.0	0.050	1.000	0	105	70	130			
Chlorobenzene	0.99	0.050	1.000	0	99.0	70	130			
1,1-Dichloroethene	0.98	0.050	1.000	0	98.3	70	130			
Trichloroethene (TCE)	0.97	0.050	1.000	0	97.4	70	130			
Surr: Dibromofluoromethane	0.49		0.5000		98.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.56		0.5000		111	70	130			
Surr: Toluene-d8	0.50		0.5000		99.8	70	130			
Surr: 4-Bromofluorobenzene	0.53		0.5000		106	70	130			

Sample ID: **mb-62159**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **62159**	RunNo: **80831**
Prep Date: **8/24/2021**	Analysis Date: **8/25/2021**	SeqNo: **2851926** 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								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62159** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **62159** RunNo: **80831**
Prep Date: **8/24/2021** Analysis Date: **8/25/2021** SeqNo: **2851926** Units: **mg/Kg**

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

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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62159** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **62159** RunNo: **80831**
Prep Date: **8/24/2021** Analysis Date: **8/25/2021** SeqNo: **2851926** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	0.52		0.5000		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.57		0.5000		113	70	130			
Surr: Toluene-d8	0.52		0.5000		105	70	130			
Surr: 4-Bromofluorobenzene	0.54		0.5000		108	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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **100ng 8260 lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R80688** RunNo: **80688**
Prep Date: Analysis Date: **8/20/2021** SeqNo: **2846644** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	92.6	70	130			
Toluene	20	1.0	20.00	0	100	70	130			
Chlorobenzene	20	1.0	20.00	0	98.4	70	130			
1,1-Dichloroethene	17	1.0	20.00	0	83.9	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	85.1	70	130			
Surr: 1,2-Dichloroethane-d4	8.3		10.00		82.6	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.6	70	130			
Surr: Dibromofluoromethane	8.1		10.00		81.4	70	130			
Surr: Toluene-d8	9.9		10.00		99.2	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R80688** RunNo: **80688**
Prep Date: Analysis Date: **8/20/2021** SeqNo: **2846769** 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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R80688**	RunNo: **80688**
Prep Date:	Analysis Date: **8/20/2021**	SeqNo: **2846769** 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.	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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**							
Client ID: **PBW**	Batch ID: **R80688**	RunNo: **80688**							
Prep Date:	Analysis Date: **8/20/2021**	SeqNo: **2846769**	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	8.3		10.00		82.5	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.7	70	130			
Surr: Dibromofluoromethane	8.1		10.00		81.3	70	130			
Surr: Toluene-d8	10		10.00		100	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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62128**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **62128**	RunNo: **80799**
Prep Date: **8/23/2021**	Analysis Date: **8/25/2021**	SeqNo: **2851005** 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	0.50								
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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62128** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62128** RunNo: **80799**
Prep Date: **8/23/2021** Analysis Date: **8/25/2021** SeqNo: **2851005** 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-Nitrosodimethylamine	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	2.6		3.330		77.7	20.3	74.1			S
Surr: Phenol-d5	3.3		3.330		100	23.1	92.7			S
Surr: 2,4,6-Tribromophenol	2.8		3.330		83.7	17.3	122			
Surr: Nitrobenzene-d5	1.2		1.670		71.8	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.4		1.670		82.0	21.5	90.1			
Surr: 4-Terphenyl-d14	1.1		1.670		66.2	15	140			

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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **lcs-62128** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62128** RunNo: **80799**
Prep Date: **8/23/2021** Analysis Date: **8/25/2021** SeqNo: **2851006** 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	78.9	22.9	109			
4-Chloro-3-methylphenol	2.6	0.50	3.330	0	77.3	24.2	109			
2-Chlorophenol	2.4	0.20	3.330	0	72.0	18.8	103			
1,4-Dichlorobenzene	1.0	0.20	1.670	0	61.7	18.8	89.5			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	68.9	20.2	94.5			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	73.5	19.2	96.9			
4-Nitrophenol	3.1	0.25	3.330	0	91.9	25	118			
Pentachlorophenol	2.2	0.40	3.330	0	66.8	24.1	107			
Phenol	2.6	0.20	3.330	0	76.6	17.8	112			
Pyrene	1.4	0.20	1.670	0	84.9	25.9	125			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	69.0	18.5	92.8			
Surr: 2-Fluorophenol	2.1		3.330		62.2	20.3	74.1			
Surr: Phenol-d5	2.5		3.330		75.4	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.6		3.330		79.0	17.3	122			
Surr: Nitrobenzene-d5	1.1		1.670		68.8	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		74.5	21.5	90.1			
Surr: 4-Terphenyl-d14	1.1		1.670		63.0	15	140			

Sample ID: **mb-62187** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62187** RunNo: **80881**
Prep Date: **8/25/2021** Analysis Date: **8/27/2021** SeqNo: **2854274** 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	1.0								
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.	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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62187** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62187** RunNo: **80881**
Prep Date: **8/25/2021** Analysis Date: **8/27/2021** SeqNo: **2854274** 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	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	0.50								
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-Nitrosodimethylamine	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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62187** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62187** RunNo: **80881**
Prep Date: **8/25/2021** Analysis Date: **8/27/2021** SeqNo: **2854274** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	2.1		3.330		62.8	20.3	74.1			
Surr: Phenol-d5	2.5		3.330		76.3	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.2		3.330		66.6	17.3	122			
Surr: Nitrobenzene-d5	0.98		1.670		59.0	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		70.8	21.5	90.1			
Surr: 4-Terphenyl-d14	1.4		1.670		84.9	15	140			

Sample ID: **lcs-62187** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62187** RunNo: **80881**
Prep Date: **8/25/2021** Analysis Date: **8/27/2021** SeqNo: **2854275** 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	86.6	22.9	109			
4-Chloro-3-methylphenol	2.9	0.50	3.330	0	85.8	24.2	109			
2-Chlorophenol	2.5	0.20	3.330	0	75.1	18.8	103			
1,4-Dichlorobenzene	1.1	0.20	1.670	0	64.9	18.8	89.5			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	74.1	20.2	94.5			
N-Nitrosodi-n-propylamine	1.3	0.20	1.670	0	77.4	19.2	96.9			
4-Nitrophenol	3.2	0.25	3.330	0	95.0	25	118			
Pentachlorophenol	2.7	0.40	3.330	0	81.7	24.1	107			
Phenol	2.7	0.20	3.330	0	82.2	17.8	112			
Pyrene	1.7	0.20	1.670	0	102	25.9	125			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	71.0	18.5	92.8			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **lcs-62187** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62187** RunNo: **80881**
Prep Date: **8/25/2021** Analysis Date: **8/27/2021** SeqNo: **2854275** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	2.2		3.330		66.8	20.3	74.1			
Surr: Phenol-d5	2.7		3.330		81.8	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.9		3.330		87.6	17.3	122			
Surr: Nitrobenzene-d5	1.1		1.670		68.8	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.4		1.670		81.0	21.5	90.1			
Surr: 4-Terphenyl-d14	1.8		1.670		107	15	140			

Sample ID: **mb-62272** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62272** RunNo: **80978**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2858020** 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	1.0								
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								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62272** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62272** RunNo: **80978**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2858020** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	0.50								
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-Nitrosodimethylamine	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								

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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62272** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62272** RunNo: **80978**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2858020** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	3.5		6.660		52.2	20.3	74.1			
Surr: Phenol-d5	4.5		6.660		67.0	23.1	92.7			
Surr: 2,4,6-Tribromophenol	3.0		6.660		45.4	17.3	122			
Surr: Nitrobenzene-d5	1.5		3.330		45.9	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.7		3.330		51.5	21.5	90.1			
Surr: 4-Terphenyl-d14	1.9		3.330		55.6	15	140			

Sample ID: **lcs-62272** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62272** RunNo: **80978**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2858021** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.5	0.20	1.670	0	90.0	22.9	109			
4-Chloro-3-methylphenol	2.9	0.50	3.330	0	87.3	24.2	109			
2-Chlorophenol	2.7	0.20	3.330	0	80.8	18.8	103			
1,4-Dichlorobenzene	1.1	0.20	1.670	0	67.8	18.8	89.5			
2,4-Dinitrotoluene	1.3	0.50	1.670	0	80.8	20.2	94.5			
N-Nitrosodi-n-propylamine	1.4	0.20	1.670	0	83.9	19.2	96.9			
4-Nitrophenol	3.6	0.25	3.330	0	109	25	118			
Pentachlorophenol	2.4	0.40	3.330	0	70.6	24.1	107			
Phenol	3.0	0.20	3.330	0	91.3	17.8	112			
Pyrene	1.5	0.20	1.670	0	91.0	25.9	125			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	72.3	18.5	92.8			
Surr: 2-Fluorophenol	2.5		3.330		73.9	20.3	74.1			
Surr: Phenol-d5	3.0		3.330		89.6	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.6		3.330		78.5	17.3	122			
Surr: Nitrobenzene-d5	1.3		1.670		78.6	24.7	73.2			S
Surr: 2-Fluorobiphenyl	1.4		1.670		85.8	21.5	90.1			
Surr: 4-Terphenyl-d14	1.6		1.670		93.8	15	140			

Sample ID: **MB-62216** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62216** RunNo: **81016**
Prep Date: **8/26/2021** Analysis Date: **9/2/2021** SeqNo: **2859379** 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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62216**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **62216**	RunNo: **81016**
Prep Date: **8/26/2021**	Analysis Date: **9/2/2021**	SeqNo: **2859379** 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	1.0								
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	0.50								
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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62216**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**	
Client ID: **PBS**	Batch ID: **62216**	RunNo: **81016**	
Prep Date: **8/26/2021**	Analysis Date: **9/2/2021**	SeqNo: **2859379**	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-Nitrosodimethylamine	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	2.5		3.330		75.4	20.3	74.1			S
Surr: Phenol-d5	3.2		3.330		94.7	23.1	92.7			S
Surr: 2,4,6-Tribromophenol	2.7		3.330		79.6	17.3	122			
Surr: Nitrobenzene-d5	1.3		1.670		77.1	24.7	73.2			S
Surr: 2-Fluorobiphenyl	1.4		1.670		84.0	21.5	90.1			
Surr: 4-Terphenyl-d14	1.8		1.670		108	15	140			

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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **LCS-62216** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62216** RunNo: **81016**
Prep Date: **8/26/2021** Analysis Date: **9/2/2021** SeqNo: **2859380** 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	85.7	22.9	109			
4-Chloro-3-methylphenol	2.9	0.50	3.330	0	85.8	24.2	109			
2-Chlorophenol	2.7	0.20	3.330	0	80.0	18.8	103			
1,4-Dichlorobenzene	1.2	0.20	1.670	0	69.1	18.8	89.5			
2,4-Dinitrotoluene	1.3	0.50	1.670	0	77.8	20.2	94.5			
N-Nitrosodi-n-propylamine	1.4	0.20	1.670	0	81.1	19.2	96.9			
4-Nitrophenol	3.4	0.25	3.330	0	103	25	118			
Pentachlorophenol	2.5	0.40	3.330	0	75.1	24.1	107			
Phenol	2.8	0.20	3.330	0	83.7	17.8	112			
Pyrene	1.6	0.20	1.670	0	95.0	25.9	125			
1,2,4-Trichlorobenzene	1.3	0.20	1.670	0	76.2	18.5	92.8			
Surr: 2-Fluorophenol	2.4		3.330		71.9	20.3	74.1			
Surr: Phenol-d5	2.8		3.330		83.7	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.7		3.330		80.4	17.3	122			
Surr: Nitrobenzene-d5	1.3		1.670		76.9	24.7	73.2			S
Surr: 2-Fluorobiphenyl	1.4		1.670		84.7	21.5	90.1			
Surr: 4-Terphenyl-d14	1.7		1.670		101	15	140			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62297** SampType: **MBLK** TestCode: **EPA Method 7471B: Mercury**
Client ID: **PBS** Batch ID: **62297** RunNo: **80969**
Prep Date: **8/31/2021** Analysis Date: **9/1/2021** SeqNo: **2857597** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LLLCS-62297** SampType: **LCSLL** TestCode: **EPA Method 7471B: Mercury**
Client ID: **BatchQC** Batch ID: **62297** RunNo: **80969**
Prep Date: **8/31/2021** Analysis Date: **9/1/2021** SeqNo: **2857598** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0041	0.033	0.006660	0	61.7	70	130			JS

Sample ID: **LCS-62297** SampType: **LCS** TestCode: **EPA Method 7471B: Mercury**
Client ID: **LCSS** Batch ID: **62297** RunNo: **80969**
Prep Date: **8/31/2021** Analysis Date: **9/1/2021** SeqNo: **2857599** 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	105	80	120			

Sample ID: **2108A32-003AMS** SampType: **MS** TestCode: **EPA Method 7471B: Mercury**
Client ID: **NDD-BD2** Batch ID: **62297** RunNo: **80969**
Prep Date: **8/31/2021** Analysis Date: **9/1/2021** SeqNo: **2857651** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.77	0.17	0.1685	0.5197	150	80	120			S

Sample ID: **2108A32-003AMSD** SampType: **MSD** TestCode: **EPA Method 7471B: Mercury**
Client ID: **NDD-BD2** Batch ID: **62297** RunNo: **80969**
Prep Date: **8/31/2021** Analysis Date: **9/1/2021** SeqNo: **2857654** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.77	0.17	0.1716	0.5197	148	80	120	0.293	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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62201** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62201** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853110** 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	0.041	0.15								J
Cadmium	ND	0.10								
Chromium	ND	0.30								
Cobalt	0.062	0.30								J
Iron	ND	2.5								
Manganese	ND	0.20								
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	ND	2.5								

Sample ID: **LCS-62201** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62201** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853112** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	23	2.5	25.00	0	93.7	80	120			
Arsenic	23	2.5	25.00	0	91.5	80	120			
Barium	24	0.10	25.00	0	95.6	80	120			
Beryllium	25	0.15	25.00	0	99.0	80	120			
Cadmium	24	0.10	25.00	0	94.6	80	120			
Chromium	24	0.30	25.00	0	95.5	80	120			
Cobalt	24	0.30	25.00	0	95.9	80	120			
Iron	25	2.5	25.00	0	99.4	80	120			
Manganese	24	0.20	25.00	0	94.4	80	120			
Nickel	24	0.50	25.00	0	95.2	80	120			
Selenium	22	2.5	25.00	0	89.3	80	120			
Silver	4.6	0.25	5.000	0	92.6	80	120			
Vanadium	24	2.5	25.00	0	97.4	80	120			
Zinc	23	2.5	25.00	0	93.2	80	120			

Sample ID: **MB-62201** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62201** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2855988** 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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62201**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **62201**	RunNo: **80919**
Prep Date: **8/25/2021**	Analysis Date: **8/30/2021**	SeqNo: **2855988** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.30								

Sample ID: **LCS-62201**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **62201**	RunNo: **80919**
Prep Date: **8/25/2021**	Analysis Date: **8/30/2021**	SeqNo: **2855990** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	25	0.30	25.00	0	98.6	80	120			

Sample ID: **MB-62280**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **62280**	RunNo: **80954**
Prep Date: **8/30/2021**	Analysis Date: **8/31/2021**	SeqNo: **2857279** 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	0.055	0.10								J
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	ND	2.5								
Lead	ND	0.30								
Manganese	ND	0.20								
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Zinc	ND	2.5								

Sample ID: **LCS-62280**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **62280**	RunNo: **80954**
Prep Date: **8/30/2021**	Analysis Date: **8/31/2021**	SeqNo: **2857281** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	24	2.5	25.00	0	96.4	80	120			
Barium	24	0.10	25.00	0	96.9	80	120			
Beryllium	25	0.15	25.00	0	99.1	80	120			
Cadmium	24	0.10	25.00	0	95.8	80	120			
Chromium	24	0.30	25.00	0	97.0	80	120			
Cobalt	24	0.30	25.00	0	96.7	80	120			
Iron	25	2.5	25.00	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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **LCS-62280** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62280** RunNo: **80954**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857281** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	25	0.30	25.00	0	99.4	80	120			
Manganese	24	0.20	25.00	0	97.2	80	120			
Nickel	24	0.50	25.00	0	96.6	80	120			
Selenium	22	2.5	25.00	0	89.6	80	120			
Silver	4.7	0.25	5.000	0	93.9	80	120			
Zinc	25	2.5	25.00	0	99.3	80	120			

Sample ID: **MB-62280** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62280** RunNo: **80954**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857364** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								

Sample ID: **LCS-62280** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62280** RunNo: **80954**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857366** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	24	2.5	25.00	0	97.3	80	120			

Sample ID: **MB-62280** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62280** RunNo: **80971**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2857697** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	ND	2.5								

Sample ID: **LCS-62280** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62280** RunNo: **80971**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2857699** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	24	2.5	25.00	0	97.1	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#: **2108A32**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **lcs-62086** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **62086** RunNo: **80755**
Prep Date: **8/19/2021** Analysis Date: **8/24/2021** SeqNo: **2850089** 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	70	130			
Surr: BFB	510		500.0		102	70	130			

Sample ID: **mb-62086** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **62086** RunNo: **80755**
Prep Date: **8/19/2021** Analysis Date: **8/24/2021** SeqNo: **2850090** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1.7	5.0								J
Surr: BFB	500		500.0		99.5	70	130			

Sample ID: **lcs-62159** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **62159** RunNo: **80831**
Prep Date: **8/24/2021** Analysis Date: **8/25/2021** SeqNo: **2851951** 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	102	70	130			
Surr: BFB	480		500.0		96.5	70	130			

Sample ID: **mb-62159** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **62159** RunNo: **80831**
Prep Date: **8/24/2021** Analysis Date: **8/25/2021** SeqNo: **2851952** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1.5	5.0								J
Surr: BFB	500		500.0		99.8	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: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: **Marathon** Work Order Number: **2108A32** RcptNo: **1**

Received By: **Cheyenne Cason** **8/19/2021 7:40:00 AM** Chk

Completed By: **Isaiah Ortiz** **8/19/2021 9:09:10 AM** I_OK

Reviewed By: JR 8/19/21

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. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
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: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
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: SPA 8.19.21

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	5.8	Good	Not Present			

Released to Imaging: 11/23/2022 1:30:09 PM

Received by OCD: 9/19/2022 12:31:41 PM

Chain-of-Custody Record

Client: Marathon Gallup Refinery

Mailing Address: 92 Giant Crossing Road
Jamesto' NM,87301

Phone #: 808-640-1823

email or Fax#:

QA/QC Package:
X Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
X EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name:
North Drainage Ditch Area

Project #:
697-082-002

Project Manager:
Caitlin Fields

Sampler: Kara Hoppes
On Ice: ☒ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 5.9-0.1=5.8

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 Name	Container Type and #	Preservative Type	HEAL No. 2108432	Analysis Request: TPH-DRO, Method 8015M/D	TPH-GRO, Method 8015D	VOCs, Method 8260B	Total metals, Method 6020	Mercury, Method 7470	SVOCs, Method 827/8270SIM	Cyanide 9/14/21
8/16/2021	1441	Soil	NDD-MW-1 (0-0.5')	4		001	x	x	x	x	x	x	x
8/16/2021	1455	Soil	NDD-MW-1 (1.5-2')	4		002	x	x	x	x	x	x	x
8/16/2021		Soil	NDD-BD2	4		003	x	x	x	x	x	x	x
8/17/2021	0925	Soil	NDD-MW-1 (7.5-8')	4		004	x	x	x	x	x	x	x
8/17/2021	1020	Soil	NDD-MW-1 (27.5-28')	4		005	x	x	x	x	x	x	x
8/17/2021	0830	Soil	NDD-MW-1 (35-35.5')	4		006	x	x	x	x	x	x	x
8/17/2021	1030	Soil	NDD-MW-1 (45.5-46')	4		007	x	x	x	x	x	x	x
8/17/2021	1410	Soil	NDD-MW-2 (0-0.5')	4		008	x	x	x	x	x	x	x
8/17/2021	1420	Soil	NDD-MW-2 (1.5-2')	4		009	x	x	x	x	x	x	x
8/17/2021	1622	Soil	NDD-MW-2 (28.2-28.7')	4		010	x	x	x	x	x	x	x
8/16/2021	1455	Water	NDD-EB3	2	HCl	011			x				
8/17/2021	1622	Water	NDD-EB4	2	HCl	012			x				

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
8/18/21	2:00 PM	Kara Hoppes		Courier	8/19/21	0740
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks: PO# 4500273327
Add CN to all Samples. cf 9/19/21

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Released to Imaging: 11/23/2022 1:30:09 PM

Received by OCD: 9/19/2022 12:31:41 PM

Chain-of-Custody Record

Client: Marathon Gallup Refinery

Mailing Address: 92 Giant Crossing Road
Jamesto NM,87301

Phone #: 808-640-1823

email or Fax#:

QA/QC Package:
X Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

X EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name:
North Drainage Ditch Area

Project #:
697-082-002

Project Manager:
Caitlin Fields

Sampler: Kara Hoppes
On Ice: ☒ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 5.9 - 0.1 = 5.8 (uncorrected)

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 Name	Container Type and #	Preservative Type	HEAL No. 2108432	TPH-DRO, Method 8015M/D	TPH-GRO, Method 8015D	VOCs, Method 8260B	Total metals, Method 6020	Mercury, Method 7470	SVOCs, Method 827/8270SIM	Analysis Request: Cyanide 9/14/21
8/18/21	1025	Soil	NDD-MW-2 (42.5-43')	4		013	X	X	X	X	X	X	X
8/18/21	1035	Soil	NDD-MW-2 (47.5-48')	4		014	X	X	X	X	X	X	X
			MeOH TRIP BLANK			015							
			SPA	8.19.21									

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
8/18/21	2:00 PM	Kara Hoppes		courier	8/19/21	0740
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Page 2 of 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

September 14, 2021

Caitlin Fields

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX:

RE: North Drainage Ditch Area OrderNo.: 2108B84

Dear Caitlin Fields:

Hall Environmental Analysis Laboratory received 26 sample(s) on 8/20/2021 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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 3:45:00 PM
Lab ID: 2108B84-001 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.8	9.6		mg/Kg	1	8/24/2021 11:12:28 AM	62132
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/24/2021 11:12:28 AM	62132
Surr: DNOP	128	0	70-130		%Rec	1	8/24/2021 11:12:28 AM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0068	0.0026	0.032	J	mg/Kg	1	9/3/2021 9:55:48 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/26/2021 7:19:30 PM	62200
Arsenic	ND	2.8	5.0		mg/Kg	2	8/26/2021 7:19:30 PM	62200
Barium	300	0.12	0.20		mg/Kg	2	8/26/2021 7:19:30 PM	62200
Beryllium	1.2	0.058	0.30		mg/Kg	2	8/26/2021 7:19:30 PM	62200
Cadmium	ND	0.10	0.20		mg/Kg	2	8/26/2021 7:19:30 PM	62200
Chromium	12	0.30	0.60		mg/Kg	2	8/26/2021 7:19:30 PM	62200
Cobalt	5.7	0.12	0.60		mg/Kg	2	8/26/2021 7:19:30 PM	62200
Iron	17000	250	250		mg/Kg	100	8/30/2021 3:32:03 PM	62200
Lead	5.7	0.53	0.60		mg/Kg	2	8/30/2021 2:46:28 PM	62200
Manganese	370	0.33	0.40		mg/Kg	2	8/26/2021 7:19:30 PM	62200
Nickel	12	0.39	1.0		mg/Kg	2	8/26/2021 7:19:30 PM	62200
Selenium	ND	4.4	5.0		mg/Kg	2	8/30/2021 2:46:28 PM	62200
Silver	ND	0.29	0.50		mg/Kg	2	8/26/2021 7:19:30 PM	62200
Vanadium	21	0.23	5.0		mg/Kg	2	8/26/2021 7:19:30 PM	62200
Zinc	19	2.7	5.0		mg/Kg	2	8/26/2021 7:19:30 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.89	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Acenaphthylene	ND	0.90	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Aniline	ND	0.69	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Anthracene	ND	0.90	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Azobenzene	ND	0.99	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Benz(a)anthracene	ND	0.64	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Benzo(a)pyrene	ND	0.94	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Benzo(b)fluoranthene	ND	1.1	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Benzo(k)fluoranthene	ND	0.75	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Benzoic acid	ND	1.2	9.9	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Benzyl alcohol	ND	0.81	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Bis(2-chloroethoxy)methane	ND	0.76	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Bis(2-ethylhexyl)phthalate	ND	2.1	5.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 3:45:00 PM
Lab ID: 2108B84-001 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Butyl benzyl phthalate	ND	0.61	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Carbazole	ND	0.87	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
4-Chloro-3-methylphenol	ND	0.84	5.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
4-Chloroaniline	ND	0.97	5.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2-Chloronaphthalene	ND	0.94	2.5	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
4-Chlorophenyl phenyl ether	ND	0.84	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Chrysene	ND	0.88	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Di-n-butyl phthalate	ND	2.8	4.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Di-n-octyl phthalate	ND	1.3	4.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
1,2-Dichlorobenzene	ND	0.80	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
1,3-Dichlorobenzene	ND	0.71	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
1,4-Dichlorobenzene	ND	0.84	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Diethyl phthalate	ND	3.2	5.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Dimethyl phthalate	ND	0.92	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2,4-Dichlorophenol	ND	0.81	4.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2,4-Dimethylphenol	ND	0.71	3.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
4,6-Dinitro-2-methylphenol	ND	0.84	4.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2,4-Dinitrophenol	ND	0.50	5.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2,4-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2,6-Dinitrotoluene	ND	1.0	5.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Fluoranthene	ND	0.80	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Fluorene	ND	0.89	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Hexachlorobenzene	ND	0.88	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Hexachlorobutadiene	ND	0.93	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Hexachloroethane	ND	0.88	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Isophorone	ND	0.81	4.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
1-Methylnaphthalene	ND	0.91	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2-Methylnaphthalene	ND	0.82	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2-Methylphenol	ND	0.84	4.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
3+4-Methylphenol	ND	0.82	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
N-Nitrosodi-n-propylamine	ND	0.92	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 3:45:00 PM
Lab ID: 2108B84-001 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Naphthalene	ND	0.94	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
3-Nitroaniline	ND	1.2	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Nitrobenzene	ND	0.82	4.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2-Nitrophenol	ND	0.86	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
4-Nitrophenol	ND	0.82	2.5	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Pentachlorophenol	ND	0.86	4.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Phenol	ND	0.77	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Pyrene	ND	0.75	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Pyridine	ND	1.6	4.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
1,2,4-Trichlorobenzene	ND	0.91	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2,4,5-Trichlorophenol	ND	0.63	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
2,4,6-Trichlorophenol	ND	0.86	2.0	D	mg/Kg	10	8/28/2021 2:54:00 AM	62157
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	8/28/2021 2:54:00 AM	62157
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	8/28/2021 2:54:00 AM	62157
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	8/28/2021 2:54:00 AM	62157
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	8/28/2021 2:54:00 AM	62157
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	8/28/2021 2:54:00 AM	62157
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	8/28/2021 2:54:00 AM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0053	0.014		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Toluene	ND	0.0035	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Ethylbenzene	ND	0.0067	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.016	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,2,4-Trimethylbenzene	ND	0.0039	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,3,5-Trimethylbenzene	ND	0.0062	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,2-Dichloroethane (EDC)	ND	0.0063	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,2-Dibromoethane (EDB)	ND	0.011	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Naphthalene	ND	0.010	0.055		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1-Methylnaphthalene	ND	0.032	0.11		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
2-Methylnaphthalene	ND	0.025	0.11		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Acetone	ND	0.090	0.41		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Bromobenzene	ND	0.0058	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Bromodichloromethane	ND	0.0035	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Bromoform	ND	0.0066	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Bromomethane	ND	0.046	0.083		mg/Kg	1	8/30/2021 9:10:01 PM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 3:45:00 PM
Lab ID: 2108B84-001 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.12	0.28		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Carbon disulfide	ND	0.011	0.28		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Carbon tetrachloride	ND	0.0031	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Chlorobenzene	ND	0.0050	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Chloroethane	ND	0.010	0.055		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Chloroform	ND	0.0039	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Chloromethane	ND	0.0097	0.083		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
2-Chlorotoluene	ND	0.0037	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
4-Chlorotoluene	ND	0.014	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
cis-1,2-DCE	ND	0.014	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
cis-1,3-Dichloropropene	ND	0.0041	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,2-Dibromo-3-chloropropane	ND	0.012	0.055		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Dibromochloromethane	ND	0.0044	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Dibromomethane	ND	0.0064	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,2-Dichlorobenzene	ND	0.0057	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,3-Dichlorobenzene	ND	0.0052	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,4-Dichlorobenzene	ND	0.0074	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Dichlorodifluoromethane	ND	0.011	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,1-Dichloroethane	ND	0.0080	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,1-Dichloroethene	ND	0.0059	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,2-Dichloropropane	ND	0.0054	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,3-Dichloropropane	ND	0.0061	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
2,2-Dichloropropane	ND	0.0039	0.055		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,1-Dichloropropene	ND	0.0033	0.055		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Hexachlorobutadiene	ND	0.019	0.055		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
2-Hexanone	ND	0.012	0.28		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Isopropylbenzene	ND	0.0051	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
4-Isopropyltoluene	ND	0.0071	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
4-Methyl-2-pentanone	ND	0.032	0.28		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Methylene chloride	ND	0.020	0.083		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
n-Butylbenzene	ND	0.0074	0.083		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
n-Propylbenzene	ND	0.0044	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
sec-Butylbenzene	ND	0.023	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Styrene	ND	0.0038	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
tert-Butylbenzene	ND	0.0064	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0040	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,1,2,2-Tetrachloroethane	ND	0.0089	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Tetrachloroethene (PCE)	ND	0.0075	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
trans-1,2-DCE	ND	0.0053	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 3:45:00 PM
Lab ID: 2108B84-001 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0065	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,2,3-Trichlorobenzene	ND	0.0043	0.055		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,2,4-Trichlorobenzene	ND	0.0096	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,1,1-Trichloroethane	ND	0.0061	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,1,2-Trichloroethane	ND	0.0069	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Trichloroethene (TCE)	ND	0.0054	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Trichlorofluoromethane	ND	0.0062	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
1,2,3-Trichloropropane	ND	0.012	0.055		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Vinyl chloride	ND	0.0053	0.028		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Xylenes, Total	ND	0.014	0.055		mg/Kg	1	8/30/2021 9:10:01 PM	A80915
Surr: Dibromofluoromethane	107		70-130		%Rec	1	8/30/2021 9:10:01 PM	A80915
Surr: 1,2-Dichloroethane-d4	89.9		70-130		%Rec	1	8/30/2021 9:10:01 PM	A80915
Surr: Toluene-d8	100		70-130		%Rec	1	8/30/2021 9:10:01 PM	A80915
Surr: 4-Bromofluorobenzene	96.6		70-130		%Rec	1	8/30/2021 9:10:01 PM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.77	2.8		mg/Kg	1	8/30/2021 9:10:01 PM	B80915
Surr: BFB	97.3	0	70-130		%Rec	1	8/30/2021 9:10:01 PM	B80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 4:00:00 PM
Lab ID: 2108B84-002 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.8	9.8		mg/Kg	1	8/24/2021 11:22:08 AM	62132
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	8/24/2021 11:22:08 AM	62132
Surr: DNOP	127	0	70-130		%Rec	1	8/24/2021 11:22:08 AM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0038	0.0026	0.033	J	mg/Kg	1	9/3/2021 10:02:12 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.8		mg/Kg	2	8/26/2021 7:37:11 PM	62200
Arsenic	ND	2.7	4.8		mg/Kg	2	8/26/2021 7:37:11 PM	62200
Barium	240	0.12	0.19		mg/Kg	2	8/26/2021 7:37:11 PM	62200
Beryllium	1.5	0.057	0.29		mg/Kg	2	8/26/2021 7:37:11 PM	62200
Cadmium	ND	0.097	0.19		mg/Kg	2	8/26/2021 7:37:11 PM	62200
Chromium	16	0.29	0.58		mg/Kg	2	8/26/2021 7:37:11 PM	62200
Cobalt	6.5	0.12	0.58		mg/Kg	2	8/26/2021 7:37:11 PM	62200
Iron	21000	240	240		mg/Kg	100	8/30/2021 3:40:32 PM	62200
Lead	3.5	0.52	0.58		mg/Kg	2	8/30/2021 3:38:45 PM	62200
Manganese	340	0.32	0.39		mg/Kg	2	8/26/2021 7:37:11 PM	62200
Nickel	14	0.38	0.97		mg/Kg	2	8/26/2021 7:37:11 PM	62200
Selenium	ND	4.3	4.8		mg/Kg	2	8/30/2021 3:38:45 PM	62200
Silver	ND	0.28	0.48		mg/Kg	2	8/26/2021 7:37:11 PM	62200
Vanadium	25	0.22	4.8		mg/Kg	2	8/26/2021 7:37:11 PM	62200
Zinc	19	2.6	4.8		mg/Kg	2	8/26/2021 7:37:11 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.087	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Acenaphthylene	ND	0.088	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Aniline	ND	0.067	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Anthracene	ND	0.088	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Azobenzene	ND	0.097	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Benz(a)anthracene	ND	0.063	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Benzo(a)pyrene	ND	0.092	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Benzo(g,h,i)perylene	ND	0.099	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Benzo(k)fluoranthene	ND	0.073	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Benzoic acid	ND	0.12	0.97		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Benzyl alcohol	ND	0.080	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Bis(2-chloroethoxy)methane	ND	0.074	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Bis(2-chloroisopropyl)ether	ND	0.099	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	8/28/2021 3:35:12 AM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 4:00:00 PM
Lab ID: 2108B84-002 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Butyl benzyl phthalate	ND	0.059	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Carbazole	ND	0.086	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
4-Chloro-3-methylphenol	ND	0.082	0.49		mg/Kg	1	8/28/2021 3:35:12 AM	62157
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2-Chloronaphthalene	ND	0.092	0.24		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
4-Chlorophenyl phenyl ether	ND	0.083	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Chrysene	ND	0.086	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
1,2-Dichlorobenzene	ND	0.079	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
1,3-Dichlorobenzene	ND	0.069	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
1,4-Dichlorobenzene	ND	0.083	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Dimethyl phthalate	ND	0.090	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	8/28/2021 3:35:12 AM	62157
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2,6-Dinitrotoluene	ND	0.099	0.49		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Fluoranthene	ND	0.079	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Fluorene	ND	0.087	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Hexachlorobenzene	ND	0.087	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Hexachlorobutadiene	ND	0.091	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Hexachloroethane	ND	0.086	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Isophorone	ND	0.080	0.39		mg/Kg	1	8/28/2021 3:35:12 AM	62157
1-Methylnaphthalene	ND	0.090	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2-Methylnaphthalene	ND	0.080	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2-Methylphenol	ND	0.082	0.39		mg/Kg	1	8/28/2021 3:35:12 AM	62157
3+4-Methylphenol	ND	0.080	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
N-Nitrosodi-n-propylamine	ND	0.090	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 4:00:00 PM
Lab ID: 2108B84-002 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Naphthalene	ND	0.092	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2-Nitroaniline	ND	0.10	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2-Nitrophenol	ND	0.084	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Pentachlorophenol	ND	0.084	0.39		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Phenanthrene	ND	0.099	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Phenol	ND	0.075	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Pyrene	ND	0.074	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Pyridine	ND	0.16	0.39		mg/Kg	1	8/28/2021 3:35:12 AM	62157
1,2,4-Trichlorobenzene	ND	0.089	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2,4,5-Trichlorophenol	ND	0.062	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
2,4,6-Trichlorophenol	ND	0.084	0.19		mg/Kg	1	8/28/2021 3:35:12 AM	62157
Surr: 2-Fluorophenol	48.7		20.3-74.1		%Rec	1	8/28/2021 3:35:12 AM	62157
Surr: Phenol-d5	62.7		23.1-92.7		%Rec	1	8/28/2021 3:35:12 AM	62157
Surr: 2,4,6-Tribromophenol	67.8		17.3-122		%Rec	1	8/28/2021 3:35:12 AM	62157
Surr: Nitrobenzene-d5	49.1		24.7-73.2		%Rec	1	8/28/2021 3:35:12 AM	62157
Surr: 2-Fluorobiphenyl	57.8		21.5-90.1		%Rec	1	8/28/2021 3:35:12 AM	62157
Surr: 4-Terphenyl-d14	90.2		15-140		%Rec	1	8/28/2021 3:35:12 AM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0051	0.013		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Toluene	ND	0.0034	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Ethylbenzene	ND	0.0064	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.015	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,2,4-Trimethylbenzene	ND	0.0037	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,3,5-Trimethylbenzene	ND	0.0059	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,2-Dichloroethane (EDC)	ND	0.0060	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,2-Dibromoethane (EDB)	ND	0.010	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Naphthalene	ND	0.0098	0.053		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1-Methylnaphthalene	ND	0.030	0.11		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
2-Methylnaphthalene	ND	0.024	0.11		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Acetone	ND	0.086	0.40		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Bromobenzene	ND	0.0056	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Bromodichloromethane	ND	0.0034	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Bromoform	ND	0.0064	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Bromomethane	ND	0.044	0.079		mg/Kg	1	8/30/2021 9:38:41 PM	A80915

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.

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 4:00:00 PM
Lab ID: 2108B84-002 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.11	0.26		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Carbon disulfide	ND	0.011	0.26		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Carbon tetrachloride	ND	0.0029	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Chlorobenzene	ND	0.0048	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Chloroethane	ND	0.0099	0.053		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Chloroform	ND	0.0038	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Chloromethane	ND	0.0093	0.079		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
2-Chlorotoluene	ND	0.0035	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
4-Chlorotoluene	ND	0.014	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
cis-1,2-DCE	ND	0.013	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
cis-1,3-Dichloropropene	ND	0.0039	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,2-Dibromo-3-chloropropane	ND	0.011	0.053		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Dibromochloromethane	ND	0.0042	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Dibromomethane	ND	0.0062	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,2-Dichlorobenzene	ND	0.0055	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,3-Dichlorobenzene	ND	0.0050	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,4-Dichlorobenzene	ND	0.0071	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Dichlorodifluoromethane	ND	0.010	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,1-Dichloroethane	ND	0.0077	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,1-Dichloroethene	ND	0.0057	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,2-Dichloropropane	ND	0.0052	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,3-Dichloropropane	ND	0.0058	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
2,2-Dichloropropane	ND	0.0038	0.053		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,1-Dichloropropene	ND	0.0032	0.053		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Hexachlorobutadiene	ND	0.018	0.053		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
2-Hexanone	ND	0.012	0.26		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Isopropylbenzene	ND	0.0049	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
4-Isopropyltoluene	ND	0.0068	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
4-Methyl-2-pentanone	ND	0.031	0.26		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Methylene chloride	ND	0.019	0.079		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
n-Butylbenzene	ND	0.0071	0.079		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
n-Propylbenzene	ND	0.0043	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
sec-Butylbenzene	ND	0.022	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Styrene	ND	0.0036	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
tert-Butylbenzene	ND	0.0061	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0039	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,1,2,2-Tetrachloroethane	ND	0.0086	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Tetrachloroethene (PCE)	ND	0.0072	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
trans-1,2-DCE	ND	0.0051	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 4:00:00 PM
Lab ID: 2108B84-002 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0062	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,2,3-Trichlorobenzene	ND	0.0041	0.053		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,2,4-Trichlorobenzene	ND	0.0092	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,1,1-Trichloroethane	ND	0.0058	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,1,2-Trichloroethane	ND	0.0066	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Trichloroethene (TCE)	ND	0.0052	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Trichlorofluoromethane	ND	0.0060	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
1,2,3-Trichloropropane	ND	0.011	0.053		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Vinyl chloride	ND	0.0050	0.026		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Xylenes, Total	ND	0.014	0.053		mg/Kg	1	8/30/2021 9:38:41 PM	A80915
Surr: Dibromofluoromethane	106		70-130		%Rec	1	8/30/2021 9:38:41 PM	A80915
Surr: 1,2-Dichloroethane-d4	85.5		70-130		%Rec	1	8/30/2021 9:38:41 PM	A80915
Surr: Toluene-d8	98.0		70-130		%Rec	1	8/30/2021 9:38:41 PM	A80915
Surr: 4-Bromofluorobenzene	100		70-130		%Rec	1	8/30/2021 9:38:41 PM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.73	2.6		mg/Kg	1	8/30/2021 9:38:41 PM	B80915
Surr: BFB	105	0	70-130		%Rec	1	8/30/2021 9:38:41 PM	B80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (18.5-19')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:35:00 PM
Lab ID: 2108B84-003 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	57	4.6	9.4		mg/Kg	1	8/24/2021 11:31:49 AM	62132
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/24/2021 11:31:49 AM	62132
Surr: DNOP	110	0	70-130		%Rec	1	8/24/2021 11:31:49 AM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0038	0.0026	0.032	J	mg/Kg	1	9/3/2021 10:04:20 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/26/2021 7:39:26 PM	62200
Arsenic	ND	2.8	4.9		mg/Kg	2	8/26/2021 7:39:26 PM	62200
Barium	270	0.12	0.20		mg/Kg	2	8/26/2021 7:39:26 PM	62200
Beryllium	1.4	0.057	0.29		mg/Kg	2	8/26/2021 7:39:26 PM	62200
Cadmium	ND	0.098	0.20		mg/Kg	2	8/26/2021 7:39:26 PM	62200
Chromium	13	0.29	0.59		mg/Kg	2	8/26/2021 7:39:26 PM	62200
Cobalt	5.6	0.12	0.59		mg/Kg	2	8/26/2021 7:39:26 PM	62200
Iron	18000	240	240		mg/Kg	100	8/30/2021 3:43:57 PM	62200
Lead	4.4	0.52	0.59		mg/Kg	2	8/30/2021 3:42:11 PM	62200
Manganese	300	0.32	0.39		mg/Kg	2	8/26/2021 7:39:26 PM	62200
Nickel	11	0.39	0.98		mg/Kg	2	8/26/2021 7:39:26 PM	62200
Selenium	ND	4.3	4.9		mg/Kg	2	8/30/2021 3:42:11 PM	62200
Silver	ND	0.28	0.49		mg/Kg	2	8/26/2021 7:39:26 PM	62200
Vanadium	23	0.22	4.9		mg/Kg	2	8/26/2021 7:39:26 PM	62200
Zinc	17	2.6	4.9		mg/Kg	2	8/26/2021 7:39:26 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.084	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Acenaphthylene	ND	0.085	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Aniline	ND	0.065	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Anthracene	ND	0.085	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Azobenzene	ND	0.094	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Benz(a)anthracene	ND	0.060	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Benzo(a)pyrene	ND	0.088	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Benzo(g,h,i)perylene	ND	0.096	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Benzo(k)fluoranthene	ND	0.071	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Benzoic acid	ND	0.12	0.94		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Benzyl alcohol	ND	0.077	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Bis(2-chloroethoxy)methane	ND	0.072	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Bis(2-chloroethyl)ether	ND	0.098	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Bis(2-chloroisopropyl)ether	ND	0.095	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Bis(2-ethylhexyl)phthalate	ND	0.20	0.47		mg/Kg	1	8/28/2021 4:17:17 AM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (18.5-19')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:35:00 PM
Lab ID: 2108B84-003 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.098	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Butyl benzyl phthalate	ND	0.057	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Carbazole	ND	0.083	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
4-Chloro-3-methylphenol	ND	0.079	0.47		mg/Kg	1	8/28/2021 4:17:17 AM	62157
4-Chloroaniline	ND	0.091	0.47		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2-Chloronaphthalene	ND	0.089	0.23		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
4-Chlorophenyl phenyl ether	ND	0.080	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Chrysene	ND	0.083	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Di-n-butyl phthalate	ND	0.26	0.38		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Di-n-octyl phthalate	ND	0.12	0.38		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Dibenz(a,h)anthracene	ND	0.099	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Dibenzofuran	ND	0.098	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
1,2-Dichlorobenzene	ND	0.076	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
1,3-Dichlorobenzene	ND	0.067	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
1,4-Dichlorobenzene	ND	0.080	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
3,3´-Dichlorobenzidine	ND	0.14	0.23		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Diethyl phthalate	ND	0.31	0.47		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Dimethyl phthalate	ND	0.087	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2,4-Dichlorophenol	ND	0.076	0.38		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2,4-Dimethylphenol	0.068	0.067	0.28	J	mg/Kg	1	8/28/2021 4:17:17 AM	62157
4,6-Dinitro-2-methylphenol	ND	0.079	0.38		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2,4-Dinitrophenol	ND	0.047	0.47		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2,4-Dinitrotoluene	ND	0.11	0.47		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2,6-Dinitrotoluene	ND	0.095	0.47		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Fluoranthene	ND	0.076	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Fluorene	ND	0.084	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Hexachlorobenzene	ND	0.084	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Hexachlorobutadiene	ND	0.088	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Hexachloroethane	ND	0.083	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Isophorone	ND	0.077	0.38		mg/Kg	1	8/28/2021 4:17:17 AM	62157
1-Methylnaphthalene	0.17	0.086	0.19	J	mg/Kg	1	8/28/2021 4:17:17 AM	62157
2-Methylnaphthalene	0.31	0.077	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2-Methylphenol	ND	0.079	0.38		mg/Kg	1	8/28/2021 4:17:17 AM	62157
3+4-Methylphenol	ND	0.078	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
N-Nitrosodi-n-propylamine	ND	0.087	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (18.5-19')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:35:00 PM
Lab ID: 2108B84-003 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.098	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Naphthalene	0.30	0.088	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2-Nitroaniline	ND	0.096	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Nitrobenzene	ND	0.077	0.38		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2-Nitrophenol	ND	0.081	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
4-Nitrophenol	ND	0.077	0.23		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Pentachlorophenol	ND	0.081	0.38		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Phenanthrene	ND	0.096	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Phenol	0.16	0.072	0.19	J	mg/Kg	1	8/28/2021 4:17:17 AM	62157
Pyrene	ND	0.071	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Pyridine	ND	0.15	0.38		mg/Kg	1	8/28/2021 4:17:17 AM	62157
1,2,4-Trichlorobenzene	ND	0.086	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2,4,5-Trichlorophenol	ND	0.060	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
2,4,6-Trichlorophenol	ND	0.081	0.19		mg/Kg	1	8/28/2021 4:17:17 AM	62157
Surr: 2-Fluorophenol	43.0		20.3-74.1		%Rec	1	8/28/2021 4:17:17 AM	62157
Surr: Phenol-d5	48.2		23.1-92.7		%Rec	1	8/28/2021 4:17:17 AM	62157
Surr: 2,4,6-Tribromophenol	70.9		17.3-122		%Rec	1	8/28/2021 4:17:17 AM	62157
Surr: Nitrobenzene-d5	41.5		24.7-73.2		%Rec	1	8/28/2021 4:17:17 AM	62157
Surr: 2-Fluorobiphenyl	38.7		21.5-90.1		%Rec	1	8/28/2021 4:17:17 AM	62157
Surr: 4-Terphenyl-d14	96.9		15-140		%Rec	1	8/28/2021 4:17:17 AM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	4.0	0.024	0.062		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Toluene	2.7	0.016	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Ethylbenzene	3.9	0.030	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.070	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,2,4-Trimethylbenzene	7.9	0.018	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,3,5-Trimethylbenzene	3.0	0.028	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,2-Dichloroethane (EDC)	ND	0.028	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,2-Dibromoethane (EDB)	ND	0.049	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Naphthalene	1.2	0.046	0.25		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1-Methylnaphthalene	0.70	0.14	0.50		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
2-Methylnaphthalene	1.3	0.12	0.50		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Acetone	ND	0.41	1.9		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Bromobenzene	ND	0.026	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Bromodichloromethane	ND	0.016	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Bromoform	ND	0.030	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Bromomethane	ND	0.21	0.37		mg/Kg	5	8/30/2021 10:07:26 PM	A80915

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (18.5-19')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:35:00 PM
Lab ID: 2108B84-003 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.54	1.2		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Carbon disulfide	ND	0.051	1.2		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Carbon tetrachloride	ND	0.014	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Chlorobenzene	ND	0.022	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Chloroethane	ND	0.047	0.25		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Chloroform	ND	0.018	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Chloromethane	ND	0.044	0.37		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
2-Chlorotoluene	ND	0.017	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
4-Chlorotoluene	ND	0.066	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
cis-1,2-DCE	ND	0.062	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
cis-1,3-Dichloropropene	ND	0.019	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,2-Dibromo-3-chloropropane	ND	0.054	0.25		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Dibromochloromethane	ND	0.020	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Dibromomethane	ND	0.029	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,2-Dichlorobenzene	ND	0.026	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,3-Dichlorobenzene	ND	0.024	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,4-Dichlorobenzene	ND	0.033	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Dichlorodifluoromethane	ND	0.048	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,1-Dichloroethane	ND	0.036	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,1-Dichloroethene	ND	0.027	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,2-Dichloropropane	ND	0.024	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,3-Dichloropropane	ND	0.027	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
2,2-Dichloropropane	ND	0.018	0.25		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,1-Dichloropropene	ND	0.015	0.25		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Hexachlorobutadiene	ND	0.085	0.25		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
2-Hexanone	ND	0.054	1.2		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Isopropylbenzene	0.24	0.023	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
4-Isopropyltoluene	0.089	0.032	0.12	J	mg/Kg	5	8/30/2021 10:07:26 PM	A80915
4-Methyl-2-pentanone	ND	0.15	1.2		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Methylene chloride	ND	0.090	0.37		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
n-Butylbenzene	0.40	0.033	0.37		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
n-Propylbenzene	1.4	0.020	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
sec-Butylbenzene	0.12	0.10	0.12	J	mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Styrene	ND	0.017	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
tert-Butylbenzene	ND	0.029	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,1,1,2-Tetrachloroethane	ND	0.018	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,1,2,2-Tetrachloroethane	ND	0.040	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Tetrachloroethene (PCE)	ND	0.034	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
trans-1,2-DCE	ND	0.024	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915

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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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E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (18.5-19')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:35:00 PM
Lab ID: 2108B84-003 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.029	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,2,3-Trichlorobenzene	ND	0.019	0.25		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,2,4-Trichlorobenzene	ND	0.043	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,1,1-Trichloroethane	ND	0.028	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,1,2-Trichloroethane	ND	0.031	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Trichloroethene (TCE)	ND	0.024	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Trichlorofluoromethane	ND	0.028	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
1,2,3-Trichloropropane	ND	0.052	0.25		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Vinyl chloride	ND	0.024	0.12		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Xylenes, Total	14	0.065	0.25		mg/Kg	5	8/30/2021 10:07:26 PM	A80915
Surr: Dibromofluoromethane	83.0		70-130		%Rec	5	8/30/2021 10:07:26 PM	A80915
Surr: 1,2-Dichloroethane-d4	87.4		70-130		%Rec	5	8/30/2021 10:07:26 PM	A80915
Surr: Toluene-d8	102		70-130		%Rec	5	8/30/2021 10:07:26 PM	A80915
Surr: 4-Bromofluorobenzene	95.5		70-130		%Rec	5	8/30/2021 10:07:26 PM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	370	3.5	12		mg/Kg	5	8/30/2021 10:07:26 PM	B80915
Surr: BFB	99.1	0	70-130		%Rec	5	8/30/2021 10:07:26 PM	B80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (23-23.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:45:00 PM
Lab ID: 2108B84-004 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.7	9.5		mg/Kg	1	8/24/2021 11:41:30 AM	62132
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/24/2021 11:41:30 AM	62132
Surr: DNOP	130	0	70-130	S	%Rec	1	8/24/2021 11:41:30 AM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0026	0.032		mg/Kg	1	9/3/2021 10:06:28 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/26/2021 7:41:41 PM	62200
Arsenic	ND	2.8	4.9		mg/Kg	2	8/26/2021 7:41:41 PM	62200
Barium	360	0.12	0.19		mg/Kg	2	8/26/2021 7:41:41 PM	62200
Beryllium	0.95	0.057	0.29		mg/Kg	2	8/26/2021 7:41:41 PM	62200
Cadmium	ND	0.097	0.19		mg/Kg	2	8/26/2021 7:41:41 PM	62200
Chromium	8.8	0.29	0.58		mg/Kg	2	8/26/2021 7:41:41 PM	62200
Cobalt	4.5	0.12	0.58		mg/Kg	2	8/26/2021 7:41:41 PM	62200
Iron	14000	240	240		mg/Kg	100	8/30/2021 3:47:17 PM	62200
Lead	4.0	0.52	0.58		mg/Kg	2	8/30/2021 3:45:37 PM	62200
Manganese	490	0.32	0.39		mg/Kg	2	8/30/2021 3:45:37 PM	62200
Nickel	8.3	0.38	0.97		mg/Kg	2	8/26/2021 7:41:41 PM	62200
Selenium	ND	4.3	4.9		mg/Kg	2	8/30/2021 3:45:37 PM	62200
Silver	ND	0.28	0.49		mg/Kg	2	8/26/2021 7:41:41 PM	62200
Vanadium	19	0.22	4.9		mg/Kg	2	8/26/2021 7:41:41 PM	62200
Zinc	12	2.6	4.9		mg/Kg	2	8/26/2021 7:41:41 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.089	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Acenaphthylene	ND	0.090	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Aniline	ND	0.069	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Anthracene	ND	0.090	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Azobenzene	ND	0.099	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Benz(a)anthracene	ND	0.064	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Benzo(a)pyrene	ND	0.094	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Benzo(b)fluoranthene	ND	0.11	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Benzo(k)fluoranthene	ND	0.075	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Benzoic acid	ND	0.12	0.99		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Benzyl alcohol	ND	0.081	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Bis(2-chloroethoxy)methane	ND	0.076	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Bis(2-ethylhexyl)phthalate	ND	0.21	0.50		mg/Kg	1	8/28/2021 4:58:40 AM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (23-23.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:45:00 PM
Lab ID: 2108B84-004 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Carbazole	ND	0.087	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
4-Chloro-3-methylphenol	ND	0.084	0.50		mg/Kg	1	8/28/2021 4:58:40 AM	62157
4-Chloroaniline	ND	0.097	0.50		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2-Chloronaphthalene	ND	0.094	0.25		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
4-Chlorophenyl phenyl ether	ND	0.084	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Chrysene	ND	0.088	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Di-n-butyl phthalate	ND	0.28	0.40		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Di-n-octyl phthalate	ND	0.13	0.40		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
1,2-Dichlorobenzene	ND	0.080	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
1,3-Dichlorobenzene	ND	0.071	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Diethyl phthalate	ND	0.32	0.50		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Dimethyl phthalate	ND	0.092	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2,4-Dichlorophenol	ND	0.081	0.40		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2,4-Dimethylphenol	ND	0.071	0.30		mg/Kg	1	8/28/2021 4:58:40 AM	62157
4,6-Dinitro-2-methylphenol	ND	0.084	0.40		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2,4-Dinitrophenol	ND	0.050	0.50		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2,6-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Fluoranthene	ND	0.080	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Fluorene	ND	0.089	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Hexachlorobenzene	ND	0.088	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Hexachlorobutadiene	ND	0.093	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Hexachloroethane	ND	0.088	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Isophorone	ND	0.081	0.40		mg/Kg	1	8/28/2021 4:58:40 AM	62157
1-Methylnaphthalene	ND	0.091	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2-Methylnaphthalene	ND	0.082	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2-Methylphenol	ND	0.084	0.40		mg/Kg	1	8/28/2021 4:58:40 AM	62157
3+4-Methylphenol	ND	0.082	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
N-Nitrosodi-n-propylamine	ND	0.092	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (23-23.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:45:00 PM
Lab ID: 2108B84-004 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Naphthalene	ND	0.094	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
3-Nitroaniline	ND	0.12	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Nitrobenzene	ND	0.081	0.40		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2-Nitrophenol	ND	0.086	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
4-Nitrophenol	ND	0.082	0.25		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Pentachlorophenol	ND	0.086	0.40		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Phenanthrene	ND	0.10	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Phenol	ND	0.077	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Pyrene	ND	0.075	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Pyridine	ND	0.16	0.40		mg/Kg	1	8/28/2021 4:58:40 AM	62157
1,2,4-Trichlorobenzene	ND	0.091	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
2,4,6-Trichlorophenol	ND	0.086	0.20		mg/Kg	1	8/28/2021 4:58:40 AM	62157
Surr: 2-Fluorophenol	42.9		20.3-74.1		%Rec	1	8/28/2021 4:58:40 AM	62157
Surr: Phenol-d5	48.3		23.1-92.7		%Rec	1	8/28/2021 4:58:40 AM	62157
Surr: 2,4,6-Tribromophenol	63.3		17.3-122		%Rec	1	8/28/2021 4:58:40 AM	62157
Surr: Nitrobenzene-d5	36.9		24.7-73.2		%Rec	1	8/28/2021 4:58:40 AM	62157
Surr: 2-Fluorobiphenyl	39.6		21.5-90.1		%Rec	1	8/28/2021 4:58:40 AM	62157
Surr: 4-Terphenyl-d14	96.0		15-140		%Rec	1	8/28/2021 4:58:40 AM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	0.75	0.0047	0.012		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Toluene	0.39	0.0031	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Ethylbenzene	0.15	0.0059	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Methyl tert-butyl ether (MTBE)	0.065	0.014	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,2,4-Trimethylbenzene	0.16	0.0034	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,3,5-Trimethylbenzene	0.036	0.0055	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,2-Dichloroethane (EDC)	ND	0.0055	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,2-Dibromoethane (EDB)	ND	0.0096	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Naphthalene	0.059	0.0090	0.049		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1-Methylnaphthalene	ND	0.028	0.097		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
2-Methylnaphthalene	0.039	0.022	0.097	J	mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Acetone	ND	0.079	0.36		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Bromobenzene	ND	0.0052	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Bromodichloromethane	ND	0.0031	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Bromoform	ND	0.0059	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Bromomethane	ND	0.040	0.073		mg/Kg	1	8/30/2021 11:04:42 PM	A80915

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (23-23.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:45:00 PM
Lab ID: 2108B84-004 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.11	0.24		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Carbon disulfide	ND	0.010	0.24		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Carbon tetrachloride	ND	0.0027	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Chlorobenzene	ND	0.0044	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Chloroethane	ND	0.0091	0.049		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Chloroform	ND	0.0035	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Chloromethane	ND	0.0085	0.073		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
2-Chlorotoluene	ND	0.0033	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
4-Chlorotoluene	ND	0.013	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
cis-1,2-DCE	ND	0.012	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
cis-1,3-Dichloropropene	ND	0.0036	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,2-Dibromo-3-chloropropane	ND	0.011	0.049		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Dibromochloromethane	ND	0.0039	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Dibromomethane	ND	0.0057	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,2-Dichlorobenzene	ND	0.0051	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,3-Dichlorobenzene	ND	0.0046	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,4-Dichlorobenzene	ND	0.0065	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Dichlorodifluoromethane	ND	0.0094	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,1-Dichloroethane	ND	0.0071	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,1-Dichloroethene	ND	0.0052	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,2-Dichloropropane	ND	0.0047	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,3-Dichloropropane	ND	0.0053	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
2,2-Dichloropropane	ND	0.0035	0.049		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,1-Dichloropropene	ND	0.0029	0.049		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Hexachlorobutadiene	ND	0.017	0.049		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
2-Hexanone	ND	0.011	0.24		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Isopropylbenzene	ND	0.0045	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
4-Isopropyltoluene	ND	0.0063	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
4-Methyl-2-pentanone	ND	0.028	0.24		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Methylene chloride	ND	0.018	0.073		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
n-Butylbenzene	ND	0.0065	0.073		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
n-Propylbenzene	0.017	0.0039	0.024	J	mg/Kg	1	8/30/2021 11:04:42 PM	A80915
sec-Butylbenzene	ND	0.020	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Styrene	ND	0.0033	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
tert-Butylbenzene	ND	0.0056	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0036	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,1,2,2-Tetrachloroethane	ND	0.0079	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Tetrachloroethene (PCE)	ND	0.0067	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
trans-1,2-DCE	ND	0.0047	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (23-23.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:45:00 PM
Lab ID: 2108B84-004 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0057	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,2,3-Trichlorobenzene	ND	0.0038	0.049		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,2,4-Trichlorobenzene	ND	0.0085	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,1,1-Trichloroethane	ND	0.0054	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,1,2-Trichloroethane	ND	0.0061	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Trichloroethene (TCE)	ND	0.0048	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Trichlorofluoromethane	ND	0.0055	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
1,2,3-Trichloropropane	ND	0.010	0.049		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Vinyl chloride	ND	0.0046	0.024		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Xylenes, Total	0.88	0.013	0.049		mg/Kg	1	8/30/2021 11:04:42 PM	A80915
Surr: Dibromofluoromethane	102		70-130		%Rec	1	8/30/2021 11:04:42 PM	A80915
Surr: 1,2-Dichloroethane-d4	91.1		70-130		%Rec	1	8/30/2021 11:04:42 PM	A80915
Surr: Toluene-d8	99.8		70-130		%Rec	1	8/30/2021 11:04:42 PM	A80915
Surr: 4-Bromofluorobenzene	99.8		70-130		%Rec	1	8/30/2021 11:04:42 PM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	8.1	0.68	2.4		mg/Kg	1	8/30/2021 11:04:42 PM	B80915
Surr: BFB	102	0	70-130		%Rec	1	8/30/2021 11:04:42 PM	B80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-BD4
Project: North Drainage Ditch Area
Collection Date: 8/19/2021
Lab ID: 2108B84-005
Matrix: SOIL
Received Date: 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.6	9.3		mg/Kg	1	8/24/2021 11:51:12 AM	62132
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/24/2021 11:51:12 AM	62132
Surr: DNOP	126	0	70-130		%Rec	1	8/24/2021 11:51:12 AM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0027	0.035		mg/Kg	1	9/3/2021 10:08:36 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.4	5.2		mg/Kg	2	8/26/2021 7:43:49 PM	62200
Arsenic	ND	2.9	5.2		mg/Kg	2	8/26/2021 7:43:49 PM	62200
Barium	290	0.12	0.21		mg/Kg	2	8/26/2021 7:43:49 PM	62200
Beryllium	0.97	0.060	0.31		mg/Kg	2	8/26/2021 7:43:49 PM	62200
Cadmium	ND	0.10	0.21		mg/Kg	2	8/26/2021 7:43:49 PM	62200
Chromium	8.1	0.31	0.62		mg/Kg	2	8/26/2021 7:43:49 PM	62200
Cobalt	4.2	0.13	0.62		mg/Kg	2	8/26/2021 7:43:49 PM	62200
Iron	12000	260	260		mg/Kg	100	8/30/2021 3:58:10 PM	62200
Lead	3.7	0.55	0.62		mg/Kg	2	8/30/2021 3:54:48 PM	62200
Manganese	840	1.7	2.1		mg/Kg	10	8/30/2021 3:56:30 PM	62200
Nickel	7.7	0.41	1.0		mg/Kg	2	8/26/2021 7:43:49 PM	62200
Selenium	ND	4.6	5.2		mg/Kg	2	8/30/2021 3:54:48 PM	62200
Silver	ND	0.30	0.52		mg/Kg	2	8/26/2021 7:43:49 PM	62200
Vanadium	17	0.23	5.2		mg/Kg	2	8/26/2021 7:43:49 PM	62200
Zinc	12	2.8	5.2		mg/Kg	2	8/26/2021 7:43:49 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.089	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Acenaphthylene	ND	0.090	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Aniline	ND	0.069	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Anthracene	ND	0.090	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Azobenzene	ND	0.10	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Benz(a)anthracene	ND	0.064	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Benzo(a)pyrene	ND	0.094	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Benzo(b)fluoranthene	ND	0.11	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Benzo(k)fluoranthene	ND	0.075	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Benzoic acid	ND	0.12	1.0		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Benzyl alcohol	ND	0.082	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Bis(2-chloroethoxy)methane	ND	0.076	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Bis(2-ethylhexyl)phthalate	ND	0.21	0.50		mg/Kg	1	8/28/2021 5:40:06 AM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD4
Project: North Drainage Ditch Area **Collection Date:** 8/19/2021
Lab ID: 2108B84-005 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Butyl benzyl phthalate	ND	0.061	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Carbazole	ND	0.088	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
4-Chloro-3-methylphenol	ND	0.084	0.50		mg/Kg	1	8/28/2021 5:40:06 AM	62157
4-Chloroaniline	ND	0.097	0.50		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2-Chloronaphthalene	ND	0.095	0.25		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
4-Chlorophenyl phenyl ether	ND	0.085	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Chrysene	ND	0.088	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Di-n-butyl phthalate	ND	0.28	0.40		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Di-n-octyl phthalate	ND	0.13	0.40		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
1,2-Dichlorobenzene	ND	0.081	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
1,3-Dichlorobenzene	ND	0.071	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
1,4-Dichlorobenzene	ND	0.085	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Diethyl phthalate	ND	0.33	0.50		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Dimethyl phthalate	ND	0.092	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2,4-Dichlorophenol	ND	0.081	0.40		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2,4-Dimethylphenol	ND	0.071	0.30		mg/Kg	1	8/28/2021 5:40:06 AM	62157
4,6-Dinitro-2-methylphenol	ND	0.084	0.40		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2,4-Dinitrophenol	ND	0.050	0.50		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2,6-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Fluoranthene	ND	0.081	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Fluorene	ND	0.089	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Hexachlorobenzene	ND	0.089	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Hexachlorobutadiene	ND	0.094	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Hexachloroethane	ND	0.088	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Indeno(1,2,3-cd)pyrene	ND	0.12	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Isophorone	ND	0.082	0.40		mg/Kg	1	8/28/2021 5:40:06 AM	62157
1-Methylnaphthalene	ND	0.092	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2-Methylnaphthalene	ND	0.082	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2-Methylphenol	ND	0.084	0.40		mg/Kg	1	8/28/2021 5:40:06 AM	62157
3+4-Methylphenol	ND	0.083	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
N-Nitrosodi-n-propylamine	ND	0.092	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-BD4
Project: North Drainage Ditch Area
Collection Date: 8/19/2021
Lab ID: 2108B84-005
Matrix: SOIL
Received Date: 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Naphthalene	ND	0.094	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
3-Nitroaniline	ND	0.12	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Nitrobenzene	ND	0.082	0.40		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2-Nitrophenol	ND	0.086	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
4-Nitrophenol	ND	0.082	0.25		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Pentachlorophenol	ND	0.086	0.40		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Phenanthrene	ND	0.10	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Phenol	ND	0.077	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Pyrene	ND	0.076	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Pyridine	ND	0.16	0.40		mg/Kg	1	8/28/2021 5:40:06 AM	62157
1,2,4-Trichlorobenzene	ND	0.092	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2,4,5-Trichlorophenol	ND	0.064	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
2,4,6-Trichlorophenol	ND	0.086	0.20		mg/Kg	1	8/28/2021 5:40:06 AM	62157
Surr: 2-Fluorophenol	36.8		20.3-74.1		%Rec	1	8/28/2021 5:40:06 AM	62157
Surr: Phenol-d5	43.7		23.1-92.7		%Rec	1	8/28/2021 5:40:06 AM	62157
Surr: 2,4,6-Tribromophenol	67.7		17.3-122		%Rec	1	8/28/2021 5:40:06 AM	62157
Surr: Nitrobenzene-d5	31.3		24.7-73.2		%Rec	1	8/28/2021 5:40:06 AM	62157
Surr: 2-Fluorobiphenyl	33.8		21.5-90.1		%Rec	1	8/28/2021 5:40:06 AM	62157
Surr: 4-Terphenyl-d14	90.7		15-140		%Rec	1	8/28/2021 5:40:06 AM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	0.43	0.0050	0.013		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Toluene	0.22	0.0033	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Ethylbenzene	0.11	0.0063	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Methyl tert-butyl ether (MTBE)	0.046	0.015	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,2,4-Trimethylbenzene	0.13	0.0036	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,3,5-Trimethylbenzene	0.031	0.0058	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,2-Dichloroethane (EDC)	ND	0.0059	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.010	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Naphthalene	0.060	0.0096	0.051		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1-Methylnaphthalene	ND	0.030	0.10		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
2-Methylnaphthalene	0.044	0.024	0.10	J	mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Acetone	ND	0.084	0.39		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Bromobenzene	ND	0.0055	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Bromodichloromethane	ND	0.0033	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Bromoform	ND	0.0062	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Bromomethane	ND	0.043	0.077		mg/Kg	1	8/31/2021 12:01:58 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-BD4
Project: North Drainage Ditch Area
Collection Date: 8/19/2021
Lab ID: 2108B84-005
Matrix: SOIL
Received Date: 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.11	0.26		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Carbon disulfide	ND	0.011	0.26		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Carbon tetrachloride	ND	0.0029	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Chlorobenzene	ND	0.0046	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Chloroethane	ND	0.0096	0.051		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Chloroform	ND	0.0037	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Chloromethane	ND	0.0090	0.077		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
2-Chlorotoluene	ND	0.0034	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
4-Chlorotoluene	ND	0.014	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
cis-1,2-DCE	ND	0.013	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
cis-1,3-Dichloropropene	ND	0.0038	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.011	0.051		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Dibromochloromethane	ND	0.0041	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Dibromomethane	ND	0.0060	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,2-Dichlorobenzene	ND	0.0054	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,3-Dichlorobenzene	ND	0.0049	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,4-Dichlorobenzene	ND	0.0069	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Dichlorodifluoromethane	ND	0.0099	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,1-Dichloroethane	ND	0.0075	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,1-Dichloroethene	ND	0.0055	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,2-Dichloropropane	ND	0.0050	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,3-Dichloropropane	ND	0.0057	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
2,2-Dichloropropane	ND	0.0037	0.051		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,1-Dichloropropene	ND	0.0031	0.051		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Hexachlorobutadiene	ND	0.018	0.051		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
2-Hexanone	ND	0.011	0.26		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Isopropylbenzene	ND	0.0048	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
4-Isopropyltoluene	ND	0.0066	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
4-Methyl-2-pentanone	ND	0.030	0.26		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Methylene chloride	ND	0.019	0.077		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
n-Butylbenzene	ND	0.0069	0.077		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
n-Propylbenzene	0.013	0.0042	0.026	J	mg/Kg	1	8/31/2021 12:01:58 AM	A80915
sec-Butylbenzene	ND	0.021	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Styrene	ND	0.0035	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
tert-Butylbenzene	ND	0.0060	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0038	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.0083	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Tetrachloroethene (PCE)	ND	0.0071	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
trans-1,2-DCE	ND	0.0050	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-BD4
Project: North Drainage Ditch Area
Collection Date: 8/19/2021
Lab ID: 2108B84-005
Matrix: SOIL
Received Date: 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0060	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,2,3-Trichlorobenzene	ND	0.0040	0.051		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,2,4-Trichlorobenzene	ND	0.0090	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,1,1-Trichloroethane	ND	0.0057	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,1,2-Trichloroethane	ND	0.0064	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Trichloroethene (TCE)	ND	0.0050	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Trichlorofluoromethane	ND	0.0058	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
1,2,3-Trichloropropane	ND	0.011	0.051		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Vinyl chloride	ND	0.0049	0.026		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Xylenes, Total	0.63	0.014	0.051		mg/Kg	1	8/31/2021 12:01:58 AM	A80915
Surr: Dibromofluoromethane	100		70-130		%Rec	1	8/31/2021 12:01:58 AM	A80915
Surr: 1,2-Dichloroethane-d4	94.7		70-130		%Rec	1	8/31/2021 12:01:58 AM	A80915
Surr: Toluene-d8	96.2		70-130		%Rec	1	8/31/2021 12:01:58 AM	A80915
Surr: 4-Bromofluorobenzene	102		70-130		%Rec	1	8/31/2021 12:01:58 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	5.1	0.72	2.6		mg/Kg	1	8/31/2021 12:01:58 AM	B80915
Surr: BFB	100	0	70-130		%Rec	1	8/31/2021 12:01:58 AM	B80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (30.5-31)
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 8:10:00 AM
Lab ID: 2108B84-008 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	5.5	4.6	9.2	J	mg/Kg	1	8/24/2021 12:00:55 PM	62132
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/24/2021 12:00:55 PM	62132
Surr: DNOP	130	0	70-130	S	%Rec	1	8/24/2021 12:00:55 PM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0049	0.0026	0.033	J	mg/Kg	1	9/3/2021 10:10:45 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/26/2021 7:45:57 PM	62200
Arsenic	ND	2.8	4.9		mg/Kg	2	8/26/2021 7:45:57 PM	62200
Barium	730	0.59	0.97		mg/Kg	10	8/30/2021 4:01:32 PM	62200
Beryllium	0.51	0.057	0.29		mg/Kg	2	8/26/2021 7:45:57 PM	62200
Cadmium	ND	0.097	0.19		mg/Kg	2	8/26/2021 7:45:57 PM	62200
Chromium	9.3	0.29	0.58		mg/Kg	2	8/26/2021 7:45:57 PM	62200
Cobalt	3.5	0.12	0.58		mg/Kg	2	8/26/2021 7:45:57 PM	62200
Iron	7700	240	240		mg/Kg	100	8/30/2021 4:03:13 PM	62200
Lead	ND	0.52	0.58		mg/Kg	2	8/30/2021 3:59:52 PM	62200
Manganese	150	0.32	0.39		mg/Kg	2	8/26/2021 7:45:57 PM	62200
Nickel	5.8	0.38	0.97		mg/Kg	2	8/26/2021 7:45:57 PM	62200
Selenium	ND	4.3	4.9		mg/Kg	2	8/30/2021 3:59:52 PM	62200
Silver	ND	0.28	0.49		mg/Kg	2	8/26/2021 7:45:57 PM	62200
Vanadium	33	0.22	4.9		mg/Kg	2	8/26/2021 7:45:57 PM	62200
Zinc	15	2.6	4.9		mg/Kg	2	8/26/2021 7:45:57 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.086	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Acenaphthylene	ND	0.088	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Aniline	ND	0.067	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Anthracene	ND	0.088	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Azobenzene	ND	0.097	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Benz(a)anthracene	ND	0.062	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Benzo(a)pyrene	ND	0.091	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Benzo(g,h,i)perylene	ND	0.099	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Benzo(k)fluoranthene	ND	0.073	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Benzoic acid	ND	0.12	0.97		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Benzyl alcohol	ND	0.079	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Bis(2-chloroethoxy)methane	ND	0.074	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Bis(2-chloroisopropyl)ether	ND	0.098	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Bis(2-ethylhexyl)phthalate	ND	0.21	0.48		mg/Kg	1	9/2/2021 4:02:37 PM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (30.5-31)
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 8:10:00 AM
Lab ID: 2108B84-008 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Butyl benzyl phthalate	ND	0.059	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Carbazole	ND	0.085	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
4-Chloro-3-methylphenol	ND	0.082	0.48		mg/Kg	1	9/2/2021 4:02:37 PM	62157
4-Chloroaniline	ND	0.094	0.48		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2-Chloronaphthalene	ND	0.092	0.24		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
4-Chlorophenyl phenyl ether	ND	0.082	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Chrysene	ND	0.085	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Di-n-octyl phthalate	ND	0.12	0.39		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
1,2-Dichlorobenzene	ND	0.078	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
1,3-Dichlorobenzene	ND	0.069	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
1,4-Dichlorobenzene	ND	0.082	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Diethyl phthalate	ND	0.32	0.48		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Dimethyl phthalate	ND	0.090	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	9/2/2021 4:02:37 PM	62157
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2,4-Dinitrophenol	ND	0.049	0.48		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2,6-Dinitrotoluene	ND	0.098	0.48		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Fluoranthene	ND	0.078	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Fluorene	ND	0.086	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Hexachlorobenzene	ND	0.086	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Hexachlorobutadiene	ND	0.091	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Hexachloroethane	ND	0.086	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Isophorone	ND	0.079	0.39		mg/Kg	1	9/2/2021 4:02:37 PM	62157
1-Methylnaphthalene	ND	0.089	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2-Methylnaphthalene	ND	0.080	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2-Methylphenol	ND	0.081	0.39		mg/Kg	1	9/2/2021 4:02:37 PM	62157
3+4-Methylphenol	ND	0.080	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
N-Nitrosodi-n-propylamine	ND	0.090	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (30.5-31)
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 8:10:00 AM
Lab ID: 2108B84-008 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Naphthalene	ND	0.091	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2-Nitroaniline	ND	0.099	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Nitrobenzene	ND	0.079	0.39		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2-Nitrophenol	ND	0.083	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Pentachlorophenol	ND	0.083	0.39		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Phenanthrene	ND	0.099	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Phenol	ND	0.075	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Pyrene	ND	0.073	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Pyridine	ND	0.16	0.39		mg/Kg	1	9/2/2021 4:02:37 PM	62157
1,2,4-Trichlorobenzene	ND	0.089	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2,4,5-Trichlorophenol	ND	0.062	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
2,4,6-Trichlorophenol	ND	0.083	0.19		mg/Kg	1	9/2/2021 4:02:37 PM	62157
Surr: 2-Fluorophenol	51.0		20.3-74.1		%Rec	1	9/2/2021 4:02:37 PM	62157
Surr: Phenol-d5	60.0		23.1-92.7		%Rec	1	9/2/2021 4:02:37 PM	62157
Surr: 2,4,6-Tribromophenol	74.3		17.3-122		%Rec	1	9/2/2021 4:02:37 PM	62157
Surr: Nitrobenzene-d5	52.2		24.7-73.2		%Rec	1	9/2/2021 4:02:37 PM	62157
Surr: 2-Fluorobiphenyl	71.9		21.5-90.1		%Rec	1	9/2/2021 4:02:37 PM	62157
Surr: 4-Terphenyl-d14	94.6		15-140		%Rec	1	9/2/2021 4:02:37 PM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	0.026	0.0060	0.016		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Toluene	0.013	0.0040	0.031	J	mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Ethylbenzene	ND	0.0077	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Methyl tert-butyl ether (MTBE)	0.031	0.018	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,2,4-Trimethylbenzene	0.0075	0.0044	0.031	J	mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,3,5-Trimethylbenzene	ND	0.0071	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,2-Dichloroethane (EDC)	ND	0.0072	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,2-Dibromoethane (EDB)	ND	0.012	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Naphthalene	ND	0.012	0.063		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1-Methylnaphthalene	ND	0.036	0.13		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
2-Methylnaphthalene	ND	0.029	0.13		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Acetone	ND	0.10	0.47		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Bromobenzene	ND	0.0067	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Bromodichloromethane	ND	0.0040	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Bromoform	ND	0.0076	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Bromomethane	ND	0.052	0.094		mg/Kg	1	8/31/2021 4:01:47 PM	A80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (30.5-31)
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 8:10:00 AM
Lab ID: 2108B84-008 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.14	0.31		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Carbon disulfide	ND	0.013	0.31		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Carbon tetrachloride	ND	0.0035	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Chlorobenzene	ND	0.0057	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Chloroethane	ND	0.012	0.063		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Chloroform	ND	0.0045	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Chloromethane	ND	0.011	0.094		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
2-Chlorotoluene	ND	0.0042	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
4-Chlorotoluene	ND	0.017	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
cis-1,2-DCE	ND	0.016	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
cis-1,3-Dichloropropene	ND	0.0047	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,2-Dibromo-3-chloropropane	ND	0.014	0.063		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Dibromochloromethane	ND	0.0050	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Dibromomethane	ND	0.0073	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,2-Dichlorobenzene	ND	0.0065	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,3-Dichlorobenzene	ND	0.0059	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,4-Dichlorobenzene	ND	0.0084	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Dichlorodifluoromethane	ND	0.012	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,1-Dichloroethane	ND	0.0091	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,1-Dichloroethene	ND	0.0067	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,2-Dichloropropane	ND	0.0061	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,3-Dichloropropane	ND	0.0069	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
2,2-Dichloropropane	ND	0.0045	0.063		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,1-Dichloropropene	ND	0.0038	0.063		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Hexachlorobutadiene	ND	0.021	0.063		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
2-Hexanone	ND	0.014	0.31		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Isopropylbenzene	ND	0.0058	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
4-Isopropyltoluene	ND	0.0081	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
4-Methyl-2-pentanone	ND	0.037	0.31		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Methylene chloride	ND	0.023	0.094		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
n-Butylbenzene	ND	0.0084	0.094		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
n-Propylbenzene	ND	0.0051	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
sec-Butylbenzene	ND	0.026	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Styrene	ND	0.0043	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
tert-Butylbenzene	ND	0.0073	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,1,1,2-Tetrachloroethane	ND	0.0046	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,1,2,2-Tetrachloroethane	ND	0.010	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Tetrachloroethene (PCE)	ND	0.0086	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
trans-1,2-DCE	ND	0.0061	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-5 (30.5-31)
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 8:10:00 AM
Lab ID: 2108B84-008 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0074	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,2,3-Trichlorobenzene	ND	0.0049	0.063		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,2,4-Trichlorobenzene	ND	0.011	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,1,1-Trichloroethane	ND	0.0069	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,1,2-Trichloroethane	ND	0.0079	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Trichloroethene (TCE)	ND	0.0062	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Trichlorofluoromethane	ND	0.0071	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
1,2,3-Trichloropropane	ND	0.013	0.063		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Vinyl chloride	ND	0.0060	0.031		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Xylenes, Total	ND	0.016	0.063		mg/Kg	1	8/31/2021 4:01:47 PM	A80948
Surr: Dibromofluoromethane	118		70-130		%Rec	1	8/31/2021 4:01:47 PM	A80948
Surr: 1,2-Dichloroethane-d4	87.2		70-130		%Rec	1	8/31/2021 4:01:47 PM	A80948
Surr: Toluene-d8	93.6		70-130		%Rec	1	8/31/2021 4:01:47 PM	A80948
Surr: 4-Bromofluorobenzene	90.7		70-130		%Rec	1	8/31/2021 4:01:47 PM	A80948
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.87	3.1		mg/Kg	1	8/31/2021 4:01:47 PM	B80948
Surr: BFB	94.7	0	70-130		%Rec	1	8/31/2021 4:01:47 PM	B80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:37:00 PM
Lab ID: 2108B84-009 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	200	4.7	9.5		mg/Kg	1	8/24/2021 12:10:40 PM	62132
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/24/2021 12:10:40 PM	62132
Surr: DNOP	120	0	70-130		%Rec	1	8/24/2021 12:10:40 PM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.020	0.0027	0.034	J	mg/Kg	1	9/3/2021 10:12:54 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/26/2021 7:48:05 PM	62200
Arsenic	ND	2.8	5.0		mg/Kg	2	8/26/2021 7:48:05 PM	62200
Barium	430	0.12	0.20		mg/Kg	2	8/26/2021 7:48:05 PM	62200
Beryllium	0.97	0.058	0.30		mg/Kg	2	8/26/2021 7:48:05 PM	62200
Cadmium	ND	0.10	0.20		mg/Kg	2	8/26/2021 7:48:05 PM	62200
Chromium	9.8	0.30	0.60		mg/Kg	2	8/26/2021 7:48:05 PM	62200
Cobalt	4.7	0.12	0.60		mg/Kg	2	8/26/2021 7:48:05 PM	62200
Iron	13000	250	250		mg/Kg	100	8/30/2021 4:06:33 PM	62200
Lead	5.4	0.53	0.60		mg/Kg	2	8/30/2021 4:04:54 PM	62200
Manganese	410	0.33	0.40		mg/Kg	2	8/26/2021 7:48:05 PM	62200
Nickel	22	0.39	1.0		mg/Kg	2	8/26/2021 7:48:05 PM	62200
Selenium	ND	4.4	5.0		mg/Kg	2	8/30/2021 4:04:54 PM	62200
Silver	ND	0.29	0.50		mg/Kg	2	8/26/2021 7:48:05 PM	62200
Vanadium	22	0.23	5.0		mg/Kg	2	8/26/2021 7:48:05 PM	62200
Zinc	27	2.7	5.0		mg/Kg	2	8/26/2021 7:48:05 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.84	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Acenaphthylene	ND	0.85	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Aniline	ND	0.65	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Anthracene	ND	0.85	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Azobenzene	ND	0.94	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Benz(a)anthracene	ND	0.61	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Benzo(a)pyrene	ND	0.89	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Benzo(g,h,i)perylene	ND	0.96	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Benzo(k)fluoranthene	ND	0.71	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Benzoic acid	ND	1.2	9.4	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Benzyl alcohol	ND	0.77	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Bis(2-chloroethoxy)methane	ND	0.72	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Bis(2-chloroethyl)ether	ND	0.98	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Bis(2-chloroisopropyl)ether	ND	0.96	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Bis(2-ethylhexyl)phthalate	ND	2.0	4.7	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157

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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
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:37:00 PM
Lab ID: 2108B84-009 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.98	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Butyl benzyl phthalate	ND	0.57	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Carbazole	ND	0.83	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
4-Chloro-3-methylphenol	ND	0.79	4.7	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
4-Chloroaniline	ND	0.92	4.7	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2-Chloronaphthalene	ND	0.89	2.4	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
4-Chlorophenyl phenyl ether	ND	0.80	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Chrysene	ND	0.83	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Di-n-butyl phthalate	ND	2.6	3.8	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Di-n-octyl phthalate	ND	1.2	3.8	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Dibenz(a,h)anthracene	ND	0.99	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Dibenzofuran	ND	0.98	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
1,2-Dichlorobenzene	ND	0.76	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
1,3-Dichlorobenzene	ND	0.67	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
1,4-Dichlorobenzene	ND	0.80	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
3,3´-Dichlorobenzidine	ND	1.4	2.4	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Diethyl phthalate	ND	3.1	4.7	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Dimethyl phthalate	ND	0.87	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2,4-Dichlorophenol	ND	0.76	3.8	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2,4-Dimethylphenol	ND	0.67	2.8	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
4,6-Dinitro-2-methylphenol	ND	0.79	3.8	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2,4-Dinitrophenol	ND	0.47	4.7	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2,4-Dinitrotoluene	ND	1.1	4.7	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2,6-Dinitrotoluene	ND	0.96	4.7	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Fluoranthene	ND	0.76	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Fluorene	ND	0.84	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Hexachlorobenzene	ND	0.84	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Hexachlorobutadiene	ND	0.88	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Hexachloroethane	ND	0.83	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Isophorone	ND	0.77	3.8	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
1-Methylnaphthalene	ND	0.87	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2-Methylnaphthalene	ND	0.78	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2-Methylphenol	ND	0.79	3.8	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
3+4-Methylphenol	ND	0.78	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
N-Nitrosodi-n-propylamine	ND	0.87	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
N-Nitrosodimethylamine	ND	1.4	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:37:00 PM
Lab ID: 2108B84-009 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.98	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Naphthalene	ND	0.89	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2-Nitroaniline	ND	0.96	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
4-Nitroaniline	ND	1.2	3.8	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Nitrobenzene	ND	0.77	3.8	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2-Nitrophenol	ND	0.81	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
4-Nitrophenol	ND	0.77	2.4	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Pentachlorophenol	ND	0.81	3.8	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Phenanthrene	ND	0.96	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Phenol	ND	0.72	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Pyrene	ND	0.71	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Pyridine	ND	1.5	3.8	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
1,2,4-Trichlorobenzene	ND	0.86	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2,4,5-Trichlorophenol	ND	0.60	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
2,4,6-Trichlorophenol	ND	0.81	1.9	D	mg/Kg	10	9/2/2021 4:44:39 PM	62157
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/2/2021 4:44:39 PM	62157
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/2/2021 4:44:39 PM	62157
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/2/2021 4:44:39 PM	62157
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/2/2021 4:44:39 PM	62157
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/2/2021 4:44:39 PM	62157
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/2/2021 4:44:39 PM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	0.077	0.033	0.085	J	mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Toluene	0.90	0.022	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Ethylbenzene	0.39	0.041	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Methyl tert-butyl ether (MTBE)	ND	0.096	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,2,4-Trimethylbenzene	3.6	0.024	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,3,5-Trimethylbenzene	13	0.038	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,2-Dichloroethane (EDC)	ND	0.039	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,2-Dibromoethane (EDB)	ND	0.067	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Naphthalene	10	0.063	0.34		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1-Methylnaphthalene	21	1.9	6.8		mg/Kg	50	9/1/2021 3:15:41 PM	R80995
2-Methylnaphthalene	27	1.6	6.8		mg/Kg	50	9/1/2021 3:15:41 PM	R80995
Acetone	ND	0.55	2.5		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Bromobenzene	ND	0.036	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Bromodichloromethane	ND	0.022	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Bromoform	ND	0.041	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Bromomethane	ND	0.28	0.51		mg/Kg	5	8/31/2021 5:28:35 PM	A80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:37:00 PM
Lab ID: 2108B84-009 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.73	1.7		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Carbon disulfide	ND	0.070	1.7		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Carbon tetrachloride	ND	0.019	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Chlorobenzene	ND	0.030	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Chloroethane	ND	0.063	0.34		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Chloroform	ND	0.024	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Chloromethane	ND	0.059	0.51		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
2-Chlorotoluene	ND	0.023	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
4-Chlorotoluene	ND	0.089	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
cis-1,2-DCE	ND	0.084	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
cis-1,3-Dichloropropene	ND	0.025	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,2-Dibromo-3-chloropropane	ND	0.073	0.34		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Dibromochloromethane	ND	0.027	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Dibromomethane	ND	0.040	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,2-Dichlorobenzene	ND	0.035	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,3-Dichlorobenzene	ND	0.032	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,4-Dichlorobenzene	ND	0.045	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Dichlorodifluoromethane	ND	0.065	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,1-Dichloroethane	ND	0.049	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,1-Dichloroethene	ND	0.036	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,2-Dichloropropane	ND	0.033	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,3-Dichloropropane	ND	0.037	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
2,2-Dichloropropane	ND	0.024	0.34		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,1-Dichloropropene	ND	0.020	0.34		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Hexachlorobutadiene	ND	0.12	0.34		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
2-Hexanone	ND	0.074	1.7		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Isopropylbenzene	ND	0.031	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
4-Isopropyltoluene	3.3	0.044	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
4-Methyl-2-pentanone	ND	0.20	1.7		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Methylene chloride	ND	0.12	0.51		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
n-Butylbenzene	ND	0.045	0.51		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
n-Propylbenzene	0.11	0.027	0.17	J	mg/Kg	5	8/31/2021 5:28:35 PM	A80948
sec-Butylbenzene	ND	0.14	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Styrene	ND	0.023	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
tert-Butylbenzene	0.32	0.039	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,1,1,2-Tetrachloroethane	ND	0.025	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,1,2,2-Tetrachloroethane	ND	0.055	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Tetrachloroethene (PCE)	ND	0.046	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
trans-1,2-DCE	ND	0.033	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:37:00 PM
Lab ID: 2108B84-009 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.040	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,2,3-Trichlorobenzene	ND	0.026	0.34		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,2,4-Trichlorobenzene	ND	0.059	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,1,1-Trichloroethane	ND	0.037	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,1,2-Trichloroethane	ND	0.042	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Trichloroethene (TCE)	ND	0.033	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Trichlorofluoromethane	ND	0.038	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
1,2,3-Trichloropropane	ND	0.071	0.34		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Vinyl chloride	ND	0.032	0.17		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Xylenes, Total	3.8	0.089	0.34		mg/Kg	5	8/31/2021 5:28:35 PM	A80948
Surr: Dibromofluoromethane	94.2		70-130		%Rec	5	8/31/2021 5:28:35 PM	A80948
Surr: 1,2-Dichloroethane-d4	90.1		70-130		%Rec	5	8/31/2021 5:28:35 PM	A80948
Surr: Toluene-d8	102		70-130		%Rec	5	8/31/2021 5:28:35 PM	A80948
Surr: 4-Bromofluorobenzene	87.5		70-130		%Rec	5	8/31/2021 5:28:35 PM	A80948
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	810	4.7	17		mg/Kg	5	8/31/2021 5:28:35 PM	B80948
Surr: BFB	93.6	0	70-130		%Rec	5	8/31/2021 5:28:35 PM	B80948

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:50:00 PM
Lab ID: 2108B84-010 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	6100	240	480		mg/Kg	50	8/25/2021 3:44:41 PM	62132
Motor Oil Range Organics (MRO)	ND	2400	2400	D	mg/Kg	50	8/25/2021 3:44:41 PM	62132
Surr: DNOP	0	0	70-130	S	%Rec	50	8/25/2021 3:44:41 PM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0042	0.0028	0.035	J	mg/Kg	1	9/3/2021 10:15:04 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/26/2021 7:50:13 PM	62200
Arsenic	ND	2.8	5.0		mg/Kg	2	8/26/2021 7:50:13 PM	62200
Barium	300	0.12	0.20		mg/Kg	2	8/26/2021 7:50:13 PM	62200
Beryllium	0.91	0.058	0.30		mg/Kg	2	8/26/2021 7:50:13 PM	62200
Cadmium	ND	0.099	0.20		mg/Kg	2	8/26/2021 7:50:13 PM	62200
Chromium	8.6	0.30	0.60		mg/Kg	2	8/26/2021 7:50:13 PM	62200
Cobalt	4.4	0.12	0.60		mg/Kg	2	8/26/2021 7:50:13 PM	62200
Iron	13000	250	250		mg/Kg	100	8/30/2021 4:09:52 PM	62200
Lead	5.5	0.53	0.60		mg/Kg	2	8/30/2021 4:08:13 PM	62200
Manganese	270	0.33	0.40		mg/Kg	2	8/26/2021 7:50:13 PM	62200
Nickel	8.8	0.39	0.99		mg/Kg	2	8/26/2021 7:50:13 PM	62200
Selenium	ND	4.4	5.0		mg/Kg	2	8/30/2021 4:08:13 PM	62200
Silver	ND	0.29	0.50		mg/Kg	2	8/26/2021 7:50:13 PM	62200
Vanadium	21	0.22	5.0		mg/Kg	2	8/26/2021 7:50:13 PM	62200
Zinc	14	2.7	5.0		mg/Kg	2	8/26/2021 7:50:13 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.87	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Acenaphthylene	ND	0.88	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Aniline	ND	0.67	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Anthracene	ND	0.88	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Azobenzene	ND	0.97	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Benz(a)anthracene	ND	0.63	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Benzo(a)pyrene	ND	0.92	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Benzo(g,h,i)perylene	ND	0.99	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Benzo(k)fluoranthene	ND	0.73	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Benzoic acid	ND	1.2	9.7	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Benzyl alcohol	ND	0.80	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Bis(2-chloroethoxy)methane	ND	0.74	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Bis(2-chloroethyl)ether	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Bis(2-chloroisopropyl)ether	ND	0.99	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:50:00 PM
Lab ID: 2108B84-010 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Butyl benzyl phthalate	ND	0.59	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Carbazole	ND	0.85	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
4-Chloro-3-methylphenol	ND	0.82	4.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
4-Chloroaniline	ND	0.95	4.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2-Chloronaphthalene	ND	0.92	2.4	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
4-Chlorophenyl phenyl ether	ND	0.82	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Chrysene	ND	0.86	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Di-n-octyl phthalate	ND	1.3	3.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Dibenz(a,h)anthracene	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Dibenzofuran	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
1,2-Dichlorobenzene	ND	0.79	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
1,3-Dichlorobenzene	ND	0.69	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
1,4-Dichlorobenzene	ND	0.82	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
3,3´-Dichlorobenzidine	ND	1.5	2.4	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Dimethyl phthalate	ND	0.90	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2,4-Dichlorophenol	ND	0.79	3.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2,4-Dimethylphenol	ND	0.69	2.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
4,6-Dinitro-2-methylphenol	ND	0.82	3.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2,4-Dinitrophenol	ND	0.49	4.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2,6-Dinitrotoluene	ND	0.99	4.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Fluoranthene	ND	0.79	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Fluorene	1.0	0.87	1.9	JD	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Hexachlorobenzene	ND	0.86	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Hexachlorobutadiene	ND	0.91	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Hexachloroethane	ND	0.86	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Isophorone	ND	0.79	3.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
1-Methylnaphthalene	27	0.89	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2-Methylnaphthalene	43	1.6	3.9	D	mg/Kg	20	9/9/2021 1:29:36 PM	62157
2-Methylphenol	ND	0.82	3.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
3+4-Methylphenol	ND	0.80	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
N-Nitrosodi-n-propylamine	ND	0.90	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
N-Nitrosodimethylamine	ND	1.4	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:50:00 PM
Lab ID: 2108B84-010 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Naphthalene	19	0.92	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2-Nitroaniline	ND	0.99	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
4-Nitroaniline	ND	1.2	3.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Nitrobenzene	ND	0.80	3.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2-Nitrophenol	ND	0.84	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
4-Nitrophenol	ND	0.80	2.4	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Pentachlorophenol	ND	0.84	3.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Phenanthrene	1.7	0.99	1.9	JD	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Phenol	ND	0.75	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Pyrene	ND	0.74	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Pyridine	ND	1.6	3.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
1,2,4-Trichlorobenzene	ND	0.89	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2,4,5-Trichlorophenol	ND	0.62	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
2,4,6-Trichlorophenol	ND	0.84	1.9	D	mg/Kg	10	9/2/2021 5:26:51 PM	62157
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/2/2021 5:26:51 PM	62157
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/2/2021 5:26:51 PM	62157
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/2/2021 5:26:51 PM	62157
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/2/2021 5:26:51 PM	62157
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/2/2021 5:26:51 PM	62157
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/2/2021 5:26:51 PM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	7.6	3.6	7.6		mg/Kg	500	9/1/2021 3:42:51 PM	R80995
Toluene	110	0.24	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Ethylbenzene	65	0.46	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Methyl tert-butyl ether (MTBE)	ND	1.1	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,2,4-Trimethylbenzene	180	0.27	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,3,5-Trimethylbenzene	63	0.42	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,2-Dichloroethane (EDC)	ND	0.43	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,2-Dibromoethane (EDB)	ND	0.74	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Naphthalene	22	0.70	3.8		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1-Methylnaphthalene	24	2.2	7.6		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
2-Methylnaphthalene	37	1.7	7.6		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Acetone	ND	6.2	28		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Bromobenzene	ND	0.40	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Bromodichloromethane	ND	0.24	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Bromoform	ND	0.46	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Bromomethane	ND	3.1	5.7		mg/Kg	50	9/1/2021 4:09:55 PM	R80995

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:50:00 PM
Lab ID: 2108B84-010 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	8.2	19		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Carbon disulfide	ND	0.78	19		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Carbon tetrachloride	ND	0.21	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Chlorobenzene	ND	0.34	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Chloroethane	ND	0.71	3.8		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Chloroform	ND	0.27	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Chloromethane	ND	0.66	5.7		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
2-Chlorotoluene	0.29	0.25	1.9	J	mg/Kg	50	9/1/2021 4:09:55 PM	R80995
4-Chlorotoluene	ND	0.99	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
cis-1,2-DCE	ND	0.94	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
cis-1,3-Dichloropropene	ND	0.28	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,2-Dibromo-3-chloropropane	ND	0.82	3.8		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Dibromochloromethane	ND	0.30	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Dibromomethane	ND	0.44	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,2-Dichlorobenzene	ND	0.39	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,3-Dichlorobenzene	ND	0.36	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,4-Dichlorobenzene	ND	0.50	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Dichlorodifluoromethane	ND	0.73	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,1-Dichloroethane	ND	0.55	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,1-Dichloroethene	ND	0.40	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,2-Dichloropropane	ND	0.37	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,3-Dichloropropane	ND	0.41	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
2,2-Dichloropropane	ND	0.27	3.8		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,1-Dichloropropene	ND	0.23	3.8		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Hexachlorobutadiene	ND	1.3	3.8		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
2-Hexanone	ND	0.82	19		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Isopropylbenzene	20	0.35	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
4-Isopropyltoluene	10	0.49	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
4-Methyl-2-pentanone	ND	2.2	19		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Methylene chloride	ND	1.4	5.7		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
n-Butylbenzene	15	0.50	5.7		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
n-Propylbenzene	35	0.30	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
sec-Butylbenzene	12	1.6	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Styrene	ND	0.26	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
tert-Butylbenzene	ND	0.44	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,1,1,2-Tetrachloroethane	ND	0.28	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,1,2,2-Tetrachloroethane	ND	0.61	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Tetrachloroethene (PCE)	ND	0.52	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
trans-1,2-DCE	ND	0.36	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:50:00 PM
Lab ID: 2108B84-010 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.44	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,2,3-Trichlorobenzene	ND	0.29	3.8		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,2,4-Trichlorobenzene	ND	0.66	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,1,1-Trichloroethane	ND	0.42	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,1,2-Trichloroethane	ND	0.47	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Trichloroethene (TCE)	ND	0.37	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Trichlorofluoromethane	ND	0.43	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
1,2,3-Trichloropropane	ND	0.79	3.8		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Vinyl chloride	ND	0.36	1.9		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Xylenes, Total	410	0.99	3.8		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Surr: Dibromofluoromethane	85.9		70-130		%Rec	50	9/1/2021 4:09:55 PM	R80995
Surr: 1,2-Dichloroethane-d4	86.7		70-130		%Rec	50	9/1/2021 4:09:55 PM	R80995
Surr: Toluene-d8	112		70-130		%Rec	50	9/1/2021 4:09:55 PM	R80995
Surr: 4-Bromofluorobenzene	115		70-130		%Rec	50	9/1/2021 4:09:55 PM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	14000	52	190		mg/Kg	50	9/1/2021 4:09:55 PM	R80995
Surr: BFB	120	0	70-130		%Rec	50	9/1/2021 4:09:55 PM	R80995

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (3.5-4')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:55:00 PM
Lab ID: 2108B84-011 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	8500	240	480		mg/Kg	50	8/25/2021 3:20:32 PM	62132
Motor Oil Range Organics (MRO)	ND	2400	2400	D	mg/Kg	50	8/25/2021 3:20:32 PM	62132
Surr: DNOP	0	0	70-130	S	%Rec	50	8/25/2021 3:20:32 PM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0025	0.0025	0.031	J	mg/Kg	1	9/3/2021 10:21:30 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.8		mg/Kg	2	8/26/2021 7:52:21 PM	62200
Arsenic	ND	2.7	4.8		mg/Kg	2	8/26/2021 7:52:21 PM	62200
Barium	200	0.12	0.19		mg/Kg	2	8/26/2021 7:52:21 PM	62200
Beryllium	0.85	0.056	0.29		mg/Kg	2	8/26/2021 7:52:21 PM	62200
Cadmium	ND	0.096	0.19		mg/Kg	2	8/26/2021 7:52:21 PM	62200
Chromium	8.3	0.29	0.58		mg/Kg	2	8/26/2021 7:52:21 PM	62200
Cobalt	4.1	0.12	0.58		mg/Kg	2	8/26/2021 7:52:21 PM	62200
Iron	12000	240	240		mg/Kg	100	8/30/2021 4:20:34 PM	62200
Lead	5.3	0.51	0.58		mg/Kg	2	8/30/2021 4:18:53 PM	62200
Manganese	220	0.32	0.39		mg/Kg	2	8/26/2021 7:52:21 PM	62200
Nickel	7.7	0.38	0.96		mg/Kg	2	8/26/2021 7:52:21 PM	62200
Selenium	ND	4.2	4.8		mg/Kg	2	8/30/2021 4:18:53 PM	62200
Silver	ND	0.28	0.48		mg/Kg	2	8/26/2021 7:52:21 PM	62200
Vanadium	19	0.22	4.8		mg/Kg	2	8/26/2021 7:52:21 PM	62200
Zinc	13	2.6	4.8		mg/Kg	2	8/26/2021 7:52:21 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.86	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Acenaphthylene	ND	0.87	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Aniline	ND	0.67	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Anthracene	ND	0.87	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Azobenzene	ND	0.96	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Benz(a)anthracene	ND	0.62	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Benzo(a)pyrene	ND	0.91	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Benzo(g,h,i)perylene	ND	0.98	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Benzo(k)fluoranthene	ND	0.72	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Benzoic acid	ND	1.2	9.6	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Benzyl alcohol	ND	0.79	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Bis(2-chloroethoxy)methane	ND	0.74	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Bis(2-chloroethyl)ether	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Bis(2-chloroisopropyl)ether	ND	0.98	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Bis(2-ethylhexyl)phthalate	ND	2.1	4.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157

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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
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P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (3.5-4')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:55:00 PM
Lab ID: 2108B84-011 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Butyl benzyl phthalate	ND	0.59	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Carbazole	ND	0.85	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
4-Chloro-3-methylphenol	ND	0.81	4.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
4-Chloroaniline	ND	0.94	4.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
2-Chloronaphthalene	ND	0.91	2.4	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
4-Chlorophenyl phenyl ether	ND	0.82	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Chrysene	ND	0.85	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Di-n-butyl phthalate	ND	2.7	3.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Di-n-octyl phthalate	ND	1.2	3.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Dibenz(a,h)anthracene	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Dibenzofuran	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
1,2-Dichlorobenzene	ND	0.78	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
1,3-Dichlorobenzene	ND	0.69	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
1,4-Dichlorobenzene	ND	0.82	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
3,3´-Dichlorobenzidine	ND	1.4	2.4	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Diethyl phthalate	ND	3.1	4.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Dimethyl phthalate	ND	0.89	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
2,4-Dichlorophenol	ND	0.78	3.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
2,4-Dimethylphenol	ND	0.68	2.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
4,6-Dinitro-2-methylphenol	ND	0.81	3.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
2,4-Dinitrophenol	ND	0.48	4.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
2,4-Dinitrotoluene	ND	1.2	4.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
2,6-Dinitrotoluene	ND	0.98	4.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Fluoranthene	ND	0.78	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Fluorene	1.7	0.86	1.9	JD	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Hexachlorobenzene	ND	0.86	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Hexachlorobutadiene	ND	0.90	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Hexachloroethane	ND	0.85	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Isophorone	ND	0.79	3.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
1-Methylnaphthalene	39	4.4	9.6	D	mg/Kg	50	9/9/2021 2:11:44 PM	62157
2-Methylnaphthalene	59	4.0	9.6	D	mg/Kg	50	9/9/2021 2:11:44 PM	62157
2-Methylphenol	ND	0.81	3.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
3+4-Methylphenol	ND	0.80	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
N-Nitrosodi-n-propylamine	ND	0.89	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
N-Nitrosodimethylamine	ND	1.4	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (3.5-4')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:55:00 PM
Lab ID: 2108B84-011 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Naphthalene	30	0.91	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
2-Nitroaniline	ND	0.98	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
4-Nitroaniline	ND	1.2	3.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Nitrobenzene	ND	0.79	3.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
2-Nitrophenol	ND	0.83	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
4-Nitrophenol	ND	0.79	2.4	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Pentachlorophenol	ND	0.83	3.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Phenanthrene	2.4	0.98	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Phenol	ND	0.74	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Pyrene	ND	0.73	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Pyridine	ND	1.6	3.8	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
1,2,4-Trichlorobenzene	ND	0.88	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
2,4,5-Trichlorophenol	ND	0.61	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
2,4,6-Trichlorophenol	ND	0.83	1.9	D	mg/Kg	10	9/2/2021 6:08:26 PM	62157
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/2/2021 6:08:26 PM	62157
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/2/2021 6:08:26 PM	62157
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/2/2021 6:08:26 PM	62157
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/2/2021 6:08:26 PM	62157
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/2/2021 6:08:26 PM	62157
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/2/2021 6:08:26 PM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	47	0.28	0.72		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Toluene	320	1.9	14		mg/Kg	500	9/1/2021 5:03:55 PM	R80995
Ethylbenzene	78	0.35	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.82	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,2,4-Trimethylbenzene	120	0.20	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,3,5-Trimethylbenzene	40	0.32	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,2-Dichloroethane (EDC)	1.3	0.33	1.4	J	mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,2-Dibromoethane (EDB)	ND	0.57	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Naphthalene	18	0.54	2.9		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1-Methylnaphthalene	17	1.7	5.8		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
2-Methylnaphthalene	25	1.3	5.8		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Acetone	ND	4.7	22		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Bromobenzene	ND	0.31	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Bromodichloromethane	ND	0.18	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Bromoform	ND	0.35	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Bromomethane	ND	2.4	4.3		mg/Kg	50	9/1/2021 5:30:55 PM	R80995

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (3.5-4')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:55:00 PM
Lab ID: 2108B84-011 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	6.3	14		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Carbon disulfide	ND	0.60	14		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Carbon tetrachloride	ND	0.16	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Chlorobenzene	0.45	0.26	1.4	J	mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Chloroethane	ND	0.54	2.9		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Chloroform	ND	0.21	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Chloromethane	ND	0.51	4.3		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
2-Chlorotoluene	ND	0.19	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
4-Chlorotoluene	ND	0.76	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
cis-1,2-DCE	ND	0.72	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
cis-1,3-Dichloropropene	ND	0.21	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,2-Dibromo-3-chloropropane	ND	0.62	2.9		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Dibromochloromethane	ND	0.23	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Dibromomethane	ND	0.34	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,2-Dichlorobenzene	ND	0.30	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,3-Dichlorobenzene	ND	0.27	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,4-Dichlorobenzene	ND	0.39	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Dichlorodifluoromethane	ND	0.56	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,1-Dichloroethane	ND	0.42	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,1-Dichloroethene	ND	0.31	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,2-Dichloropropane	ND	0.28	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,3-Dichloropropane	ND	0.32	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
2,2-Dichloropropane	ND	0.21	2.9		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,1-Dichloropropene	ND	0.17	2.9		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Hexachlorobutadiene	ND	0.98	2.9		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
2-Hexanone	ND	0.63	14		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Isopropylbenzene	16	0.27	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
4-Isopropyltoluene	5.6	0.37	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
4-Methyl-2-pentanone	ND	1.7	14		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Methylene chloride	ND	1.0	4.3		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
n-Butylbenzene	8.3	0.39	4.3		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
n-Propylbenzene	28	0.23	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
sec-Butylbenzene	6.9	1.2	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Styrene	ND	0.20	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
tert-Butylbenzene	ND	0.33	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,1,1,2-Tetrachloroethane	ND	0.21	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,1,2,2-Tetrachloroethane	ND	0.47	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Tetrachloroethene (PCE)	ND	0.40	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
trans-1,2-DCE	ND	0.28	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (3.5-4')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 12:55:00 PM
Lab ID: 2108B84-011 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.34	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,2,3-Trichlorobenzene	ND	0.22	2.9		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,2,4-Trichlorobenzene	ND	0.50	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,1,1-Trichloroethane	ND	0.32	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,1,2-Trichloroethane	ND	0.36	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Trichloroethene (TCE)	ND	0.28	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Trichlorofluoromethane	ND	0.33	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
1,2,3-Trichloropropane	ND	0.61	2.9		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Vinyl chloride	ND	0.28	1.4		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Xylenes, Total	560	7.6	29		mg/Kg	500	9/1/2021 5:03:55 PM	R80995
Surr: Dibromofluoromethane	100		70-130		%Rec	50	9/1/2021 5:30:55 PM	R80995
Surr: 1,2-Dichloroethane-d4	98.3		70-130		%Rec	50	9/1/2021 5:30:55 PM	R80995
Surr: Toluene-d8	110		70-130		%Rec	50	9/1/2021 5:30:55 PM	R80995
Surr: 4-Bromofluorobenzene	113		70-130		%Rec	50	9/1/2021 5:30:55 PM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	8300	40	140		mg/Kg	50	9/1/2021 5:30:55 PM	R80995
Surr: BFB	103	0	70-130		%Rec	50	9/1/2021 5:30:55 PM	R80995

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (19-19.5')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 1:00:00 PM
Lab ID: 2108B84-012 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	5.2	4.5	9.1	J	mg/Kg	1	8/24/2021 1:09:01 PM	62132
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/24/2021 1:09:01 PM	62132
Surr: DNOP	132	0	70-130	S	%Rec	1	8/24/2021 1:09:01 PM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0025	0.032		mg/Kg	1	9/3/2021 10:27:54 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.1		mg/Kg	2	8/26/2021 8:03:07 PM	62200
Arsenic	ND	2.9	5.1		mg/Kg	2	8/26/2021 8:03:07 PM	62200
Barium	300	0.12	0.20		mg/Kg	2	8/26/2021 8:03:07 PM	62200
Beryllium	1.0	0.059	0.30		mg/Kg	2	8/26/2021 8:03:07 PM	62200
Cadmium	ND	0.10	0.20		mg/Kg	2	8/26/2021 8:03:07 PM	62200
Chromium	13	0.30	0.61		mg/Kg	2	8/26/2021 8:03:07 PM	62200
Cobalt	6.9	0.12	0.61		mg/Kg	2	8/26/2021 8:03:07 PM	62200
Iron	19000	250	250		mg/Kg	100	8/30/2021 4:24:00 PM	62200
Lead	3.5	0.54	0.61		mg/Kg	2	8/30/2021 4:22:14 PM	62200
Manganese	440	0.34	0.41		mg/Kg	2	8/26/2021 8:03:07 PM	62200
Nickel	14	0.40	1.0		mg/Kg	2	8/26/2021 8:03:07 PM	62200
Selenium	ND	4.5	5.1		mg/Kg	2	8/30/2021 4:22:14 PM	62200
Silver	ND	0.30	0.51		mg/Kg	2	8/26/2021 8:03:07 PM	62200
Vanadium	14	0.23	5.1		mg/Kg	2	8/26/2021 8:03:07 PM	62200
Zinc	25	2.7	5.1		mg/Kg	2	8/26/2021 8:03:07 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.089	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Acenaphthylene	ND	0.090	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Aniline	ND	0.069	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Anthracene	ND	0.090	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Azobenzene	ND	0.099	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Benz(a)anthracene	ND	0.064	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Benzo(a)pyrene	ND	0.093	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Benzo(b)fluoranthene	ND	0.11	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Benzo(k)fluoranthene	ND	0.075	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Benzoic acid	ND	0.12	0.99		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Benzyl alcohol	ND	0.081	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Bis(2-chloroethoxy)methane	ND	0.076	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Bis(2-ethylhexyl)phthalate	ND	0.21	0.50		mg/Kg	1	9/2/2021 6:49:40 PM	62157

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Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (19-19.5')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 1:00:00 PM
Lab ID: 2108B84-012 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Carbazole	ND	0.087	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
4-Chloro-3-methylphenol	ND	0.084	0.50		mg/Kg	1	9/2/2021 6:49:40 PM	62157
4-Chloroaniline	ND	0.097	0.50		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2-Chloronaphthalene	ND	0.094	0.25		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
4-Chlorophenyl phenyl ether	ND	0.084	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Chrysene	ND	0.088	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Di-n-butyl phthalate	0.45	0.28	0.40		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Di-n-octyl phthalate	ND	0.13	0.40		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
1,2-Dichlorobenzene	ND	0.080	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
1,3-Dichlorobenzene	ND	0.071	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Diethyl phthalate	ND	0.32	0.50		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Dimethyl phthalate	ND	0.092	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2,4-Dichlorophenol	ND	0.081	0.40		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2,4-Dimethylphenol	ND	0.071	0.30		mg/Kg	1	9/2/2021 6:49:40 PM	62157
4,6-Dinitro-2-methylphenol	ND	0.084	0.40		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2,4-Dinitrophenol	ND	0.050	0.50		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2,6-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Fluoranthene	ND	0.080	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Fluorene	ND	0.088	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Hexachlorobenzene	ND	0.088	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Hexachlorobutadiene	ND	0.093	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Hexachloroethane	ND	0.088	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Isophorone	ND	0.081	0.40		mg/Kg	1	9/2/2021 6:49:40 PM	62157
1-Methylnaphthalene	ND	0.091	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2-Methylnaphthalene	ND	0.082	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2-Methylphenol	ND	0.083	0.40		mg/Kg	1	9/2/2021 6:49:40 PM	62157
3+4-Methylphenol	ND	0.082	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
N-Nitrosodi-n-propylamine	ND	0.092	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (19-19.5')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 1:00:00 PM
Lab ID: 2108B84-012 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Naphthalene	ND	0.093	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
3-Nitroaniline	ND	0.12	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Nitrobenzene	ND	0.081	0.40		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2-Nitrophenol	ND	0.086	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
4-Nitrophenol	ND	0.082	0.25		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Pentachlorophenol	ND	0.086	0.40		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Phenanthrene	ND	0.10	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Phenol	ND	0.076	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Pyrene	ND	0.075	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Pyridine	ND	0.16	0.40		mg/Kg	1	9/2/2021 6:49:40 PM	62157
1,2,4-Trichlorobenzene	ND	0.091	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
2,4,6-Trichlorophenol	ND	0.085	0.20		mg/Kg	1	9/2/2021 6:49:40 PM	62157
Surr: 2-Fluorophenol	47.5		20.3-74.1		%Rec	1	9/2/2021 6:49:40 PM	62157
Surr: Phenol-d5	51.8		23.1-92.7		%Rec	1	9/2/2021 6:49:40 PM	62157
Surr: 2,4,6-Tribromophenol	78.9		17.3-122		%Rec	1	9/2/2021 6:49:40 PM	62157
Surr: Nitrobenzene-d5	41.6		24.7-73.2		%Rec	1	9/2/2021 6:49:40 PM	62157
Surr: 2-Fluorobiphenyl	46.2		21.5-90.1		%Rec	1	9/2/2021 6:49:40 PM	62157
Surr: 4-Terphenyl-d14	92.8		15-140		%Rec	1	9/2/2021 6:49:40 PM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	0.015	0.0064	0.017	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Toluene	0.0084	0.0043	0.033	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Ethylbenzene	0.0087	0.0081	0.033	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.019	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,2,4-Trimethylbenzene	0.014	0.0047	0.033	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,3,5-Trimethylbenzene	ND	0.0075	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,2-Dichloroethane (EDC)	0.017	0.0076	0.033	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,2-Dibromoethane (EDB)	ND	0.013	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Naphthalene	ND	0.012	0.067		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1-Methylnaphthalene	ND	0.038	0.13		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
2-Methylnaphthalene	ND	0.031	0.13		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Acetone	ND	0.11	0.50		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Bromobenzene	ND	0.0071	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Bromodichloromethane	ND	0.0042	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Bromoform	ND	0.0081	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Bromomethane	0.056	0.055	0.10	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (19-19.5')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 1:00:00 PM
Lab ID: 2108B84-012 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	0.22	0.14	0.33	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Carbon disulfide	ND	0.014	0.33		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Carbon tetrachloride	ND	0.0037	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Chlorobenzene	ND	0.0060	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Chloroethane	ND	0.012	0.067		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Chloroform	ND	0.0047	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Chloromethane	ND	0.012	0.10		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
2-Chlorotoluene	ND	0.0045	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
4-Chlorotoluene	ND	0.018	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
cis-1,2-DCE	ND	0.017	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
cis-1,3-Dichloropropene	ND	0.0050	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,2-Dibromo-3-chloropropane	ND	0.014	0.067		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Dibromochloromethane	ND	0.0053	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Dibromomethane	ND	0.0078	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,2-Dichlorobenzene	ND	0.0069	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,3-Dichlorobenzene	ND	0.0063	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,4-Dichlorobenzene	ND	0.0089	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Dichlorodifluoromethane	ND	0.013	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,1-Dichloroethane	ND	0.0097	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,1-Dichloroethene	ND	0.0072	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,2-Dichloropropane	ND	0.0065	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,3-Dichloropropane	ND	0.0073	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
2,2-Dichloropropane	ND	0.0048	0.067		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,1-Dichloropropene	ND	0.0040	0.067		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Hexachlorobutadiene	ND	0.023	0.067		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
2-Hexanone	0.031	0.015	0.33	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Isopropylbenzene	ND	0.0062	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
4-Isopropyltoluene	ND	0.0086	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
4-Methyl-2-pentanone	0.064	0.039	0.33	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Methylene chloride	ND	0.024	0.10		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
n-Butylbenzene	ND	0.0089	0.10		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
n-Propylbenzene	ND	0.0054	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
sec-Butylbenzene	ND	0.028	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Styrene	ND	0.0046	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
tert-Butylbenzene	ND	0.0077	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,1,1,2-Tetrachloroethane	ND	0.0049	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,1,2,2-Tetrachloroethane	0.011	0.011	0.033	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Tetrachloroethene (PCE)	ND	0.0092	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
trans-1,2-DCE	ND	0.0065	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-2 (19-19.5')
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 1:00:00 PM
Lab ID: 2108B84-012 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0078	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,2,3-Trichlorobenzene	ND	0.0052	0.067		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,2,4-Trichlorobenzene	ND	0.012	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,1,1-Trichloroethane	ND	0.0074	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,1,2-Trichloroethane	ND	0.0084	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Trichloroethene (TCE)	ND	0.0065	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Trichlorofluoromethane	ND	0.0076	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
1,2,3-Trichloropropane	ND	0.014	0.067		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Vinyl chloride	ND	0.0064	0.033		mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Xylenes, Total	0.031	0.018	0.067	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Surr: Dibromofluoromethane	122		70-130		%Rec	1	9/1/2021 6:24:50 PM	R80995
Surr: 1,2-Dichloroethane-d4	117		70-130		%Rec	1	9/1/2021 6:24:50 PM	R80995
Surr: Toluene-d8	101		70-130		%Rec	1	9/1/2021 6:24:50 PM	R80995
Surr: 4-Bromofluorobenzene	97.7		70-130		%Rec	1	9/1/2021 6:24:50 PM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1.8	0.93	3.3	J	mg/Kg	1	9/1/2021 6:24:50 PM	R80995
Surr: BFB	101	0	70-130		%Rec	1	9/1/2021 6:24:50 PM	R80995

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:35:00 PM
Lab ID: 2108B84-013 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.6	9.4		mg/Kg	1	8/24/2021 1:18:47 PM	62132
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/24/2021 1:18:47 PM	62132
Surr: DNOP	131	0	70-130	S	%Rec	1	8/24/2021 1:18:47 PM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.013	0.0027	0.034	J	mg/Kg	1	9/3/2021 10:30:01 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.8		mg/Kg	2	8/26/2021 8:05:20 PM	62200
Arsenic	ND	2.7	4.8		mg/Kg	2	8/26/2021 8:05:20 PM	62200
Barium	410	0.12	0.19		mg/Kg	2	8/26/2021 8:05:20 PM	62200
Beryllium	0.93	0.056	0.29		mg/Kg	2	8/26/2021 8:05:20 PM	62200
Cadmium	ND	0.096	0.19		mg/Kg	2	8/26/2021 8:05:20 PM	62200
Chromium	10	0.29	0.57		mg/Kg	2	8/26/2021 8:05:20 PM	62200
Cobalt	4.3	0.12	0.57		mg/Kg	2	8/26/2021 8:05:20 PM	62200
Iron	14000	240	240		mg/Kg	100	8/30/2021 4:27:19 PM	62200
Lead	4.1	0.51	0.57		mg/Kg	2	8/30/2021 4:25:38 PM	62200
Manganese	330	0.32	0.38		mg/Kg	2	8/26/2021 8:05:20 PM	62200
Nickel	9.0	0.38	0.96		mg/Kg	2	8/26/2021 8:05:20 PM	62200
Selenium	ND	4.2	4.8		mg/Kg	2	8/30/2021 4:25:38 PM	62200
Silver	ND	0.28	0.48		mg/Kg	2	8/26/2021 8:05:20 PM	62200
Vanadium	23	0.22	4.8		mg/Kg	2	8/26/2021 8:05:20 PM	62200
Zinc	16	2.6	4.8		mg/Kg	2	8/26/2021 8:05:20 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.87	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Acenaphthylene	ND	0.88	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Aniline	ND	0.67	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Anthracene	ND	0.88	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Azobenzene	ND	0.97	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Benz(a)anthracene	ND	0.63	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Benzo(a)pyrene	ND	0.92	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Benzo(g,h,i)perylene	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Benzo(k)fluoranthene	ND	0.73	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Benzoic acid	ND	1.2	9.7	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Benzyl alcohol	ND	0.80	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Bis(2-chloroethoxy)methane	ND	0.74	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Bis(2-chloroethyl)ether	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Bis(2-chloroisopropyl)ether	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:35:00 PM
Lab ID: 2108B84-013 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Butyl benzyl phthalate	ND	0.59	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Carbazole	ND	0.85	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
4-Chloro-3-methylphenol	ND	0.82	4.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
4-Chloroaniline	ND	0.95	4.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2-Chloronaphthalene	ND	0.92	2.4	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
4-Chlorophenyl phenyl ether	ND	0.82	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Chrysene	ND	0.86	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Di-n-octyl phthalate	ND	1.3	3.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Dibenz(a,h)anthracene	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Dibenzofuran	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
1,2-Dichlorobenzene	ND	0.79	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
1,3-Dichlorobenzene	ND	0.69	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
1,4-Dichlorobenzene	ND	0.82	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
3,3´-Dichlorobenzidine	ND	1.5	2.4	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Dimethyl phthalate	ND	0.90	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2,4-Dichlorophenol	ND	0.79	3.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2,4-Dimethylphenol	ND	0.69	2.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
4,6-Dinitro-2-methylphenol	ND	0.82	3.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2,4-Dinitrophenol	ND	0.49	4.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2,6-Dinitrotoluene	ND	0.99	4.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Fluoranthene	ND	0.79	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Fluorene	ND	0.87	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Hexachlorobenzene	ND	0.86	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Hexachlorobutadiene	ND	0.91	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Hexachloroethane	ND	0.86	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Isophorone	ND	0.79	3.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
1-Methylnaphthalene	ND	0.89	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2-Methylnaphthalene	ND	0.80	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2-Methylphenol	ND	0.82	3.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
3+4-Methylphenol	ND	0.80	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
N-Nitrosodi-n-propylamine	ND	0.90	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
N-Nitrosodimethylamine	ND	1.4	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157

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		

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:35:00 PM
Lab ID: 2108B84-013 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Naphthalene	ND	0.92	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2-Nitroaniline	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
4-Nitroaniline	ND	1.2	3.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Nitrobenzene	ND	0.80	3.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2-Nitrophenol	ND	0.84	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
4-Nitrophenol	ND	0.80	2.4	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Pentachlorophenol	ND	0.84	3.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Phenanthrene	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Phenol	ND	0.75	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Pyrene	ND	0.74	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Pyridine	ND	1.6	3.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
1,2,4-Trichlorobenzene	ND	0.89	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2,4,5-Trichlorophenol	ND	0.62	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
2,4,6-Trichlorophenol	ND	0.84	1.9	D	mg/Kg	10	9/7/2021 11:04:45 AM	62157
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/7/2021 11:04:45 AM	62157
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/7/2021 11:04:45 AM	62157
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/7/2021 11:04:45 AM	62157
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/7/2021 11:04:45 AM	62157
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/7/2021 11:04:45 AM	62157
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/7/2021 11:04:45 AM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0063	0.016		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Toluene	ND	0.0042	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Ethylbenzene	ND	0.0079	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.018	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,2,4-Trimethylbenzene	ND	0.0046	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,3,5-Trimethylbenzene	ND	0.0073	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,2-Dichloroethane (EDC)	ND	0.0074	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.013	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Naphthalene	ND	0.012	0.065		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1-Methylnaphthalene	ND	0.037	0.13		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
2-Methylnaphthalene	ND	0.030	0.13		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Acetone	ND	0.11	0.49		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Bromobenzene	ND	0.0069	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Bromodichloromethane	ND	0.0041	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Bromoform	ND	0.0078	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Bromomethane	ND	0.054	0.098		mg/Kg	1	8/31/2021 12:59:15 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:35:00 PM
Lab ID: 2108B84-013 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.14	0.33		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Carbon disulfide	ND	0.013	0.33		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Carbon tetrachloride	ND	0.0036	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Chlorobenzene	ND	0.0059	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Chloroethane	ND	0.012	0.065		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Chloroform	ND	0.0046	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Chloromethane	ND	0.011	0.098		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
2-Chlorotoluene	ND	0.0044	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
4-Chlorotoluene	ND	0.017	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
cis-1,2-DCE	ND	0.016	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
cis-1,3-Dichloropropene	ND	0.0048	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.014	0.065		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Dibromochloromethane	ND	0.0052	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Dibromomethane	ND	0.0076	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,2-Dichlorobenzene	ND	0.0068	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,3-Dichlorobenzene	ND	0.0061	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,4-Dichlorobenzene	ND	0.0087	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Dichlorodifluoromethane	ND	0.013	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,1-Dichloroethane	ND	0.0095	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,1-Dichloroethene	ND	0.0070	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,2-Dichloropropane	ND	0.0063	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,3-Dichloropropane	ND	0.0071	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
2,2-Dichloropropane	ND	0.0046	0.065		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,1-Dichloropropene	ND	0.0039	0.065		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Hexachlorobutadiene	ND	0.022	0.065		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
2-Hexanone	ND	0.014	0.33		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Isopropylbenzene	ND	0.0060	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
4-Isopropyltoluene	ND	0.0084	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
4-Methyl-2-pentanone	ND	0.038	0.33		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Methylene chloride	ND	0.024	0.098		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
n-Butylbenzene	ND	0.0087	0.098		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
n-Propylbenzene	ND	0.0053	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
sec-Butylbenzene	ND	0.027	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Styrene	ND	0.0044	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
tert-Butylbenzene	ND	0.0075	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0048	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.011	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Tetrachloroethene (PCE)	ND	0.0089	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
trans-1,2-DCE	ND	0.0063	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:35:00 PM
Lab ID: 2108B84-013 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0076	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,2,3-Trichlorobenzene	ND	0.0050	0.065		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,2,4-Trichlorobenzene	ND	0.011	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,1,1-Trichloroethane	ND	0.0072	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,1,2-Trichloroethane	ND	0.0081	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Trichloroethene (TCE)	ND	0.0064	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Trichlorofluoromethane	ND	0.0074	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
1,2,3-Trichloropropane	ND	0.014	0.065		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Vinyl chloride	ND	0.0062	0.033		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Xylenes, Total	ND	0.017	0.065		mg/Kg	1	8/31/2021 12:59:15 AM	A80915
Surr: Dibromofluoromethane	107		70-130		%Rec	1	8/31/2021 12:59:15 AM	A80915
Surr: 1,2-Dichloroethane-d4	94.1		70-130		%Rec	1	8/31/2021 12:59:15 AM	A80915
Surr: Toluene-d8	96.3		70-130		%Rec	1	8/31/2021 12:59:15 AM	A80915
Surr: 4-Bromofluorobenzene	97.6		70-130		%Rec	1	8/31/2021 12:59:15 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.90	3.3		mg/Kg	1	8/31/2021 12:59:15 AM	B80915
Surr: BFB	99.6	0	70-130		%Rec	1	8/31/2021 12:59:15 AM	B80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:45:00 PM
Lab ID: 2108B84-014 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	12	4.5	9.0		mg/Kg	1	8/24/2021 1:28:38 PM	62132
Motor Oil Range Organics (MRO)	ND	45	45		mg/Kg	1	8/24/2021 1:28:38 PM	62132
Surr: DNOP	130	0	70-130		%Rec	1	8/24/2021 1:28:38 PM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0034	0.0027	0.034	J	mg/Kg	1	9/3/2021 10:32:09 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/26/2021 8:07:28 PM	62200
Arsenic	ND	2.8	5.0		mg/Kg	2	8/26/2021 8:07:28 PM	62200
Barium	300	0.12	0.20		mg/Kg	2	8/26/2021 8:07:28 PM	62200
Beryllium	1.1	0.058	0.30		mg/Kg	2	8/26/2021 8:07:28 PM	62200
Cadmium	ND	0.099	0.20		mg/Kg	2	8/26/2021 8:07:28 PM	62200
Chromium	9.7	0.30	0.60		mg/Kg	2	8/26/2021 8:07:28 PM	62200
Cobalt	5.1	0.12	0.60		mg/Kg	2	8/26/2021 8:07:28 PM	62200
Iron	15000	250	250		mg/Kg	100	8/30/2021 4:30:39 PM	62200
Lead	4.2	0.53	0.60		mg/Kg	2	8/30/2021 4:28:59 PM	62200
Manganese	410	0.33	0.40		mg/Kg	2	8/26/2021 8:07:28 PM	62200
Nickel	10	0.39	0.99		mg/Kg	2	8/26/2021 8:07:28 PM	62200
Selenium	ND	4.4	5.0		mg/Kg	2	8/30/2021 4:28:59 PM	62200
Silver	ND	0.29	0.50		mg/Kg	2	8/26/2021 8:07:28 PM	62200
Vanadium	23	0.22	5.0		mg/Kg	2	8/26/2021 8:07:28 PM	62200
Zinc	14	2.7	5.0		mg/Kg	2	8/26/2021 8:07:28 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Acenaphthylene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Aniline	ND	0.68	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Anthracene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Azobenzene	ND	0.98	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Benz(a)anthracene	ND	0.63	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Benzo(a)pyrene	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Benzo(b)fluoranthene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Benzo(k)fluoranthene	ND	0.74	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Benzoic acid	ND	1.2	9.8	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Benzyl alcohol	ND	0.80	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Bis(2-chloroethoxy)methane	ND	0.75	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:45:00 PM
Lab ID: 2108B84-014 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Butyl benzyl phthalate	ND	0.60	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Carbazole	ND	0.86	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
4-Chloro-3-methylphenol	ND	0.83	4.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
4-Chloroaniline	ND	0.95	4.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2-Chloronaphthalene	ND	0.93	2.5	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2-Chlorophenol	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
4-Chlorophenyl phenyl ether	ND	0.83	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Chrysene	ND	0.87	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Di-n-octyl phthalate	ND	1.3	3.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
1,2-Dichlorobenzene	ND	0.79	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
1,3-Dichlorobenzene	ND	0.70	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
1,4-Dichlorobenzene	ND	0.83	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Dimethyl phthalate	ND	0.91	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2,4-Dichlorophenol	ND	0.80	3.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2,4-Dimethylphenol	ND	0.70	2.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
4,6-Dinitro-2-methylphenol	ND	0.83	3.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2,4-Dinitrophenol	ND	0.49	4.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2,6-Dinitrotoluene	ND	1.0	4.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Fluoranthene	ND	0.79	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Fluorene	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Hexachlorobenzene	ND	0.87	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Hexachlorobutadiene	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Hexachloroethane	ND	0.87	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Isophorone	ND	0.80	3.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
1-Methylnaphthalene	ND	0.90	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2-Methylnaphthalene	ND	0.81	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2-Methylphenol	ND	0.83	3.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
3+4-Methylphenol	ND	0.81	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
N-Nitrosodi-n-propylamine	ND	0.91	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157

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		

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:45:00 PM
Lab ID: 2108B84-014 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Naphthalene	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
3-Nitroaniline	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
4-Nitroaniline	ND	1.3	3.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Nitrobenzene	ND	0.80	3.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2-Nitrophenol	ND	0.85	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
4-Nitrophenol	ND	0.81	2.5	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Pentachlorophenol	ND	0.85	3.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Phenol	ND	0.76	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Pyrene	ND	0.74	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Pyridine	ND	1.6	3.9	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
1,2,4-Trichlorobenzene	ND	0.90	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2,4,5-Trichlorophenol	ND	0.62	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
2,4,6-Trichlorophenol	ND	0.84	2.0	D	mg/Kg	10	9/7/2021 11:46:13 AM	62157
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/7/2021 11:46:13 AM	62157
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/7/2021 11:46:13 AM	62157
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/7/2021 11:46:13 AM	62157
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/7/2021 11:46:13 AM	62157
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/7/2021 11:46:13 AM	62157
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/7/2021 11:46:13 AM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0052	0.014		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Toluene	ND	0.0035	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Ethylbenzene	ND	0.0066	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.015	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,2,4-Trimethylbenzene	ND	0.0038	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,3,5-Trimethylbenzene	ND	0.0061	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,2-Dichloroethane (EDC)	ND	0.0062	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.011	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Naphthalene	ND	0.010	0.054		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1-Methylnaphthalene	ND	0.031	0.11		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
2-Methylnaphthalene	ND	0.025	0.11		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Acetone	ND	0.088	0.41		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Bromobenzene	ND	0.0058	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Bromodichloromethane	ND	0.0035	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Bromoform	ND	0.0065	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Bromomethane	ND	0.045	0.081		mg/Kg	1	8/31/2021 3:22:23 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:45:00 PM
Lab ID: 2108B84-014 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.12	0.27		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Carbon disulfide	ND	0.011	0.27		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Carbon tetrachloride	ND	0.0030	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Chlorobenzene	ND	0.0049	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Chloroethane	ND	0.010	0.054		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Chloroform	ND	0.0038	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Chloromethane	ND	0.0095	0.081		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
2-Chlorotoluene	ND	0.0036	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
4-Chlorotoluene	ND	0.014	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
cis-1,2-DCE	ND	0.013	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
cis-1,3-Dichloropropene	ND	0.0040	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.012	0.054		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Dibromochloromethane	ND	0.0043	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Dibromomethane	ND	0.0063	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,2-Dichlorobenzene	ND	0.0056	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,3-Dichlorobenzene	ND	0.0051	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,4-Dichlorobenzene	ND	0.0072	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Dichlorodifluoromethane	ND	0.010	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,1-Dichloroethane	ND	0.0079	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,1-Dichloroethene	ND	0.0058	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,2-Dichloropropane	ND	0.0053	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,3-Dichloropropane	ND	0.0060	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
2,2-Dichloropropane	ND	0.0039	0.054		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,1-Dichloropropene	ND	0.0033	0.054		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Hexachlorobutadiene	ND	0.018	0.054		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
2-Hexanone	ND	0.012	0.27		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Isopropylbenzene	ND	0.0050	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
4-Isopropyltoluene	ND	0.0070	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
4-Methyl-2-pentanone	ND	0.032	0.27		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Methylene chloride	ND	0.020	0.081		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
n-Butylbenzene	ND	0.0072	0.081		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
n-Propylbenzene	ND	0.0044	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
sec-Butylbenzene	ND	0.022	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Styrene	ND	0.0037	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
tert-Butylbenzene	ND	0.0063	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0040	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.0088	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Tetrachloroethene (PCE)	ND	0.0074	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
trans-1,2-DCE	ND	0.0052	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:45:00 PM
Lab ID: 2108B84-014 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0064	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,2,3-Trichlorobenzene	ND	0.0042	0.054		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,2,4-Trichlorobenzene	ND	0.0094	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,1,1-Trichloroethane	ND	0.0060	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,1,2-Trichloroethane	ND	0.0068	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Trichloroethene (TCE)	ND	0.0053	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Trichlorofluoromethane	ND	0.0062	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
1,2,3-Trichloropropane	ND	0.011	0.054		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Vinyl chloride	ND	0.0052	0.027		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Xylenes, Total	ND	0.014	0.054		mg/Kg	1	8/31/2021 3:22:23 AM	A80915
Surr: Dibromofluoromethane	107		70-130		%Rec	1	8/31/2021 3:22:23 AM	A80915
Surr: 1,2-Dichloroethane-d4	95.8		70-130		%Rec	1	8/31/2021 3:22:23 AM	A80915
Surr: Toluene-d8	94.1		70-130		%Rec	1	8/31/2021 3:22:23 AM	A80915
Surr: 4-Bromofluorobenzene	97.9		70-130		%Rec	1	8/31/2021 3:22:23 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.75	2.7		mg/Kg	1	8/31/2021 3:22:23 AM	B80915
Surr: BFB	98.8	0	70-130		%Rec	1	8/31/2021 3:22:23 AM	B80915

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (5-5.5')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:55:00 PM
Lab ID: 2108B84-015 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	2500	44	89		mg/Kg	10	8/25/2021 4:32:54 PM	62132
Motor Oil Range Organics (MRO)	ND	450	450	D	mg/Kg	10	8/25/2021 4:32:54 PM	62132
Surr: DNOP	0	0	70-130	S	%Rec	10	8/25/2021 4:32:54 PM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0043	0.0028	0.035	J	mg/Kg	1	9/3/2021 10:34:17 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.8		mg/Kg	2	8/26/2021 8:09:36 PM	62200
Arsenic	ND	2.7	4.8		mg/Kg	2	8/26/2021 8:09:36 PM	62200
Barium	260	0.12	0.19		mg/Kg	2	8/26/2021 8:09:36 PM	62200
Beryllium	0.78	0.056	0.29		mg/Kg	2	8/26/2021 8:09:36 PM	62200
Cadmium	ND	0.097	0.19		mg/Kg	2	8/26/2021 8:09:36 PM	62200
Chromium	7.3	0.29	0.58		mg/Kg	2	8/26/2021 8:09:36 PM	62200
Cobalt	4.0	0.12	0.58		mg/Kg	2	8/26/2021 8:09:36 PM	62200
Iron	11000	240	240		mg/Kg	100	8/30/2021 4:33:59 PM	62200
Lead	5.9	0.52	0.58		mg/Kg	2	8/30/2021 4:32:19 PM	62200
Manganese	300	0.32	0.39		mg/Kg	2	8/26/2021 8:09:36 PM	62200
Nickel	7.1	0.38	0.97		mg/Kg	2	8/26/2021 8:09:36 PM	62200
Selenium	ND	4.3	4.8		mg/Kg	2	8/30/2021 4:32:19 PM	62200
Silver	ND	0.28	0.48		mg/Kg	2	8/26/2021 8:09:36 PM	62200
Vanadium	16	0.22	4.8		mg/Kg	2	8/26/2021 8:09:36 PM	62200
Zinc	11	2.6	4.8		mg/Kg	2	8/26/2021 8:09:36 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Acenaphthylene	ND	0.90	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Aniline	ND	0.69	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Anthracene	ND	0.90	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Azobenzene	ND	0.99	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Benz(a)anthracene	ND	0.64	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Benzo(a)pyrene	ND	0.94	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Benzo(b)fluoranthene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Benzo(k)fluoranthene	ND	0.75	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Benzoic acid	ND	1.2	10	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Benzyl alcohol	ND	0.82	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Bis(2-chloroethoxy)methane	ND	0.76	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Bis(2-ethylhexyl)phthalate	ND	2.1	5.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (5-5.5')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:55:00 PM
Lab ID: 2108B84-015 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Butyl benzyl phthalate	ND	0.61	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Carbazole	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
4-Chloro-3-methylphenol	ND	0.84	5.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
4-Chloroaniline	ND	0.97	5.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2-Chloronaphthalene	ND	0.94	2.5	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
4-Chlorophenyl phenyl ether	ND	0.84	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Chrysene	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Di-n-butyl phthalate	ND	2.8	4.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Di-n-octyl phthalate	ND	1.3	4.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
1,2-Dichlorobenzene	ND	0.81	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
1,3-Dichlorobenzene	ND	0.71	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
1,4-Dichlorobenzene	ND	0.84	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Diethyl phthalate	ND	3.2	5.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Dimethyl phthalate	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2,4-Dichlorophenol	ND	0.81	4.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2,4-Dimethylphenol	ND	0.71	3.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
4,6-Dinitro-2-methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2,4-Dinitrophenol	ND	0.50	5.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2,4-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2,6-Dinitrotoluene	ND	1.0	5.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Fluoranthene	ND	0.81	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Fluorene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Hexachlorobenzene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Hexachlorobutadiene	ND	0.93	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Hexachloroethane	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Isophorone	ND	0.81	4.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
1-Methylnaphthalene	19	0.92	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2-Methylnaphthalene	30	0.82	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2-Methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
3+4-Methylphenol	ND	0.82	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
N-Nitrosodi-n-propylamine	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157

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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
P	Sample pH Not In Range
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Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (5-5.5')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:55:00 PM
Lab ID: 2108B84-015 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Naphthalene	13	0.94	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
3-Nitroaniline	ND	1.2	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Nitrobenzene	ND	0.82	4.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2-Nitrophenol	ND	0.86	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
4-Nitrophenol	ND	0.82	2.5	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Pentachlorophenol	ND	0.86	4.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Phenol	ND	0.77	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Pyrene	ND	0.75	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Pyridine	ND	1.6	4.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
1,2,4-Trichlorobenzene	ND	0.91	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2,4,5-Trichlorophenol	ND	0.63	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
2,4,6-Trichlorophenol	ND	0.86	2.0	D	mg/Kg	10	9/7/2021 12:27:46 PM	62157
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/7/2021 12:27:46 PM	62157
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/7/2021 12:27:46 PM	62157
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/7/2021 12:27:46 PM	62157
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/7/2021 12:27:46 PM	62157
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/7/2021 12:27:46 PM	62157
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/7/2021 12:27:46 PM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	6.2	0.027	0.070		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Toluene	1.1	0.018	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Ethylbenzene	12	0.034	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.079	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,2,4-Trimethylbenzene	42	0.20	1.4		mg/Kg	50	8/31/2021 2:35:01 PM	R80948
1,3,5-Trimethylbenzene	13	0.031	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,2-Dichloroethane (EDC)	ND	0.032	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.055	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Naphthalene	12	0.052	0.28		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1-Methylnaphthalene	16	1.6	5.6		mg/Kg	50	8/31/2021 2:35:01 PM	R80948
2-Methylnaphthalene	25	1.3	5.6		mg/Kg	50	8/31/2021 2:35:01 PM	R80948
Acetone	ND	0.45	2.1		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Bromobenzene	ND	0.030	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Bromodichloromethane	ND	0.018	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Bromoform	ND	0.034	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Bromomethane	ND	0.23	0.42		mg/Kg	5	8/31/2021 3:51:01 AM	A80915

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (5-5.5')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:55:00 PM
Lab ID: 2108B84-015 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.60	1.4		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Carbon disulfide	ND	0.057	1.4		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Carbon tetrachloride	ND	0.016	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Chlorobenzene	ND	0.025	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Chloroethane	ND	0.052	0.28		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Chloroform	ND	0.020	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Chloromethane	ND	0.049	0.42		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
2-Chlorotoluene	ND	0.019	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
4-Chlorotoluene	ND	0.073	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
cis-1,2-DCE	ND	0.069	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
cis-1,3-Dichloropropene	ND	0.021	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.060	0.28		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Dibromochloromethane	ND	0.022	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Dibromomethane	ND	0.033	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,2-Dichlorobenzene	ND	0.029	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,3-Dichlorobenzene	ND	0.026	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,4-Dichlorobenzene	ND	0.037	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Dichlorodifluoromethane	ND	0.054	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,1-Dichloroethane	ND	0.041	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,1-Dichloroethene	ND	0.030	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,2-Dichloropropane	ND	0.027	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,3-Dichloropropane	ND	0.031	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
2,2-Dichloropropane	ND	0.020	0.28		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,1-Dichloropropene	ND	0.017	0.28		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Hexachlorobutadiene	ND	0.095	0.28		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
2-Hexanone	ND	0.061	1.4		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Isopropylbenzene	1.8	0.026	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
4-Isopropyltoluene	1.5	0.036	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
4-Methyl-2-pentanone	ND	0.16	1.4		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Methylene chloride	ND	0.10	0.42		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
n-Butylbenzene	3.3	0.037	0.42		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
n-Propylbenzene	5.8	0.022	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
sec-Butylbenzene	1.4	0.11	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Styrene	ND	0.019	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
tert-Butylbenzene	ND	0.032	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.020	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.045	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Tetrachloroethene (PCE)	ND	0.038	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
trans-1,2-DCE	ND	0.027	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (5-5.5')
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:55:00 PM
Lab ID: 2108B84-015 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.033	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,2,3-Trichlorobenzene	ND	0.022	0.28		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,2,4-Trichlorobenzene	ND	0.048	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,1,1-Trichloroethane	ND	0.031	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,1,2-Trichloroethane	ND	0.035	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Trichloroethene (TCE)	ND	0.027	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Trichlorofluoromethane	ND	0.032	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
1,2,3-Trichloropropane	ND	0.059	0.28		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Vinyl chloride	ND	0.027	0.14		mg/Kg	5	8/31/2021 3:51:01 AM	A80915
Xylenes, Total	80	0.73	2.8		mg/Kg	50	8/31/2021 2:35:01 PM	R80948
Surr: Dibromofluoromethane	68.7		70-130	S	%Rec	5	8/31/2021 3:51:01 AM	A80915
Surr: 1,2-Dichloroethane-d4	72.2		70-130		%Rec	5	8/31/2021 3:51:01 AM	A80915
Surr: Toluene-d8	99.0		70-130		%Rec	5	8/31/2021 3:51:01 AM	A80915
Surr: 4-Bromofluorobenzene	88.4		70-130		%Rec	5	8/31/2021 3:51:01 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	1100	39	140		mg/Kg	50	8/31/2021 2:35:01 PM	R80948
Surr: BFB	96.9	0	70-130		%Rec	50	8/31/2021 2:35:01 PM	R80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD3
Project: North Drainage Ditch Area **Collection Date:** 8/19/2021
Lab ID: 2108B84-016 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	1500	48	97		mg/Kg	10	8/25/2021 4:56:57 PM	62132
Motor Oil Range Organics (MRO)	ND	490	490	D	mg/Kg	10	8/25/2021 4:56:57 PM	62132
Surr: DNOP	0	0	70-130	S	%Rec	10	8/25/2021 4:56:57 PM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0035	0.0025	0.032	J	mg/Kg	1	9/3/2021 10:36:25 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/26/2021 8:11:43 PM	62200
Arsenic	ND	2.9	5.0		mg/Kg	2	8/26/2021 8:11:43 PM	62200
Barium	300	0.12	0.20		mg/Kg	2	8/26/2021 8:11:43 PM	62200
Beryllium	0.78	0.059	0.30		mg/Kg	2	8/26/2021 8:11:43 PM	62200
Cadmium	ND	0.10	0.20		mg/Kg	2	8/26/2021 8:11:43 PM	62200
Chromium	6.7	0.30	0.60		mg/Kg	2	8/26/2021 8:11:43 PM	62200
Cobalt	3.7	0.12	0.60		mg/Kg	2	8/26/2021 8:11:43 PM	62200
Iron	11000	250	250		mg/Kg	100	8/30/2021 4:43:13 PM	62200
Lead	6.3	0.54	0.60		mg/Kg	2	8/30/2021 4:41:31 PM	62200
Manganese	190	0.33	0.40		mg/Kg	2	8/26/2021 8:11:43 PM	62200
Nickel	6.6	0.40	1.0		mg/Kg	2	8/26/2021 8:11:43 PM	62200
Selenium	ND	4.4	5.0		mg/Kg	2	8/30/2021 4:41:31 PM	62200
Silver	ND	0.29	0.50		mg/Kg	2	8/26/2021 8:11:43 PM	62200
Vanadium	15	0.23	5.0		mg/Kg	2	8/26/2021 8:11:43 PM	62200
Zinc	11	2.7	5.0		mg/Kg	2	8/26/2021 8:11:43 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.85	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Acenaphthylene	ND	0.86	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Aniline	ND	0.66	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Anthracene	ND	0.86	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Azobenzene	ND	0.95	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Benz(a)anthracene	ND	0.61	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Benzo(a)pyrene	ND	0.89	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Benzo(g,h,i)perylene	ND	0.97	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Benzo(k)fluoranthene	ND	0.71	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Benzoic acid	ND	1.2	9.5	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Benzyl alcohol	ND	0.78	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Bis(2-chloroethoxy)methane	ND	0.73	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Bis(2-chloroethyl)ether	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Bis(2-chloroisopropyl)ether	ND	0.96	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Bis(2-ethylhexyl)phthalate	ND	2.0	4.7	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-BD3
Project: North Drainage Ditch Area
Collection Date: 8/19/2021
Lab ID: 2108B84-016
Matrix: SOIL
Received Date: 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Butyl benzyl phthalate	ND	0.58	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Carbazole	ND	0.83	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
4-Chloro-3-methylphenol	ND	0.80	4.7	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
4-Chloroaniline	ND	0.92	4.7	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2-Chloronaphthalene	ND	0.90	2.4	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
4-Chlorophenyl phenyl ether	ND	0.80	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Chrysene	ND	0.84	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Di-n-butyl phthalate	ND	2.6	3.8	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Di-n-octyl phthalate	ND	1.2	3.8	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Dibenz(a,h)anthracene	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Dibenzofuran	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
1,2-Dichlorobenzene	ND	0.77	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
1,3-Dichlorobenzene	ND	0.68	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
1,4-Dichlorobenzene	ND	0.80	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
3,3´-Dichlorobenzidine	ND	1.4	2.4	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Diethyl phthalate	ND	3.1	4.7	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Dimethyl phthalate	ND	0.88	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2,4-Dichlorophenol	ND	0.77	3.8	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2,4-Dimethylphenol	ND	0.67	2.8	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
4,6-Dinitro-2-methylphenol	ND	0.80	3.8	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2,4-Dinitrophenol	ND	0.48	4.7	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2,4-Dinitrotoluene	ND	1.2	4.7	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2,6-Dinitrotoluene	ND	0.96	4.7	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Fluoranthene	ND	0.77	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Fluorene	ND	0.85	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Hexachlorobenzene	ND	0.84	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Hexachlorobutadiene	ND	0.89	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Hexachloroethane	ND	0.84	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Isophorone	ND	0.77	3.8	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
1-Methylnaphthalene	12	0.87	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2-Methylnaphthalene	18	0.78	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2-Methylphenol	ND	0.80	3.8	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
3+4-Methylphenol	ND	0.78	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
N-Nitrosodi-n-propylamine	ND	0.88	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
N-Nitrosodimethylamine	ND	1.4	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157

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		

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD3
Project: North Drainage Ditch Area **Collection Date:** 8/19/2021
Lab ID: 2108B84-016 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Naphthalene	7.4	0.89	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2-Nitroaniline	ND	0.97	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
4-Nitroaniline	ND	1.2	3.8	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Nitrobenzene	ND	0.78	3.8	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2-Nitrophenol	ND	0.82	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
4-Nitrophenol	ND	0.78	2.4	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Pentachlorophenol	ND	0.82	3.8	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Phenanthrene	ND	0.97	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Phenol	ND	0.73	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Pyrene	ND	0.72	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Pyridine	ND	1.5	3.8	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
1,2,4-Trichlorobenzene	ND	0.87	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2,4,5-Trichlorophenol	ND	0.60	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
2,4,6-Trichlorophenol	ND	0.82	1.9	D	mg/Kg	10	9/7/2021 1:09:38 PM	62157
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/7/2021 1:09:38 PM	62157
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/7/2021 1:09:38 PM	62157
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/7/2021 1:09:38 PM	62157
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/7/2021 1:09:38 PM	62157
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/7/2021 1:09:38 PM	62157
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/7/2021 1:09:38 PM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	4.4	0.026	0.068		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Toluene	0.70	0.018	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Ethylbenzene	9.5	0.033	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.077	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,2,4-Trimethylbenzene	37	0.19	1.4		mg/Kg	50	8/31/2021 3:03:55 PM	R80948
1,3,5-Trimethylbenzene	13	0.031	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,2-Dichloroethane (EDC)	ND	0.031	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.054	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Naphthalene	12	0.051	0.27		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1-Methylnaphthalene	14	1.6	5.5		mg/Kg	50	8/31/2021 3:03:55 PM	R80948
2-Methylnaphthalene	21	1.3	5.5		mg/Kg	50	8/31/2021 3:03:55 PM	R80948
Acetone	ND	0.45	2.1		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Bromobenzene	ND	0.029	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Bromodichloromethane	ND	0.017	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Bromoform	ND	0.033	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Bromomethane	ND	0.23	0.41		mg/Kg	5	8/31/2021 4:48:17 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-BD3
Project: North Drainage Ditch Area
Collection Date: 8/19/2021
Lab ID: 2108B84-016
Matrix: SOIL
Received Date: 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.59	1.4		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Carbon disulfide	ND	0.056	1.4		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Carbon tetrachloride	ND	0.015	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Chlorobenzene	ND	0.025	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Chloroethane	ND	0.051	0.27		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Chloroform	ND	0.019	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Chloromethane	ND	0.048	0.41		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
2-Chlorotoluene	ND	0.018	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
4-Chlorotoluene	ND	0.072	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
cis-1,2-DCE	ND	0.068	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
cis-1,3-Dichloropropene	ND	0.020	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.059	0.27		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Dibromochloromethane	ND	0.022	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Dibromomethane	ND	0.032	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,2-Dichlorobenzene	ND	0.028	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,3-Dichlorobenzene	ND	0.026	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,4-Dichlorobenzene	ND	0.037	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Dichlorodifluoromethane	ND	0.053	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,1-Dichloroethane	ND	0.040	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,1-Dichloroethene	ND	0.029	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,2-Dichloropropane	ND	0.027	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,3-Dichloropropane	ND	0.030	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
2,2-Dichloropropane	ND	0.019	0.27		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,1-Dichloropropene	ND	0.017	0.27		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Hexachlorobutadiene	ND	0.093	0.27		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
2-Hexanone	ND	0.060	1.4		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Isopropylbenzene	1.6	0.025	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
4-Isopropyltoluene	1.4	0.035	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
4-Methyl-2-pentanone	ND	0.16	1.4		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Methylene chloride	ND	0.099	0.41		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
n-Butylbenzene	3.2	0.037	0.41		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
n-Propylbenzene	5.2	0.022	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
sec-Butylbenzene	1.3	0.11	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Styrene	ND	0.019	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
tert-Butylbenzene	ND	0.032	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.020	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.044	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Tetrachloroethene (PCE)	ND	0.037	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
trans-1,2-DCE	ND	0.026	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD3
Project: North Drainage Ditch Area **Collection Date:** 8/19/2021
Lab ID: 2108B84-016 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.032	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,2,3-Trichlorobenzene	ND	0.021	0.27		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,2,4-Trichlorobenzene	ND	0.048	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,1,1-Trichloroethane	ND	0.030	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,1,2-Trichloroethane	ND	0.034	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Trichloroethene (TCE)	ND	0.027	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Trichlorofluoromethane	ND	0.031	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
1,2,3-Trichloropropane	ND	0.058	0.27		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Vinyl chloride	ND	0.026	0.14		mg/Kg	5	8/31/2021 4:48:17 AM	A80915
Xylenes, Total	69	0.72	2.7		mg/Kg	50	8/31/2021 3:03:55 PM	R80948
Surr: Dibromofluoromethane	77.6		70-130		%Rec	5	8/31/2021 4:48:17 AM	A80915
Surr: 1,2-Dichloroethane-d4	77.0		70-130		%Rec	5	8/31/2021 4:48:17 AM	A80915
Surr: Toluene-d8	104		70-130		%Rec	5	8/31/2021 4:48:17 AM	A80915
Surr: 4-Bromofluorobenzene	110		70-130		%Rec	5	8/31/2021 4:48:17 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	940	38	140		mg/Kg	50	8/31/2021 3:03:55 PM	R80948
Surr: BFB	98.6	0	70-130		%Rec	50	8/31/2021 3:03:55 PM	R80948

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (13.5-14')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 7:30:00 AM
Lab ID: 2108B84-017 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	10	4.9	9.9		mg/Kg	1	8/24/2021 1:58:17 PM	62132
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	8/24/2021 1:58:17 PM	62132
Surr: DNOP	128	0	70-130		%Rec	1	8/24/2021 1:58:17 PM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0025	0.031		mg/Kg	1	9/3/2021 10:38:35 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.4	5.1		mg/Kg	2	8/26/2021 8:13:51 PM	62200
Arsenic	ND	2.9	5.1		mg/Kg	2	8/26/2021 8:13:51 PM	62200
Barium	350	0.12	0.21		mg/Kg	2	8/26/2021 8:13:51 PM	62200
Beryllium	1.3	0.060	0.31		mg/Kg	2	8/26/2021 8:13:51 PM	62200
Cadmium	ND	0.10	0.21		mg/Kg	2	8/26/2021 8:13:51 PM	62200
Chromium	13	0.31	0.62		mg/Kg	2	8/26/2021 8:13:51 PM	62200
Cobalt	5.5	0.12	0.62		mg/Kg	2	8/26/2021 8:13:51 PM	62200
Iron	20000	260	260		mg/Kg	100	8/30/2021 4:50:12 PM	62200
Lead	1.8	0.55	0.62		mg/Kg	2	8/30/2021 4:44:52 PM	62200
Manganese	830	1.7	2.1		mg/Kg	10	8/30/2021 4:48:32 PM	62200
Nickel	13	0.40	1.0		mg/Kg	2	8/26/2021 8:13:51 PM	62200
Selenium	ND	4.5	5.1		mg/Kg	2	8/30/2021 4:44:52 PM	62200
Silver	ND	0.30	0.51		mg/Kg	2	8/26/2021 8:13:51 PM	62200
Vanadium	13	0.23	5.1		mg/Kg	2	8/26/2021 8:13:51 PM	62200
Zinc	18	2.8	5.1		mg/Kg	2	8/26/2021 8:13:51 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.85	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Acenaphthylene	ND	0.86	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Aniline	ND	0.66	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Anthracene	ND	0.86	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Azobenzene	ND	0.95	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Benz(a)anthracene	ND	0.61	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Benzo(a)pyrene	ND	0.90	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Benzo(g,h,i)perylene	ND	0.97	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Benzo(k)fluoranthene	ND	0.72	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Benzoic acid	ND	1.2	9.5	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Benzyl alcohol	ND	0.78	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Bis(2-chloroethoxy)methane	ND	0.73	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Bis(2-chloroethyl)ether	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Bis(2-chloroisopropyl)ether	ND	0.97	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Bis(2-ethylhexyl)phthalate	ND	2.0	4.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (13.5-14')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 7:30:00 AM
Lab ID: 2108B84-017 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Butyl benzyl phthalate	ND	0.58	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Carbazole	ND	0.84	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
4-Chloro-3-methylphenol	ND	0.80	4.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
4-Chloroaniline	ND	0.93	4.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2-Chloronaphthalene	ND	0.90	2.4	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
4-Chlorophenyl phenyl ether	ND	0.81	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Chrysene	ND	0.84	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Di-n-butyl phthalate	ND	2.7	3.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Di-n-octyl phthalate	ND	1.2	3.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Dibenz(a,h)anthracene	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Dibenzofuran	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
1,2-Dichlorobenzene	ND	0.77	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
1,3-Dichlorobenzene	ND	0.68	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
1,4-Dichlorobenzene	ND	0.81	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
3,3´-Dichlorobenzidine	ND	1.4	2.4	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Diethyl phthalate	ND	3.1	4.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Dimethyl phthalate	ND	0.88	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2,4-Dichlorophenol	ND	0.77	3.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2,4-Dimethylphenol	ND	0.68	2.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
4,6-Dinitro-2-methylphenol	ND	0.80	3.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2,4-Dinitrophenol	ND	0.48	4.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2,4-Dinitrotoluene	ND	1.2	4.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2,6-Dinitrotoluene	ND	0.97	4.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Fluoranthene	ND	0.77	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Fluorene	ND	0.85	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Hexachlorobenzene	ND	0.85	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Hexachlorobutadiene	ND	0.89	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Hexachloroethane	ND	0.84	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Isophorone	ND	0.78	3.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
1-Methylnaphthalene	ND	0.88	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2-Methylnaphthalene	ND	0.79	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2-Methylphenol	ND	0.80	3.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
3+4-Methylphenol	ND	0.79	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
N-Nitrosodi-n-propylamine	ND	0.88	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
N-Nitrosodimethylamine	ND	1.4	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157

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		

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (13.5-14')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 7:30:00 AM
Lab ID: 2108B84-017 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Naphthalene	ND	0.90	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2-Nitroaniline	ND	0.97	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
4-Nitroaniline	ND	1.2	3.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Nitrobenzene	ND	0.78	3.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2-Nitrophenol	ND	0.82	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
4-Nitrophenol	ND	0.78	2.4	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Pentachlorophenol	ND	0.82	3.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Phenanthrene	ND	0.97	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Phenol	ND	0.73	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Pyrene	ND	0.72	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Pyridine	ND	1.5	3.8	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
1,2,4-Trichlorobenzene	ND	0.87	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2,4,5-Trichlorophenol	ND	0.61	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
2,4,6-Trichlorophenol	ND	0.82	1.9	D	mg/Kg	10	9/7/2021 1:51:14 PM	62157
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/7/2021 1:51:14 PM	62157
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/7/2021 1:51:14 PM	62157
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/7/2021 1:51:14 PM	62157
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/7/2021 1:51:14 PM	62157
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/7/2021 1:51:14 PM	62157
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/7/2021 1:51:14 PM	62157
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	0.013	0.0052	0.014	J	mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Toluene	ND	0.0035	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Ethylbenzene	ND	0.0066	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.015	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,2,4-Trimethylbenzene	0.0087	0.0038	0.027	J	mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,3,5-Trimethylbenzene	ND	0.0061	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,2-Dichloroethane (EDC)	0.020	0.0062	0.027	J	mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.011	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Naphthalene	0.017	0.010	0.054	J	mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1-Methylnaphthalene	ND	0.031	0.11		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
2-Methylnaphthalene	0.039	0.025	0.11	J	mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Acetone	ND	0.089	0.41		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Bromobenzene	ND	0.0058	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Bromodichloromethane	ND	0.0035	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Bromoform	ND	0.0065	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Bromomethane	ND	0.045	0.081		mg/Kg	1	8/31/2021 5:45:26 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-1 (13.5-14')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 7:30:00 AM
Lab ID: 2108B84-017 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.12	0.27		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Carbon disulfide	ND	0.011	0.27		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Carbon tetrachloride	ND	0.0030	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Chlorobenzene	ND	0.0049	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Chloroethane	ND	0.010	0.054		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Chloroform	ND	0.0039	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Chloromethane	ND	0.0095	0.081		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
2-Chlorotoluene	ND	0.0036	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
4-Chlorotoluene	ND	0.014	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
cis-1,2-DCE	ND	0.013	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
cis-1,3-Dichloropropene	ND	0.0040	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.012	0.054		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Dibromochloromethane	ND	0.0043	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Dibromomethane	ND	0.0063	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,2-Dichlorobenzene	ND	0.0056	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,3-Dichlorobenzene	ND	0.0051	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,4-Dichlorobenzene	ND	0.0073	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Dichlorodifluoromethane	ND	0.010	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,1-Dichloroethane	ND	0.0079	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,1-Dichloroethene	ND	0.0058	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,2-Dichloropropane	ND	0.0053	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,3-Dichloropropane	ND	0.0060	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
2,2-Dichloropropane	ND	0.0039	0.054		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,1-Dichloropropene	ND	0.0033	0.054		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Hexachlorobutadiene	ND	0.018	0.054		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
2-Hexanone	ND	0.012	0.27		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Isopropylbenzene	ND	0.0050	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
4-Isopropyltoluene	ND	0.0070	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
4-Methyl-2-pentanone	ND	0.032	0.27		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Methylene chloride	ND	0.020	0.081		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
n-Butylbenzene	ND	0.0073	0.081		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
n-Propylbenzene	ND	0.0044	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
sec-Butylbenzene	ND	0.022	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Styrene	ND	0.0037	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
tert-Butylbenzene	ND	0.0063	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0040	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.0088	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Tetrachloroethene (PCE)	ND	0.0074	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
trans-1,2-DCE	ND	0.0052	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915

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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P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

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Project: North Drainage Ditch Area
Collection Date: 8/19/2021 7:30:00 AM
Lab ID: 2108B84-017 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0064	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,2,3-Trichlorobenzene	ND	0.0042	0.054		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,2,4-Trichlorobenzene	ND	0.0094	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,1,1-Trichloroethane	ND	0.0060	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,1,2-Trichloroethane	ND	0.0068	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Trichloroethene (TCE)	ND	0.0053	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Trichlorofluoromethane	ND	0.0062	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
1,2,3-Trichloropropane	ND	0.011	0.054		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Vinyl chloride	ND	0.0052	0.027		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Xylenes, Total	ND	0.014	0.054		mg/Kg	1	8/31/2021 5:45:26 AM	A80915
Surr: Dibromofluoromethane	106		70-130		%Rec	1	8/31/2021 5:45:26 AM	A80915
Surr: 1,2-Dichloroethane-d4	80.5		70-130		%Rec	1	8/31/2021 5:45:26 AM	A80915
Surr: Toluene-d8	95.6		70-130		%Rec	1	8/31/2021 5:45:26 AM	A80915
Surr: 4-Bromofluorobenzene	92.2		70-130		%Rec	1	8/31/2021 5:45:26 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.75	2.7		mg/Kg	1	8/31/2021 5:45:26 AM	B80915
Surr: BFB	95.8	0	70-130		%Rec	1	8/31/2021 5:45:26 AM	B80915

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Analytical Report
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Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 8:35:00 AM
Lab ID: 2108B84-018 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	35	4.8	9.8		mg/Kg	1	8/25/2021 10:57:13 AM	62132
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	8/25/2021 10:57:13 AM	62132
Surr: DNOP	124	0	70-130		%Rec	1	8/25/2021 10:57:13 AM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0061	0.0025	0.032	J	mg/Kg	1	9/3/2021 10:40:44 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/26/2021 8:16:02 PM	62200
Arsenic	ND	2.8	4.9		mg/Kg	2	8/26/2021 8:16:02 PM	62200
Barium	270	0.12	0.20		mg/Kg	2	8/26/2021 8:16:02 PM	62200
Beryllium	1.4	0.057	0.29		mg/Kg	2	8/26/2021 8:16:02 PM	62200
Cadmium	ND	0.098	0.20		mg/Kg	2	8/26/2021 8:16:02 PM	62200
Chromium	15	0.29	0.59		mg/Kg	2	8/26/2021 8:16:02 PM	62200
Cobalt	6.4	0.12	0.59		mg/Kg	2	8/26/2021 8:16:02 PM	62200
Iron	20000	240	240		mg/Kg	100	8/30/2021 4:53:34 PM	62200
Lead	5.2	0.52	0.59		mg/Kg	2	8/30/2021 4:51:49 PM	62200
Manganese	400	0.32	0.39		mg/Kg	2	8/26/2021 8:16:02 PM	62200
Nickel	14	0.39	0.98		mg/Kg	2	8/26/2021 8:16:02 PM	62200
Selenium	ND	4.3	4.9		mg/Kg	2	8/30/2021 4:51:49 PM	62200
Silver	ND	0.28	0.49		mg/Kg	2	8/26/2021 8:16:02 PM	62200
Vanadium	24	0.22	4.9		mg/Kg	2	8/26/2021 8:16:02 PM	62200
Zinc	23	2.6	4.9		mg/Kg	2	8/26/2021 8:16:02 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.87	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Acenaphthylene	ND	0.88	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Aniline	ND	0.68	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Anthracene	ND	0.88	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Azobenzene	ND	0.97	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Benz(a)anthracene	ND	0.63	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Benzo(a)pyrene	ND	0.92	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Benzo(g,h,i)perylene	ND	0.99	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Benzo(k)fluoranthene	ND	0.73	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Benzoic acid	ND	1.2	9.7	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Benzyl alcohol	ND	0.80	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Bis(2-chloroethoxy)methane	ND	0.75	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Bis(2-chloroethyl)ether	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Bis(2-chloroisopropyl)ether	ND	0.99	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187

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Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 8:35:00 AM
Lab ID: 2108B84-018 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Butyl benzyl phthalate	ND	0.59	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Carbazole	ND	0.86	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
4-Chloro-3-methylphenol	ND	0.82	4.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
4-Chloroaniline	ND	0.95	4.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2-Chloronaphthalene	ND	0.92	2.4	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
4-Chlorophenyl phenyl ether	ND	0.83	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Chrysene	ND	0.86	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Di-n-octyl phthalate	ND	1.3	3.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Dibenz(a,h)anthracene	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Dibenzofuran	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
1,2-Dichlorobenzene	ND	0.79	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
1,3-Dichlorobenzene	ND	0.69	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
1,4-Dichlorobenzene	ND	0.83	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
3,3´-Dichlorobenzidine	ND	1.5	2.4	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Dimethyl phthalate	ND	0.90	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2,4-Dichlorophenol	ND	0.79	3.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2,4-Dimethylphenol	ND	0.69	2.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
4,6-Dinitro-2-methylphenol	ND	0.82	3.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2,4-Dinitrophenol	ND	0.49	4.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2,6-Dinitrotoluene	ND	0.99	4.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Fluoranthene	ND	0.79	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Fluorene	ND	0.87	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Hexachlorobenzene	ND	0.87	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Hexachlorobutadiene	ND	0.91	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Hexachloroethane	ND	0.86	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Isophorone	ND	0.80	3.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
1-Methylnaphthalene	ND	0.90	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2-Methylnaphthalene	ND	0.81	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2-Methylphenol	ND	0.82	3.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
3+4-Methylphenol	ND	0.81	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
N-Nitrosodi-n-propylamine	ND	0.90	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
N-Nitrosodimethylamine	ND	1.5	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187

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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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EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Naphthalene	ND	0.92	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2-Nitroaniline	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
4-Nitroaniline	ND	1.3	3.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Nitrobenzene	ND	0.80	3.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2-Nitrophenol	ND	0.84	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
4-Nitrophenol	ND	0.80	2.4	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Pentachlorophenol	ND	0.84	3.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Phenanthrene	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Phenol	ND	0.75	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Pyrene	ND	0.74	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Pyridine	ND	1.6	3.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
1,2,4-Trichlorobenzene	ND	0.89	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2,4,5-Trichlorophenol	ND	0.62	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
2,4,6-Trichlorophenol	ND	0.84	1.9	D	mg/Kg	10	8/27/2021 5:46:41 PM	62187
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	8/27/2021 5:46:41 PM	62187
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	8/27/2021 5:46:41 PM	62187
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	8/27/2021 5:46:41 PM	62187
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	8/27/2021 5:46:41 PM	62187
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	8/27/2021 5:46:41 PM	62187
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	8/27/2021 5:46:41 PM	62187
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0052	0.014		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Toluene	ND	0.0035	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Ethylbenzene	ND	0.0066	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.015	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,2,4-Trimethylbenzene	0.0067	0.0038	0.027	J	mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,3,5-Trimethylbenzene	ND	0.0061	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,2-Dichloroethane (EDC)	ND	0.0062	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.011	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Naphthalene	ND	0.010	0.054		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1-Methylnaphthalene	ND	0.031	0.11		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
2-Methylnaphthalene	ND	0.025	0.11		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Acetone	ND	0.088	0.41		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Bromobenzene	ND	0.0057	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Bromodichloromethane	ND	0.0034	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Bromoform	ND	0.0065	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Bromomethane	ND	0.045	0.081		mg/Kg	1	8/31/2021 6:42:36 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 8:35:00 AM
Lab ID: 2108B84-018 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.12	0.27		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Carbon disulfide	ND	0.011	0.27		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Carbon tetrachloride	ND	0.0030	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Chlorobenzene	ND	0.0049	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Chloroethane	ND	0.010	0.054		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Chloroform	ND	0.0038	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Chloromethane	ND	0.0095	0.081		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
2-Chlorotoluene	ND	0.0036	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
4-Chlorotoluene	ND	0.014	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
cis-1,2-DCE	ND	0.013	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
cis-1,3-Dichloropropene	ND	0.0040	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.012	0.054		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Dibromochloromethane	ND	0.0043	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Dibromomethane	ND	0.0063	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,2-Dichlorobenzene	ND	0.0056	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,3-Dichlorobenzene	ND	0.0051	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,4-Dichlorobenzene	ND	0.0072	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Dichlorodifluoromethane	ND	0.010	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,1-Dichloroethane	ND	0.0079	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,1-Dichloroethene	ND	0.0058	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,2-Dichloropropane	ND	0.0053	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,3-Dichloropropane	ND	0.0059	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
2,2-Dichloropropane	ND	0.0038	0.054		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,1-Dichloropropene	ND	0.0033	0.054		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Hexachlorobutadiene	ND	0.018	0.054		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
2-Hexanone	ND	0.012	0.27		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Isopropylbenzene	ND	0.0050	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
4-Isopropyltoluene	ND	0.0070	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
4-Methyl-2-pentanone	ND	0.032	0.27		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Methylene chloride	ND	0.020	0.081		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
n-Butylbenzene	ND	0.0072	0.081		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
n-Propylbenzene	ND	0.0044	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
sec-Butylbenzene	ND	0.022	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Styrene	ND	0.0037	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
tert-Butylbenzene	ND	0.0063	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0040	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.0087	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Tetrachloroethene (PCE)	ND	0.0074	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
trans-1,2-DCE	ND	0.0052	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 8:35:00 AM
Lab ID: 2108B84-018 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0063	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,2,3-Trichlorobenzene	ND	0.0042	0.054		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,2,4-Trichlorobenzene	ND	0.0094	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,1,1-Trichloroethane	ND	0.0060	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,1,2-Trichloroethane	ND	0.0068	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Trichloroethene (TCE)	ND	0.0053	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Trichlorofluoromethane	ND	0.0061	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
1,2,3-Trichloropropane	ND	0.011	0.054		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Vinyl chloride	ND	0.0052	0.027		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Xylenes, Total	ND	0.014	0.054		mg/Kg	1	8/31/2021 6:42:36 AM	A80915
Surr: Dibromofluoromethane	110		70-130		%Rec	1	8/31/2021 6:42:36 AM	A80915
Surr: 1,2-Dichloroethane-d4	87.5		70-130		%Rec	1	8/31/2021 6:42:36 AM	A80915
Surr: Toluene-d8	101		70-130		%Rec	1	8/31/2021 6:42:36 AM	A80915
Surr: 4-Bromofluorobenzene	97.5		70-130		%Rec	1	8/31/2021 6:42:36 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.75	2.7		mg/Kg	1	8/31/2021 6:42:36 AM	B80915
Surr: BFB	104	0	70-130		%Rec	1	8/31/2021 6:42:36 AM	B80915

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 8:50:00 AM
Lab ID: 2108B84-019 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.8	9.7		mg/Kg	1	8/24/2021 2:45:32 PM	62132
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	8/24/2021 2:45:32 PM	62132
Surr: DNOP	132	0	70-130	S	%Rec	1	8/24/2021 2:45:32 PM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0032	0.0025	0.031	J	mg/Kg	1	9/3/2021 10:42:54 AM	62361
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.4	5.1		mg/Kg	2	8/26/2021 8:18:18 PM	62200
Arsenic	ND	2.9	5.1		mg/Kg	2	8/26/2021 8:18:18 PM	62200
Barium	370	0.12	0.20		mg/Kg	2	8/26/2021 8:18:18 PM	62200
Beryllium	1.0	0.060	0.31		mg/Kg	2	8/26/2021 8:18:18 PM	62200
Cadmium	ND	0.10	0.20		mg/Kg	2	8/26/2021 8:18:18 PM	62200
Chromium	11	0.31	0.61		mg/Kg	2	8/26/2021 8:18:18 PM	62200
Cobalt	4.9	0.12	0.61		mg/Kg	2	8/26/2021 8:18:18 PM	62200
Iron	15000	250	250		mg/Kg	100	8/30/2021 4:56:51 PM	62200
Lead	3.2	0.55	0.61		mg/Kg	2	8/30/2021 4:55:12 PM	62200
Manganese	460	0.34	0.41		mg/Kg	2	8/26/2021 8:18:18 PM	62200
Nickel	10	0.40	1.0		mg/Kg	2	8/26/2021 8:18:18 PM	62200
Selenium	ND	4.5	5.1		mg/Kg	2	8/30/2021 4:55:12 PM	62200
Silver	ND	0.30	0.51		mg/Kg	2	8/26/2021 8:18:18 PM	62200
Vanadium	20	0.23	5.1		mg/Kg	2	8/26/2021 8:18:18 PM	62200
Zinc	16	2.7	5.1		mg/Kg	2	8/26/2021 8:18:18 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Aniline	ND	0.068	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Anthracene	ND	0.089	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Azobenzene	ND	0.098	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Benzo(a)pyrene	ND	0.093	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Benzoic acid	ND	0.12	0.98		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Benzyl alcohol	ND	0.081	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	8/27/2021 6:27:59 PM	62187

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 8:50:00 AM
Lab ID: 2108B84-019 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Carbazole	ND	0.086	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	8/27/2021 6:27:59 PM	62187
4-Chloroaniline	ND	0.096	0.49		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2-Chloronaphthalene	ND	0.093	0.25		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Chrysene	ND	0.087	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2,4-Dimethylphenol	ND	0.070	0.29		mg/Kg	1	8/27/2021 6:27:59 PM	62187
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Fluoranthene	ND	0.079	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Fluorene	ND	0.088	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Isophorone	ND	0.080	0.39		mg/Kg	1	8/27/2021 6:27:59 PM	62187
1-Methylnaphthalene	ND	0.090	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2-Methylphenol	ND	0.083	0.39		mg/Kg	1	8/27/2021 6:27:59 PM	62187
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 8:50:00 AM
Lab ID: 2108B84-019 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Naphthalene	ND	0.093	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Nitrobenzene	ND	0.081	0.39		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2-Nitrophenol	ND	0.085	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
4-Nitrophenol	ND	0.081	0.25		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Phenanthrene	ND	0.10	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Phenol	ND	0.076	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Pyrene	ND	0.074	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Pyridine	ND	0.16	0.39		mg/Kg	1	8/27/2021 6:27:59 PM	62187
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
2,4,6-Trichlorophenol	ND	0.085	0.20		mg/Kg	1	8/27/2021 6:27:59 PM	62187
Surr: 2-Fluorophenol	69.0		20.3-74.1		%Rec	1	8/27/2021 6:27:59 PM	62187
Surr: Phenol-d5	87.6		23.1-92.7		%Rec	1	8/27/2021 6:27:59 PM	62187
Surr: 2,4,6-Tribromophenol	78.6		17.3-122		%Rec	1	8/27/2021 6:27:59 PM	62187
Surr: Nitrobenzene-d5	65.2		24.7-73.2		%Rec	1	8/27/2021 6:27:59 PM	62187
Surr: 2-Fluorobiphenyl	71.8		21.5-90.1		%Rec	1	8/27/2021 6:27:59 PM	62187
Surr: 4-Terphenyl-d14	108		15-140		%Rec	1	8/27/2021 6:27:59 PM	62187
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0072	0.019		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Toluene	ND	0.0048	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Ethylbenzene	ND	0.0091	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.021	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,2,4-Trimethylbenzene	ND	0.0053	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,3,5-Trimethylbenzene	ND	0.0084	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,2-Dichloroethane (EDC)	ND	0.0086	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.015	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Naphthalene	ND	0.014	0.075		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1-Methylnaphthalene	ND	0.043	0.15		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
2-Methylnaphthalene	ND	0.035	0.15		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Acetone	ND	0.12	0.56		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Bromobenzene	ND	0.0080	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Bromodichloromethane	ND	0.0048	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Bromoform	ND	0.0090	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Bromomethane	ND	0.062	0.11		mg/Kg	1	8/31/2021 7:11:10 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 8:50:00 AM
Lab ID: 2108B84-019 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.16	0.38		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Carbon disulfide	ND	0.015	0.38		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Carbon tetrachloride	ND	0.0042	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Chlorobenzene	ND	0.0067	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Chloroethane	ND	0.014	0.075		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Chloroform	ND	0.0053	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Chloromethane	ND	0.013	0.11		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
2-Chlorotoluene	ND	0.0050	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
4-Chlorotoluene	ND	0.020	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
cis-1,2-DCE	ND	0.019	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
cis-1,3-Dichloropropene	ND	0.0056	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.016	0.075		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Dibromochloromethane	ND	0.0060	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Dibromomethane	ND	0.0088	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,2-Dichlorobenzene	ND	0.0078	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,3-Dichlorobenzene	ND	0.0071	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,4-Dichlorobenzene	ND	0.010	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Dichlorodifluoromethane	ND	0.014	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,1-Dichloroethane	ND	0.011	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,1-Dichloroethene	ND	0.0080	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,2-Dichloropropane	ND	0.0073	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,3-Dichloropropane	ND	0.0082	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
2,2-Dichloropropane	ND	0.0053	0.075		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,1-Dichloropropene	ND	0.0045	0.075		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Hexachlorobutadiene	ND	0.026	0.075		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
2-Hexanone	ND	0.016	0.38		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Isopropylbenzene	ND	0.0070	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
4-Isopropyltoluene	ND	0.0097	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
4-Methyl-2-pentanone	ND	0.044	0.38		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Methylene chloride	ND	0.027	0.11		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
n-Butylbenzene	ND	0.010	0.11		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
n-Propylbenzene	ND	0.0061	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
sec-Butylbenzene	ND	0.031	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Styrene	ND	0.0051	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
tert-Butylbenzene	ND	0.0087	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0055	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.012	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Tetrachloroethene (PCE)	ND	0.010	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
trans-1,2-DCE	ND	0.0072	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 8:50:00 AM
Lab ID: 2108B84-019 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0088	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,2,3-Trichlorobenzene	ND	0.0058	0.075		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,2,4-Trichlorobenzene	ND	0.013	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,1,1-Trichloroethane	ND	0.0083	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,1,2-Trichloroethane	ND	0.0094	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Trichloroethene (TCE)	ND	0.0074	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Trichlorofluoromethane	ND	0.0085	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
1,2,3-Trichloropropane	ND	0.016	0.075		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Vinyl chloride	ND	0.0072	0.038		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Xylenes, Total	ND	0.020	0.075		mg/Kg	1	8/31/2021 7:11:10 AM	A80915
Surr: Dibromofluoromethane	112		70-130		%Rec	1	8/31/2021 7:11:10 AM	A80915
Surr: 1,2-Dichloroethane-d4	84.9		70-130		%Rec	1	8/31/2021 7:11:10 AM	A80915
Surr: Toluene-d8	97.6		70-130		%Rec	1	8/31/2021 7:11:10 AM	A80915
Surr: 4-Bromofluorobenzene	98.6		70-130		%Rec	1	8/31/2021 7:11:10 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	1.0	3.8		mg/Kg	1	8/31/2021 7:11:10 AM	B80915
Surr: BFB	99.4	0	70-130		%Rec	1	8/31/2021 7:11:10 AM	B80915

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (33.5-34')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 10:50:00 AM
Lab ID: 2108B84-020 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.6	9.2		mg/Kg	1	8/25/2021 10:33:21 AM	62132
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/25/2021 10:33:21 AM	62132
Surr: DNOP	117	0	70-130		%Rec	1	8/25/2021 10:33:21 AM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0026	0.033		mg/Kg	1	9/3/2021 10:45:04 AM	62362
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.8		mg/Kg	2	8/26/2021 8:20:34 PM	62200
Arsenic	ND	2.7	4.8		mg/Kg	2	8/26/2021 8:20:34 PM	62200
Barium	60	0.12	0.19		mg/Kg	2	8/26/2021 8:20:34 PM	62200
Beryllium	1.7	0.056	0.29		mg/Kg	2	8/26/2021 8:20:34 PM	62200
Cadmium	ND	0.097	0.19		mg/Kg	2	8/26/2021 8:20:34 PM	62200
Chromium	17	0.29	0.58		mg/Kg	2	8/26/2021 8:20:34 PM	62200
Cobalt	5.9	0.12	0.58		mg/Kg	2	8/26/2021 8:20:34 PM	62200
Iron	25000	480	480		mg/Kg	200	8/31/2021 3:33:45 PM	62200
Lead	2.4	0.52	0.58		mg/Kg	2	8/30/2021 5:05:42 PM	62200
Manganese	200	0.32	0.39		mg/Kg	2	8/26/2021 8:20:34 PM	62200
Nickel	15	0.38	0.97		mg/Kg	2	8/26/2021 8:20:34 PM	62200
Selenium	ND	4.2	4.8		mg/Kg	2	8/30/2021 5:05:42 PM	62200
Silver	ND	0.28	0.48		mg/Kg	2	8/26/2021 8:20:34 PM	62200
Vanadium	47	0.22	4.8		mg/Kg	2	8/26/2021 8:20:34 PM	62200
Zinc	24	2.6	4.8		mg/Kg	2	8/26/2021 8:20:34 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.87	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Acenaphthylene	ND	0.88	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Aniline	ND	0.67	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Anthracene	ND	0.88	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Azobenzene	ND	0.97	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Benz(a)anthracene	ND	0.63	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Benzo(a)pyrene	ND	0.92	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Benzo(g,h,i)perylene	ND	0.99	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Benzo(k)fluoranthene	ND	0.73	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Benzoic acid	ND	1.2	9.7	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Benzyl alcohol	ND	0.80	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Bis(2-chloroethoxy)methane	ND	0.74	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Bis(2-chloroethyl)ether	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Bis(2-chloroisopropyl)ether	ND	0.99	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (33.5-34')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 10:50:00 AM
Lab ID: 2108B84-020 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Butyl benzyl phthalate	ND	0.59	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Carbazole	ND	0.86	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
4-Chloro-3-methylphenol	ND	0.82	4.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
4-Chloroaniline	ND	0.95	4.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2-Chloronaphthalene	ND	0.92	2.4	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
4-Chlorophenyl phenyl ether	ND	0.83	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Chrysene	ND	0.86	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Di-n-octyl phthalate	ND	1.3	3.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Dibenz(a,h)anthracene	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Dibenzofuran	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
1,2-Dichlorobenzene	ND	0.79	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
1,3-Dichlorobenzene	ND	0.69	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
1,4-Dichlorobenzene	ND	0.82	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
3,3´-Dichlorobenzidine	ND	1.5	2.4	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Dimethyl phthalate	ND	0.90	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2,4-Dichlorophenol	ND	0.79	3.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2,4-Dimethylphenol	ND	0.69	2.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
4,6-Dinitro-2-methylphenol	ND	0.82	3.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2,4-Dinitrophenol	ND	0.49	4.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2,6-Dinitrotoluene	ND	0.99	4.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Fluoranthene	ND	0.79	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Fluorene	ND	0.87	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Hexachlorobenzene	ND	0.87	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Hexachlorobutadiene	ND	0.91	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Hexachloroethane	ND	0.86	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Isophorone	ND	0.79	3.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
1-Methylnaphthalene	ND	0.90	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2-Methylnaphthalene	ND	0.80	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2-Methylphenol	ND	0.82	3.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
3+4-Methylphenol	ND	0.80	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
N-Nitrosodi-n-propylamine	ND	0.90	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
N-Nitrosodimethylamine	ND	1.4	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (33.5-34')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 10:50:00 AM
Lab ID: 2108B84-020 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Naphthalene	ND	0.92	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2-Nitroaniline	ND	1.0	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
4-Nitroaniline	ND	1.2	3.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Nitrobenzene	ND	0.80	3.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2-Nitrophenol	ND	0.84	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
4-Nitrophenol	ND	0.80	2.4	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Pentachlorophenol	ND	0.84	3.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Phenanthrene	ND	0.99	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Phenol	ND	0.75	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Pyrene	ND	0.74	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Pyridine	ND	1.6	3.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
1,2,4-Trichlorobenzene	ND	0.89	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2,4,5-Trichlorophenol	ND	0.62	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
2,4,6-Trichlorophenol	ND	0.84	1.9	D	mg/Kg	10	8/27/2021 7:09:16 PM	62187
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	8/27/2021 7:09:16 PM	62187
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	8/27/2021 7:09:16 PM	62187
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	8/27/2021 7:09:16 PM	62187
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	8/27/2021 7:09:16 PM	62187
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	8/27/2021 7:09:16 PM	62187
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	8/27/2021 7:09:16 PM	62187
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0060	0.016		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Toluene	ND	0.0040	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Ethylbenzene	ND	0.0076	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.018	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,2,4-Trimethylbenzene	ND	0.0044	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,3,5-Trimethylbenzene	ND	0.0070	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,2-Dichloroethane (EDC)	ND	0.0071	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.012	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Naphthalene	ND	0.012	0.062		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1-Methylnaphthalene	ND	0.036	0.12		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
2-Methylnaphthalene	ND	0.029	0.12		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Acetone	ND	0.10	0.47		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Bromobenzene	ND	0.0066	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Bromodichloromethane	ND	0.0039	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Bromoform	ND	0.0075	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Bromomethane	ND	0.051	0.093		mg/Kg	1	8/31/2021 7:39:48 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (33.5-34')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 10:50:00 AM
Lab ID: 2108B84-020 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.13	0.31		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Carbon disulfide	ND	0.013	0.31		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Carbon tetrachloride	ND	0.0035	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Chlorobenzene	ND	0.0056	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Chloroethane	ND	0.012	0.062		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Chloroform	ND	0.0044	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Chloromethane	ND	0.011	0.093		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
2-Chlorotoluene	ND	0.0042	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
4-Chlorotoluene	ND	0.016	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
cis-1,2-DCE	ND	0.015	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
cis-1,3-Dichloropropene	ND	0.0046	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.013	0.062		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Dibromochloromethane	ND	0.0050	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Dibromomethane	ND	0.0072	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,2-Dichlorobenzene	ND	0.0064	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,3-Dichlorobenzene	ND	0.0059	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,4-Dichlorobenzene	ND	0.0083	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Dichlorodifluoromethane	ND	0.012	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,1-Dichloroethane	ND	0.0090	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,1-Dichloroethene	ND	0.0067	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,2-Dichloropropane	ND	0.0060	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,3-Dichloropropane	ND	0.0068	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
2,2-Dichloropropane	ND	0.0044	0.062		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,1-Dichloropropene	ND	0.0037	0.062		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Hexachlorobutadiene	ND	0.021	0.062		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
2-Hexanone	ND	0.014	0.31		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Isopropylbenzene	ND	0.0058	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
4-Isopropyltoluene	ND	0.0080	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
4-Methyl-2-pentanone	ND	0.036	0.31		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Methylene chloride	ND	0.022	0.093		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
n-Butylbenzene	ND	0.0083	0.093		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
n-Propylbenzene	ND	0.0050	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
sec-Butylbenzene	ND	0.026	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Styrene	ND	0.0042	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
tert-Butylbenzene	ND	0.0072	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0046	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.010	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Tetrachloroethene (PCE)	ND	0.0085	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
trans-1,2-DCE	ND	0.0060	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-3 (33.5-34')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 10:50:00 AM
Lab ID: 2108B84-020 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0073	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,2,3-Trichlorobenzene	ND	0.0048	0.062		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,2,4-Trichlorobenzene	ND	0.011	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,1,1-Trichloroethane	ND	0.0068	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,1,2-Trichloroethane	ND	0.0078	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Trichloroethene (TCE)	ND	0.0061	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Trichlorofluoromethane	ND	0.0070	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
1,2,3-Trichloropropane	ND	0.013	0.062		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Vinyl chloride	ND	0.0059	0.031		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Xylenes, Total	ND	0.016	0.062		mg/Kg	1	8/31/2021 7:39:48 AM	A80915
Surr: Dibromofluoromethane	110		70-130		%Rec	1	8/31/2021 7:39:48 AM	A80915
Surr: 1,2-Dichloroethane-d4	88.8		70-130		%Rec	1	8/31/2021 7:39:48 AM	A80915
Surr: Toluene-d8	96.3		70-130		%Rec	1	8/31/2021 7:39:48 AM	A80915
Surr: 4-Bromofluorobenzene	93.8		70-130		%Rec	1	8/31/2021 7:39:48 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.86	3.1		mg/Kg	1	8/31/2021 7:39:48 AM	B80915
Surr: BFB	98.8	0	70-130		%Rec	1	8/31/2021 7:39:48 AM	B80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 11:50:00 AM
Lab ID: 2108B84-021 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	8.4	4.6	9.3	J	mg/Kg	1	8/24/2021 10:24:12 AM	62136
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/24/2021 10:24:12 AM	62136
Surr: DNOP	122	0	70-130		%Rec	1	8/24/2021 10:24:12 AM	62136
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0056	0.0025	0.032	J	mg/Kg	1	9/3/2021 10:47:14 AM	62362
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.4	5.2		mg/Kg	2	8/26/2021 8:22:51 PM	62200
Arsenic	ND	2.9	5.2		mg/Kg	2	8/26/2021 8:22:51 PM	62200
Barium	390	0.12	0.21		mg/Kg	2	8/26/2021 8:22:51 PM	62200
Beryllium	1.5	0.060	0.31		mg/Kg	2	8/26/2021 8:22:51 PM	62200
Cadmium	ND	0.10	0.21		mg/Kg	2	8/26/2021 8:22:51 PM	62200
Chromium	15	0.31	0.62		mg/Kg	2	8/26/2021 8:22:51 PM	62200
Cobalt	6.8	0.12	0.62		mg/Kg	2	8/26/2021 8:22:51 PM	62200
Iron	21000	260	260		mg/Kg	100	8/30/2021 5:10:59 PM	62200
Lead	6.1	0.55	0.62		mg/Kg	2	8/30/2021 5:09:12 PM	62200
Manganese	390	0.34	0.41		mg/Kg	2	8/26/2021 8:22:51 PM	62200
Nickel	14	0.41	1.0		mg/Kg	2	8/26/2021 8:22:51 PM	62200
Selenium	ND	4.5	5.2		mg/Kg	2	8/30/2021 5:09:12 PM	62200
Silver	ND	0.30	0.52		mg/Kg	2	8/26/2021 8:22:51 PM	62200
Vanadium	24	0.23	5.2		mg/Kg	2	8/26/2021 8:22:51 PM	62200
Zinc	21	2.8	5.2		mg/Kg	2	8/26/2021 8:22:51 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.88	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Acenaphthylene	ND	0.89	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Aniline	ND	0.68	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Anthracene	ND	0.89	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Azobenzene	ND	0.98	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Benz(a)anthracene	ND	0.63	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Benzo(a)pyrene	ND	0.93	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Benzo(b)fluoranthene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Benzo(k)fluoranthene	ND	0.74	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Benzoic acid	ND	1.2	9.8	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Benzyl alcohol	ND	0.81	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Bis(2-chloroethoxy)methane	ND	0.75	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 11:50:00 AM
Lab ID: 2108B84-021 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Butyl benzyl phthalate	ND	0.60	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Carbazole	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
4-Chloro-3-methylphenol	ND	0.83	4.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
4-Chloroaniline	ND	0.96	4.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2-Chloronaphthalene	ND	0.93	2.5	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
4-Chlorophenyl phenyl ether	ND	0.84	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Chrysene	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Di-n-octyl phthalate	ND	1.3	3.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
1,2-Dichlorobenzene	ND	0.80	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
1,3-Dichlorobenzene	ND	0.70	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
1,4-Dichlorobenzene	ND	0.83	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Dimethyl phthalate	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2,4-Dichlorophenol	ND	0.80	3.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2,4-Dimethylphenol	ND	0.70	3.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
4,6-Dinitro-2-methylphenol	ND	0.83	3.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2,4-Dinitrophenol	ND	0.49	4.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2,6-Dinitrotoluene	ND	1.0	4.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Fluoranthene	ND	0.80	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Fluorene	ND	0.88	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Hexachlorobenzene	ND	0.88	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Hexachlorobutadiene	ND	0.92	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Hexachloroethane	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Isophorone	ND	0.80	3.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
1-Methylnaphthalene	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2-Methylnaphthalene	ND	0.81	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2-Methylphenol	ND	0.83	3.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
3+4-Methylphenol	ND	0.81	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
N-Nitrosodi-n-propylamine	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 11:50:00 AM
Lab ID: 2108B84-021 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Naphthalene	ND	0.93	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
3-Nitroaniline	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
4-Nitroaniline	ND	1.3	3.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Nitrobenzene	ND	0.81	3.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2-Nitrophenol	ND	0.85	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
4-Nitrophenol	ND	0.81	2.5	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Pentachlorophenol	ND	0.85	3.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Phenol	ND	0.76	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Pyrene	ND	0.75	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Pyridine	ND	1.6	3.9	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
1,2,4-Trichlorobenzene	ND	0.90	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2,4,5-Trichlorophenol	ND	0.63	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
2,4,6-Trichlorophenol	ND	0.85	2.0	D	mg/Kg	10	8/27/2021 8:41:49 PM	62187
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	8/27/2021 8:41:49 PM	62187
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	8/27/2021 8:41:49 PM	62187
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	8/27/2021 8:41:49 PM	62187
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	8/27/2021 8:41:49 PM	62187
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	8/27/2021 8:41:49 PM	62187
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	8/27/2021 8:41:49 PM	62187
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0069	0.018		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Toluene	ND	0.0046	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Ethylbenzene	ND	0.0088	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.020	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,2,4-Trimethylbenzene	ND	0.0051	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,3,5-Trimethylbenzene	ND	0.0081	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,2-Dichloroethane (EDC)	ND	0.0082	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.014	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Naphthalene	ND	0.013	0.072		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1-Methylnaphthalene	ND	0.041	0.14		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
2-Methylnaphthalene	ND	0.033	0.14		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Acetone	ND	0.12	0.54		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Bromobenzene	ND	0.0077	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Bromodichloromethane	ND	0.0046	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Bromoform	ND	0.0087	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Bromomethane	ND	0.060	0.11		mg/Kg	1	8/31/2021 8:36:55 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 11:50:00 AM
Lab ID: 2108B84-021 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.16	0.36		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Carbon disulfide	ND	0.015	0.36		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Carbon tetrachloride	ND	0.0040	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Chlorobenzene	ND	0.0065	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Chloroethane	ND	0.013	0.072		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Chloroform	ND	0.0051	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Chloromethane	ND	0.013	0.11		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
2-Chlorotoluene	ND	0.0048	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
4-Chlorotoluene	ND	0.019	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
cis-1,2-DCE	ND	0.018	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
cis-1,3-Dichloropropene	ND	0.0054	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.016	0.072		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Dibromochloromethane	ND	0.0058	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Dibromomethane	ND	0.0084	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,2-Dichlorobenzene	ND	0.0075	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,3-Dichlorobenzene	ND	0.0068	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,4-Dichlorobenzene	ND	0.0097	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Dichlorodifluoromethane	ND	0.014	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,1-Dichloroethane	ND	0.011	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,1-Dichloroethene	ND	0.0077	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,2-Dichloropropane	ND	0.0070	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,3-Dichloropropane	ND	0.0079	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
2,2-Dichloropropane	ND	0.0051	0.072		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,1-Dichloropropene	ND	0.0044	0.072		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Hexachlorobutadiene	ND	0.025	0.072		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
2-Hexanone	ND	0.016	0.36		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Isopropylbenzene	ND	0.0067	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
4-Isopropyltoluene	ND	0.0093	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
4-Methyl-2-pentanone	ND	0.042	0.36		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Methylene chloride	ND	0.026	0.11		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
n-Butylbenzene	ND	0.0096	0.11		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
n-Propylbenzene	ND	0.0058	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
sec-Butylbenzene	ND	0.030	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Styrene	ND	0.0049	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
tert-Butylbenzene	ND	0.0084	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0053	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.012	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Tetrachloroethene (PCE)	ND	0.0099	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
trans-1,2-DCE	ND	0.0070	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 11:50:00 AM
Lab ID: 2108B84-021 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0085	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,2,3-Trichlorobenzene	ND	0.0056	0.072		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,2,4-Trichlorobenzene	ND	0.013	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,1,1-Trichloroethane	ND	0.0080	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,1,2-Trichloroethane	ND	0.0090	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Trichloroethene (TCE)	ND	0.0071	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Trichlorofluoromethane	ND	0.0082	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
1,2,3-Trichloropropane	ND	0.015	0.072		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Vinyl chloride	ND	0.0069	0.036		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Xylenes, Total	ND	0.019	0.072		mg/Kg	1	8/31/2021 8:36:55 AM	A80915
Surr: Dibromofluoromethane	110		70-130		%Rec	1	8/31/2021 8:36:55 AM	A80915
Surr: 1,2-Dichloroethane-d4	88.0		70-130		%Rec	1	8/31/2021 8:36:55 AM	A80915
Surr: Toluene-d8	102		70-130		%Rec	1	8/31/2021 8:36:55 AM	A80915
Surr: 4-Bromofluorobenzene	102		70-130		%Rec	1	8/31/2021 8:36:55 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	1.0	3.6		mg/Kg	1	8/31/2021 8:36:55 AM	B80915
Surr: BFB	105	0	70-130		%Rec	1	8/31/2021 8:36:55 AM	B80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 12:45:00 PM
Lab ID: 2108B84-022 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	8.3	4.7	9.5	J	mg/Kg	1	8/24/2021 10:59:20 AM	62136
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/24/2021 10:59:20 AM	62136
Surr: DNOP	138	0	70-130	S	%Rec	1	8/24/2021 10:59:20 AM	62136
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0027	0.034		mg/Kg	1	9/3/2021 10:53:41 AM	62362
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	4.9		mg/Kg	2	8/26/2021 8:33:44 PM	62200
Arsenic	ND	2.8	4.9		mg/Kg	2	8/31/2021 7:10:21 PM	62200
Barium	300	0.12	0.20		mg/Kg	2	8/26/2021 8:33:44 PM	62200
Beryllium	1.2	0.058	0.30		mg/Kg	2	8/26/2021 8:33:44 PM	62200
Cadmium	ND	0.099	0.20		mg/Kg	2	8/26/2021 8:33:44 PM	62200
Chromium	11	0.30	0.59		mg/Kg	2	8/26/2021 8:33:44 PM	62200
Cobalt	5.5	0.12	0.59		mg/Kg	2	8/26/2021 8:33:44 PM	62200
Iron	17000	250	250		mg/Kg	100	8/30/2021 5:16:03 PM	62200
Lead	6.6	0.53	0.59		mg/Kg	2	8/30/2021 5:12:39 PM	62200
Manganese	390	0.33	0.39		mg/Kg	2	8/26/2021 8:33:44 PM	62200
Nickel	11	0.39	0.99		mg/Kg	2	8/26/2021 8:33:44 PM	62200
Selenium	ND	4.3	4.9		mg/Kg	2	8/30/2021 5:12:39 PM	62200
Silver	ND	0.29	0.49		mg/Kg	2	8/26/2021 8:33:44 PM	62200
Vanadium	19	0.22	4.9		mg/Kg	2	8/26/2021 8:33:44 PM	62200
Zinc	16	2.7	4.9		mg/Kg	2	8/30/2021 5:12:39 PM	62200
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Aniline	ND	0.068	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Anthracene	ND	0.089	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Azobenzene	ND	0.098	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Benzo(a)pyrene	ND	0.093	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Benzoic acid	ND	0.12	0.99		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Benzyl alcohol	ND	0.081	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	8/27/2021 9:23:16 PM	62187

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 12:45:00 PM
Lab ID: 2108B84-022 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Carbazole	ND	0.087	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	8/27/2021 9:23:16 PM	62187
4-Chloroaniline	ND	0.096	0.49		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2-Chloronaphthalene	ND	0.093	0.25		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
4-Chlorophenyl phenyl ether	ND	0.084	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Chrysene	ND	0.087	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Di-n-butyl phthalate	0.47	0.28	0.39		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
1,2-Dichlorobenzene	ND	0.080	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2,4-Dimethylphenol	ND	0.070	0.30		mg/Kg	1	8/27/2021 9:23:16 PM	62187
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2,4-Dinitrophenol	ND	0.050	0.49		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Fluoranthene	ND	0.080	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Fluorene	ND	0.088	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Hexachlorobenzene	ND	0.088	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Isophorone	ND	0.081	0.39		mg/Kg	1	8/27/2021 9:23:16 PM	62187
1-Methylnaphthalene	ND	0.091	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2-Methylphenol	ND	0.083	0.39		mg/Kg	1	8/27/2021 9:23:16 PM	62187
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 12:45:00 PM
Lab ID: 2108B84-022 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Naphthalene	ND	0.093	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Nitrobenzene	ND	0.081	0.39		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2-Nitrophenol	ND	0.085	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
4-Nitrophenol	ND	0.081	0.25		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Phenanthrene	ND	0.10	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Phenol	ND	0.076	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Pyrene	ND	0.075	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Pyridine	ND	0.16	0.39		mg/Kg	1	8/27/2021 9:23:16 PM	62187
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
2,4,6-Trichlorophenol	ND	0.085	0.20		mg/Kg	1	8/27/2021 9:23:16 PM	62187
Surr: 2-Fluorophenol	23.2		20.3-74.1		%Rec	1	8/27/2021 9:23:16 PM	62187
Surr: Phenol-d5	25.9		23.1-92.7		%Rec	1	8/27/2021 9:23:16 PM	62187
Surr: 2,4,6-Tribromophenol	51.6		17.3-122		%Rec	1	8/27/2021 9:23:16 PM	62187
Surr: Nitrobenzene-d5	23.3		24.7-73.2	S	%Rec	1	8/27/2021 9:23:16 PM	62187
Surr: 2-Fluorobiphenyl	28.1		21.5-90.1		%Rec	1	8/27/2021 9:23:16 PM	62187
Surr: 4-Terphenyl-d14	109		15-140		%Rec	1	8/27/2021 9:23:16 PM	62187
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0090	0.023		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Toluene	ND	0.0060	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Ethylbenzene	ND	0.011	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Methyl tert-butyl ether (MTBE)	ND	0.026	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,2,4-Trimethylbenzene	ND	0.0066	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,3,5-Trimethylbenzene	ND	0.011	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,2-Dichloroethane (EDC)	ND	0.011	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.018	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Naphthalene	ND	0.017	0.094		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1-Methylnaphthalene	ND	0.054	0.19		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
2-Methylnaphthalene	ND	0.043	0.19		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Acetone	ND	0.15	0.70		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Bromobenzene	ND	0.010	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Bromodichloromethane	ND	0.0060	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Bromoform	ND	0.011	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Bromomethane	ND	0.078	0.14		mg/Kg	1	8/31/2021 9:05:35 AM	A80915

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 12:45:00 PM
Lab ID: 2108B84-022 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.20	0.47		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Carbon disulfide	ND	0.019	0.47		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Carbon tetrachloride	ND	0.0052	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Chlorobenzene	ND	0.0084	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Chloroethane	ND	0.018	0.094		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Chloroform	ND	0.0067	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Chloromethane	ND	0.016	0.14		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
2-Chlorotoluene	ND	0.0063	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
4-Chlorotoluene	ND	0.025	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
cis-1,2-DCE	ND	0.023	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
cis-1,3-Dichloropropene	ND	0.0070	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.020	0.094		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Dibromochloromethane	ND	0.0075	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Dibromomethane	ND	0.011	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,2-Dichlorobenzene	ND	0.0098	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,3-Dichlorobenzene	ND	0.0089	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,4-Dichlorobenzene	ND	0.013	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Dichlorodifluoromethane	ND	0.018	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,1-Dichloroethane	ND	0.014	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,1-Dichloroethene	ND	0.010	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,2-Dichloropropane	ND	0.0091	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,3-Dichloropropane	ND	0.010	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
2,2-Dichloropropane	ND	0.0067	0.094		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,1-Dichloropropene	ND	0.0057	0.094		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Hexachlorobutadiene	ND	0.032	0.094		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
2-Hexanone	ND	0.020	0.47		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Isopropylbenzene	ND	0.0087	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
4-Isopropyltoluene	ND	0.012	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
4-Methyl-2-pentanone	ND	0.055	0.47		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Methylene chloride	ND	0.034	0.14		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
n-Butylbenzene	ND	0.013	0.14		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
n-Propylbenzene	ND	0.0076	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
sec-Butylbenzene	ND	0.039	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Styrene	ND	0.0064	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
tert-Butylbenzene	ND	0.011	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0069	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.015	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Tetrachloroethene (PCE)	ND	0.013	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
trans-1,2-DCE	ND	0.0091	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 12:45:00 PM
Lab ID: 2108B84-022 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.011	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,2,3-Trichlorobenzene	ND	0.0073	0.094		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,2,4-Trichlorobenzene	ND	0.016	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,1,1-Trichloroethane	ND	0.010	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,1,2-Trichloroethane	ND	0.012	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Trichloroethene (TCE)	ND	0.0092	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Trichlorofluoromethane	ND	0.011	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
1,2,3-Trichloropropane	ND	0.020	0.094		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Vinyl chloride	ND	0.0089	0.047		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Xylenes, Total	ND	0.025	0.094		mg/Kg	1	8/31/2021 9:05:35 AM	A80915
Surr: Dibromofluoromethane	119		70-130		%Rec	1	8/31/2021 9:05:35 AM	A80915
Surr: 1,2-Dichloroethane-d4	90.3		70-130		%Rec	1	8/31/2021 9:05:35 AM	A80915
Surr: Toluene-d8	99.5		70-130		%Rec	1	8/31/2021 9:05:35 AM	A80915
Surr: 4-Bromofluorobenzene	95.5		70-130		%Rec	1	8/31/2021 9:05:35 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	1.3	4.7		mg/Kg	1	8/31/2021 9:05:35 AM	B80915
Surr: BFB	101	0	70-130		%Rec	1	8/31/2021 9:05:35 AM	B80915

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting 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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (15-15.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 1:10:00 PM
Lab ID: 2108B84-023 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.8	9.7		mg/Kg	1	8/24/2021 11:10:47 AM	62136
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/24/2021 11:10:47 AM	62136
Surr: DNOP	114	0	70-130		%Rec	1	8/24/2021 11:10:47 AM	62136
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0027	0.0027	0.034	J	mg/Kg	1	9/3/2021 11:00:09 AM	62362
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.8		mg/Kg	2	8/26/2021 8:35:53 PM	62201
Arsenic	ND	2.7	4.8		mg/Kg	2	8/31/2021 7:11:46 PM	62201
Barium	640	0.29	0.48		mg/Kg	5	8/30/2021 3:13:30 PM	62201
Beryllium	1.0	0.057	0.29		mg/Kg	2	8/26/2021 8:35:53 PM	62201
Cadmium	ND	0.097	0.19		mg/Kg	2	8/26/2021 8:35:53 PM	62201
Chromium	11	0.29	0.58		mg/Kg	2	8/26/2021 8:35:53 PM	62201
Cobalt	4.6	0.12	0.58		mg/Kg	2	8/26/2021 8:35:53 PM	62201
Iron	15000	240	240		mg/Kg	100	8/30/2021 3:33:38 PM	62201
Lead	4.2	0.52	0.58		mg/Kg	2	8/30/2021 3:06:50 PM	62201
Manganese	660	0.80	0.97		mg/Kg	5	8/30/2021 3:13:30 PM	62201
Nickel	9.5	0.38	0.97		mg/Kg	2	8/26/2021 8:35:53 PM	62201
Selenium	ND	4.3	4.8		mg/Kg	2	8/26/2021 8:35:53 PM	62201
Silver	ND	0.28	0.48		mg/Kg	2	8/26/2021 8:35:53 PM	62201
Vanadium	20	0.22	4.8		mg/Kg	2	8/26/2021 8:35:53 PM	62201
Zinc	15	2.6	4.8		mg/Kg	2	8/30/2021 3:06:50 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.083	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Acenaphthylene	ND	0.084	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Aniline	ND	0.064	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Anthracene	ND	0.084	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Azobenzene	ND	0.093	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Benz(a)anthracene	ND	0.060	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Benzo(a)pyrene	ND	0.087	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Benzo(b)fluoranthene	ND	0.099	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Benzo(g,h,i)perylene	ND	0.094	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Benzo(k)fluoranthene	ND	0.070	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Benzoic acid	ND	0.12	0.93		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Benzyl alcohol	ND	0.076	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Bis(2-chloroethoxy)methane	ND	0.071	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Bis(2-chloroethyl)ether	ND	0.097	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Bis(2-chloroisopropyl)ether	ND	0.094	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Bis(2-ethylhexyl)phthalate	ND	0.20	0.46		mg/Kg	1	8/27/2021 10:04:38 PM	62187

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (15-15.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 1:10:00 PM
Lab ID: 2108B84-023 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.097	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Butyl benzyl phthalate	ND	0.056	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Carbazole	ND	0.081	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
4-Chloro-3-methylphenol	ND	0.078	0.46		mg/Kg	1	8/27/2021 10:04:38 PM	62187
4-Chloroaniline	ND	0.090	0.46		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2-Chloronaphthalene	ND	0.088	0.23		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2-Chlorophenol	ND	0.099	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
4-Chlorophenyl phenyl ether	ND	0.079	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Chrysene	ND	0.082	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Di-n-butyl phthalate	0.33	0.26	0.37	J	mg/Kg	1	8/27/2021 10:04:38 PM	62187
Di-n-octyl phthalate	ND	0.12	0.37		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Dibenz(a,h)anthracene	ND	0.097	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Dibenzofuran	ND	0.096	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
1,2-Dichlorobenzene	ND	0.075	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
1,3-Dichlorobenzene	ND	0.066	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
1,4-Dichlorobenzene	ND	0.079	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
3,3´-Dichlorobenzidine	ND	0.14	0.23		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Diethyl phthalate	ND	0.30	0.46		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Dimethyl phthalate	ND	0.086	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2,4-Dichlorophenol	ND	0.075	0.37		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2,4-Dimethylphenol	ND	0.066	0.28		mg/Kg	1	8/27/2021 10:04:38 PM	62187
4,6-Dinitro-2-methylphenol	ND	0.078	0.37		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2,4-Dinitrophenol	ND	0.047	0.46		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2,4-Dinitrotoluene	ND	0.11	0.46		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2,6-Dinitrotoluene	ND	0.094	0.46		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Fluoranthene	ND	0.075	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Fluorene	ND	0.083	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Hexachlorobenzene	ND	0.082	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Hexachlorobutadiene	ND	0.087	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Hexachlorocyclopentadiene	ND	0.10	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Hexachloroethane	ND	0.082	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Isophorone	ND	0.076	0.37		mg/Kg	1	8/27/2021 10:04:38 PM	62187
1-Methylnaphthalene	ND	0.085	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2-Methylnaphthalene	ND	0.076	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2-Methylphenol	ND	0.078	0.37		mg/Kg	1	8/27/2021 10:04:38 PM	62187
3+4-Methylphenol	ND	0.077	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
N-Nitrosodi-n-propylamine	ND	0.086	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (15-15.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 1:10:00 PM
Lab ID: 2108B84-023 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.097	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Naphthalene	ND	0.087	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2-Nitroaniline	ND	0.095	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
4-Nitroaniline	ND	0.12	0.37		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Nitrobenzene	ND	0.076	0.37		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2-Nitrophenol	ND	0.080	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
4-Nitrophenol	ND	0.076	0.23		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Pentachlorophenol	ND	0.080	0.37		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Phenanthrene	ND	0.095	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Phenol	ND	0.071	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Pyrene	ND	0.070	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Pyridine	ND	0.15	0.37		mg/Kg	1	8/27/2021 10:04:38 PM	62187
1,2,4-Trichlorobenzene	ND	0.085	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2,4,5-Trichlorophenol	ND	0.059	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
2,4,6-Trichlorophenol	ND	0.080	0.19		mg/Kg	1	8/27/2021 10:04:38 PM	62187
Surr: 2-Fluorophenol	54.0		20.3-74.1		%Rec	1	8/27/2021 10:04:38 PM	62187
Surr: Phenol-d5	64.7		23.1-92.7		%Rec	1	8/27/2021 10:04:38 PM	62187
Surr: 2,4,6-Tribromophenol	71.4		17.3-122		%Rec	1	8/27/2021 10:04:38 PM	62187
Surr: Nitrobenzene-d5	49.5		24.7-73.2		%Rec	1	8/27/2021 10:04:38 PM	62187
Surr: 2-Fluorobiphenyl	46.4		21.5-90.1		%Rec	1	8/27/2021 10:04:38 PM	62187
Surr: 4-Terphenyl-d14	107		15-140		%Rec	1	8/27/2021 10:04:38 PM	62187
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0054	0.014		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Toluene	ND	0.0036	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Ethylbenzene	ND	0.0069	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Methyl tert-butyl ether (MTBE)	0.019	0.016	0.028	J	mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,2,4-Trimethylbenzene	ND	0.0040	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,3,5-Trimethylbenzene	ND	0.0063	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,2-Dichloroethane (EDC)	ND	0.0064	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,2-Dibromoethane (EDB)	ND	0.011	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Naphthalene	ND	0.010	0.056		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1-Methylnaphthalene	ND	0.032	0.11		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
2-Methylnaphthalene	ND	0.026	0.11		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Acetone	ND	0.092	0.42		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Bromobenzene	ND	0.0060	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Bromodichloromethane	ND	0.0036	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Bromoform	ND	0.0068	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Bromomethane	ND	0.047	0.084		mg/Kg	1	8/31/2021 9:34:11 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (15-15.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 1:10:00 PM
Lab ID: 2108B84-023 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.12	0.28		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Carbon disulfide	ND	0.012	0.28		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Carbon tetrachloride	ND	0.0031	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Chlorobenzene	ND	0.0051	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Chloroethane	ND	0.011	0.056		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Chloroform	ND	0.0040	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Chloromethane	ND	0.0099	0.084		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
2-Chlorotoluene	ND	0.0038	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
4-Chlorotoluene	ND	0.015	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
cis-1,2-DCE	ND	0.014	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
cis-1,3-Dichloropropene	ND	0.0042	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,2-Dibromo-3-chloropropane	ND	0.012	0.056		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Dibromochloromethane	ND	0.0045	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Dibromomethane	ND	0.0066	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,2-Dichlorobenzene	ND	0.0059	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,3-Dichlorobenzene	ND	0.0053	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,4-Dichlorobenzene	ND	0.0075	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Dichlorodifluoromethane	ND	0.011	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,1-Dichloroethane	ND	0.0082	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,1-Dichloroethene	ND	0.0060	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,2-Dichloropropane	ND	0.0055	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,3-Dichloropropane	ND	0.0062	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
2,2-Dichloropropane	ND	0.0040	0.056		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,1-Dichloropropene	ND	0.0034	0.056		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Hexachlorobutadiene	ND	0.019	0.056		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
2-Hexanone	ND	0.012	0.28		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Isopropylbenzene	ND	0.0052	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
4-Isopropyltoluene	ND	0.0073	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
4-Methyl-2-pentanone	ND	0.033	0.28		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Methylene chloride	ND	0.020	0.084		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
n-Butylbenzene	ND	0.0075	0.084		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
n-Propylbenzene	ND	0.0045	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
sec-Butylbenzene	ND	0.023	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Styrene	ND	0.0038	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
tert-Butylbenzene	ND	0.0065	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,1,1,2-Tetrachloroethane	ND	0.0041	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,1,2,2-Tetrachloroethane	ND	0.0091	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Tetrachloroethene (PCE)	ND	0.0077	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
trans-1,2-DCE	ND	0.0054	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (15-15.5')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 1:10:00 PM
Lab ID: 2108B84-023 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0066	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,2,3-Trichlorobenzene	ND	0.0044	0.056		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,2,4-Trichlorobenzene	ND	0.0098	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,1,1-Trichloroethane	ND	0.0062	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,1,2-Trichloroethane	ND	0.0070	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Trichloroethene (TCE)	ND	0.0055	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Trichlorofluoromethane	ND	0.0064	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
1,2,3-Trichloropropane	ND	0.012	0.056		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Vinyl chloride	ND	0.0054	0.028		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Xylenes, Total	ND	0.015	0.056		mg/Kg	1	8/31/2021 9:34:11 AM	A80915
Surr: Dibromofluoromethane	117		70-130		%Rec	1	8/31/2021 9:34:11 AM	A80915
Surr: 1,2-Dichloroethane-d4	88.4		70-130		%Rec	1	8/31/2021 9:34:11 AM	A80915
Surr: Toluene-d8	101		70-130		%Rec	1	8/31/2021 9:34:11 AM	A80915
Surr: 4-Bromofluorobenzene	93.6		70-130		%Rec	1	8/31/2021 9:34:11 AM	A80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.78	2.8		mg/Kg	1	8/31/2021 9:34:11 AM	B80915
Surr: BFB	103	0	70-130		%Rec	1	8/31/2021 9:34:11 AM	B80915

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (31.5-32')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 2:25:00 PM
Lab ID: 2108B84-024 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.6	9.3		mg/Kg	1	8/24/2021 11:22:30 AM	62136
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/24/2021 11:22:30 AM	62136
Surr: DNOP	117	0	70-130		%Rec	1	8/24/2021 11:22:30 AM	62136
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0026	0.033		mg/Kg	1	9/3/2021 11:02:18 AM	62362
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/26/2021 8:46:55 PM	62201
Arsenic	ND	2.8	5.0		mg/Kg	2	8/31/2021 7:21:58 PM	62201
Barium	45	0.12	0.20		mg/Kg	2	8/30/2021 3:35:19 PM	62201
Beryllium	1.6	0.059	0.30		mg/Kg	2	8/26/2021 8:46:55 PM	62201
Cadmium	ND	0.10	0.20		mg/Kg	2	8/26/2021 8:46:55 PM	62201
Chromium	16	0.30	0.60		mg/Kg	2	8/26/2021 8:46:55 PM	62201
Cobalt	9.2	0.12	0.60		mg/Kg	2	8/26/2021 8:46:55 PM	62201
Iron	18000	250	250		mg/Kg	100	8/30/2021 3:37:05 PM	62201
Lead	8.1	0.54	0.60		mg/Kg	2	8/30/2021 3:35:19 PM	62201
Manganese	130	0.33	0.40		mg/Kg	2	8/26/2021 8:46:55 PM	62201
Nickel	21	0.40	1.0		mg/Kg	2	8/26/2021 8:46:55 PM	62201
Selenium	ND	4.4	5.0		mg/Kg	2	8/26/2021 8:46:55 PM	62201
Silver	ND	0.29	0.50		mg/Kg	2	8/26/2021 8:46:55 PM	62201
Vanadium	36	0.23	5.0		mg/Kg	2	8/26/2021 8:46:55 PM	62201
Zinc	32	2.7	5.0		mg/Kg	2	8/30/2021 3:35:19 PM	62201
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.087	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Acenaphthylene	ND	0.088	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Aniline	ND	0.067	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Anthracene	ND	0.088	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Azobenzene	ND	0.097	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Benz(a)anthracene	ND	0.062	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Benzo(a)pyrene	ND	0.091	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Benzo(g,h,i)perylene	ND	0.099	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Benzo(k)fluoranthene	ND	0.073	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Benzoic acid	ND	0.12	0.97		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Benzyl alcohol	ND	0.080	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Bis(2-chloroethoxy)methane	ND	0.074	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Bis(2-chloroisopropyl)ether	ND	0.099	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Bis(2-ethylhexyl)phthalate	ND	0.21	0.48		mg/Kg	1	8/27/2021 10:46:07 PM	62187

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (31.5-32')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 2:25:00 PM
Lab ID: 2108B84-024 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Butyl benzyl phthalate	ND	0.059	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Carbazole	ND	0.085	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
4-Chloro-3-methylphenol	ND	0.082	0.48		mg/Kg	1	8/27/2021 10:46:07 PM	62187
4-Chloroaniline	ND	0.094	0.48		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2-Chloronaphthalene	ND	0.092	0.24		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
4-Chlorophenyl phenyl ether	ND	0.082	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Chrysene	ND	0.086	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Di-n-octyl phthalate	ND	0.12	0.39		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
1,2-Dichlorobenzene	ND	0.078	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
1,3-Dichlorobenzene	ND	0.069	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
1,4-Dichlorobenzene	ND	0.082	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Diethyl phthalate	ND	0.32	0.48		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Dimethyl phthalate	ND	0.090	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	8/27/2021 10:46:07 PM	62187
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2,4-Dinitrophenol	ND	0.049	0.48		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2,6-Dinitrotoluene	ND	0.099	0.48		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Fluoranthene	ND	0.078	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Fluorene	ND	0.087	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Hexachlorobenzene	ND	0.086	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Hexachlorobutadiene	ND	0.091	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Hexachloroethane	ND	0.086	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Isophorone	ND	0.079	0.39		mg/Kg	1	8/27/2021 10:46:07 PM	62187
1-Methylnaphthalene	ND	0.089	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2-Methylnaphthalene	ND	0.080	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2-Methylphenol	ND	0.082	0.39		mg/Kg	1	8/27/2021 10:46:07 PM	62187
3+4-Methylphenol	ND	0.080	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
N-Nitrosodi-n-propylamine	ND	0.090	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187

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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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (31.5-32')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 2:25:00 PM
Lab ID: 2108B84-024 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Naphthalene	ND	0.091	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2-Nitroaniline	ND	0.099	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2-Nitrophenol	ND	0.084	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Pentachlorophenol	ND	0.084	0.39		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Phenanthrene	ND	0.099	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Phenol	ND	0.075	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Pyrene	ND	0.074	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Pyridine	ND	0.16	0.39		mg/Kg	1	8/27/2021 10:46:07 PM	62187
1,2,4-Trichlorobenzene	ND	0.089	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2,4,5-Trichlorophenol	ND	0.062	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
2,4,6-Trichlorophenol	ND	0.084	0.19		mg/Kg	1	8/27/2021 10:46:07 PM	62187
Surr: 2-Fluorophenol	46.1		20.3-74.1		%Rec	1	8/27/2021 10:46:07 PM	62187
Surr: Phenol-d5	54.1		23.1-92.7		%Rec	1	8/27/2021 10:46:07 PM	62187
Surr: 2,4,6-Tribromophenol	69.6		17.3-122		%Rec	1	8/27/2021 10:46:07 PM	62187
Surr: Nitrobenzene-d5	42.1		24.7-73.2		%Rec	1	8/27/2021 10:46:07 PM	62187
Surr: 2-Fluorobiphenyl	47.5		21.5-90.1		%Rec	1	8/27/2021 10:46:07 PM	62187
Surr: 4-Terphenyl-d14	108		15-140		%Rec	1	8/27/2021 10:46:07 PM	62187
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0064	0.017		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Toluene	ND	0.0043	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Ethylbenzene	ND	0.0081	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Methyl tert-butyl ether (MTBE)	ND	0.019	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,2,4-Trimethylbenzene	0.0076	0.0047	0.033	J	mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,3,5-Trimethylbenzene	ND	0.0075	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,2-Dichloroethane (EDC)	ND	0.0076	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,2-Dibromoethane (EDB)	ND	0.013	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Naphthalene	ND	0.012	0.067		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1-Methylnaphthalene	ND	0.038	0.13		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
2-Methylnaphthalene	ND	0.031	0.13		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Acetone	ND	0.11	0.50		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Bromobenzene	ND	0.0071	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Bromodichloromethane	ND	0.0042	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Bromoform	ND	0.0080	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Bromomethane	ND	0.055	0.10		mg/Kg	1	8/31/2021 9:47:28 PM	A80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (31.5-32')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 2:25:00 PM
Lab ID: 2108B84-024 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.14	0.33		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Carbon disulfide	ND	0.014	0.33		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Carbon tetrachloride	ND	0.0037	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Chlorobenzene	ND	0.0060	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Chloroethane	ND	0.012	0.067		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Chloroform	ND	0.0047	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Chloromethane	ND	0.012	0.10		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
2-Chlorotoluene	ND	0.0045	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
4-Chlorotoluene	ND	0.017	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
cis-1,2-DCE	ND	0.016	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
cis-1,3-Dichloropropene	ND	0.0049	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,2-Dibromo-3-chloropropane	ND	0.014	0.067		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Dibromochloromethane	ND	0.0053	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Dibromomethane	ND	0.0078	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,2-Dichlorobenzene	ND	0.0069	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,3-Dichlorobenzene	ND	0.0063	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,4-Dichlorobenzene	ND	0.0089	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Dichlorodifluoromethane	ND	0.013	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,1-Dichloroethane	ND	0.0097	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,1-Dichloroethene	ND	0.0071	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,2-Dichloropropane	ND	0.0065	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,3-Dichloropropane	ND	0.0073	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
2,2-Dichloropropane	ND	0.0047	0.067		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,1-Dichloropropene	ND	0.0040	0.067		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Hexachlorobutadiene	ND	0.023	0.067		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
2-Hexanone	ND	0.015	0.33		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Isopropylbenzene	ND	0.0062	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
4-Isopropyltoluene	ND	0.0086	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
4-Methyl-2-pentanone	ND	0.039	0.33		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Methylene chloride	ND	0.024	0.10		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
n-Butylbenzene	ND	0.0089	0.10		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
n-Propylbenzene	ND	0.0054	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
sec-Butylbenzene	ND	0.027	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Styrene	ND	0.0045	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
tert-Butylbenzene	ND	0.0077	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,1,1,2-Tetrachloroethane	ND	0.0049	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,1,2,2-Tetrachloroethane	ND	0.011	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Tetrachloroethene (PCE)	ND	0.0091	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
trans-1,2-DCE	ND	0.0064	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-4 (31.5-32')
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 2:25:00 PM
Lab ID: 2108B84-024 **Matrix:** SOIL **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0078	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,2,3-Trichlorobenzene	ND	0.0051	0.067		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,2,4-Trichlorobenzene	ND	0.012	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,1,1-Trichloroethane	ND	0.0073	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,1,2-Trichloroethane	ND	0.0083	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Trichloroethene (TCE)	ND	0.0065	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Trichlorofluoromethane	ND	0.0075	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
1,2,3-Trichloropropane	ND	0.014	0.067		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Vinyl chloride	ND	0.0063	0.033		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Xylenes, Total	ND	0.017	0.067		mg/Kg	1	8/31/2021 9:47:28 PM	A80948
Surr: Dibromofluoromethane	113		70-130		%Rec	1	8/31/2021 9:47:28 PM	A80948
Surr: 1,2-Dichloroethane-d4	85.5		70-130		%Rec	1	8/31/2021 9:47:28 PM	A80948
Surr: Toluene-d8	97.5		70-130		%Rec	1	8/31/2021 9:47:28 PM	A80948
Surr: 4-Bromofluorobenzene	96.4		70-130		%Rec	1	8/31/2021 9:47:28 PM	A80948
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.92	3.3		mg/Kg	1	8/31/2021 9:47:28 PM	B80948
Surr: BFB	98.9	0	70-130		%Rec	1	8/31/2021 9:47:28 PM	B80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOh Blank-1
Project: North Drainage Ditch Area
Collection Date:
Lab ID: 2108B84-025
Matrix: MEOH BLAN
Received Date: 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0096	0.025		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Toluene	0.011	0.0064	0.050	J	mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Ethylbenzene	ND	0.012	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Methyl tert-butyl ether (MTBE)	ND	0.028	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,2,4-Trimethylbenzene	ND	0.0071	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,3,5-Trimethylbenzene	ND	0.011	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,2-Dichloroethane (EDC)	ND	0.011	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,2-Dibromoethane (EDB)	ND	0.020	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Naphthalene	ND	0.019	0.10		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1-Methylnaphthalene	ND	0.057	0.20		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
2-Methylnaphthalene	ND	0.046	0.20		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Acetone	ND	0.16	0.75		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Bromobenzene	ND	0.011	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Bromodichloromethane	ND	0.0064	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Bromoform	ND	0.012	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Bromomethane	ND	0.083	0.15		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
2-Butanone	ND	0.22	0.50		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Carbon disulfide	ND	0.021	0.50		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Carbon tetrachloride	ND	0.0056	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Chlorobenzene	ND	0.0090	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Chloroethane	ND	0.019	0.10		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Chloroform	ND	0.0071	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Chloromethane	ND	0.018	0.15		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
2-Chlorotoluene	ND	0.0067	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
4-Chlorotoluene	ND	0.026	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
cis-1,2-DCE	ND	0.025	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
cis-1,3-Dichloropropene	ND	0.0074	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,2-Dibromo-3-chloropropane	ND	0.022	0.10		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Dibromochloromethane	ND	0.0080	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Dibromomethane	ND	0.012	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,2-Dichlorobenzene	ND	0.010	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,3-Dichlorobenzene	ND	0.0094	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,4-Dichlorobenzene	ND	0.013	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Dichlorodifluoromethane	ND	0.019	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,1-Dichloroethane	ND	0.015	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,1-Dichloroethene	ND	0.011	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,2-Dichloropropane	ND	0.0097	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,3-Dichloropropane	ND	0.011	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
2,2-Dichloropropane	ND	0.0071	0.10		mg/Kg	1	8/31/2021 10:44:44 PM	A80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOh Blank-1
Project: North Drainage Ditch Area
Collection Date:
Lab ID: 2108B84-025
Matrix: MEOH BLAN
Received Date: 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
1,1-Dichloropropene	ND	0.0060	0.10		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Hexachlorobutadiene	ND	0.034	0.10		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
2-Hexanone	ND	0.022	0.50		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Isopropylbenzene	ND	0.0093	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
4-Isopropyltoluene	ND	0.013	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
4-Methyl-2-pentanone	ND	0.058	0.50		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Methylene chloride	0.064	0.036	0.15	J	mg/Kg	1	8/31/2021 10:44:44 PM	A80948
n-Butylbenzene	ND	0.013	0.15		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
n-Propylbenzene	ND	0.0081	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
sec-Butylbenzene	ND	0.041	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Styrene	ND	0.0068	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
tert-Butylbenzene	ND	0.012	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,1,1,2-Tetrachloroethane	ND	0.0073	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,1,2,2-Tetrachloroethane	ND	0.016	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Tetrachloroethene (PCE)	ND	0.014	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
trans-1,2-DCE	ND	0.0097	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
trans-1,3-Dichloropropene	ND	0.012	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,2,3-Trichlorobenzene	ND	0.0077	0.10		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,2,4-Trichlorobenzene	ND	0.017	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,1,1-Trichloroethane	ND	0.011	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,1,2-Trichloroethane	ND	0.013	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Trichloroethene (TCE)	ND	0.0098	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Trichlorofluoromethane	ND	0.011	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
1,2,3-Trichloropropane	ND	0.021	0.10		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Vinyl chloride	ND	0.0095	0.050		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Xylenes, Total	ND	0.026	0.10		mg/Kg	1	8/31/2021 10:44:44 PM	A80948
Surr: Dibromofluoromethane	112		70-130		%Rec	1	8/31/2021 10:44:44 PM	A80948
Surr: 1,2-Dichloroethane-d4	87.8		70-130		%Rec	1	8/31/2021 10:44:44 PM	A80948
Surr: Toluene-d8	103		70-130		%Rec	1	8/31/2021 10:44:44 PM	A80948
Surr: 4-Bromofluorobenzene	96.4		70-130		%Rec	1	8/31/2021 10:44:44 PM	A80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MeOh Blank-2
Project: North Drainage Ditch Area **Collection Date:**
Lab ID: 2108B84-026 **Matrix:** MEOH BLAN **Received Date:** 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0096	0.025		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Toluene	ND	0.0064	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Ethylbenzene	ND	0.012	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Methyl tert-butyl ether (MTBE)	ND	0.028	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,2,4-Trimethylbenzene	ND	0.0071	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,3,5-Trimethylbenzene	ND	0.011	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,2-Dichloroethane (EDC)	ND	0.011	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,2-Dibromoethane (EDB)	ND	0.020	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Naphthalene	ND	0.019	0.10		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1-Methylnaphthalene	ND	0.057	0.20		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
2-Methylnaphthalene	ND	0.046	0.20		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Acetone	ND	0.16	0.75		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Bromobenzene	ND	0.011	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Bromodichloromethane	ND	0.0064	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Bromoform	ND	0.012	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Bromomethane	ND	0.083	0.15		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
2-Butanone	ND	0.22	0.50		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Carbon disulfide	ND	0.021	0.50		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Carbon tetrachloride	ND	0.0056	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Chlorobenzene	ND	0.0090	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Chloroethane	ND	0.019	0.10		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Chloroform	ND	0.0071	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Chloromethane	ND	0.018	0.15		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
2-Chlorotoluene	ND	0.0067	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
4-Chlorotoluene	ND	0.026	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
cis-1,2-DCE	ND	0.025	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
cis-1,3-Dichloropropene	ND	0.0074	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,2-Dibromo-3-chloropropane	ND	0.022	0.10		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Dibromochloromethane	ND	0.0080	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Dibromomethane	ND	0.012	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,2-Dichlorobenzene	ND	0.010	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,3-Dichlorobenzene	ND	0.0094	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,4-Dichlorobenzene	ND	0.013	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Dichlorodifluoromethane	ND	0.019	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,1-Dichloroethane	ND	0.015	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,1-Dichloroethene	ND	0.011	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,2-Dichloropropane	ND	0.0097	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,3-Dichloropropane	ND	0.011	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
2,2-Dichloropropane	ND	0.0071	0.10		mg/Kg	1	8/31/2021 11:13:21 PM	A80948

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

Analytical Report
Lab Order **2108B84**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOh Blank-2
Project: North Drainage Ditch Area
Collection Date:
Lab ID: 2108B84-026
Matrix: MEOH BLAN
Received Date: 8/20/2021 4:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
1,1-Dichloropropene	ND	0.0060	0.10		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Hexachlorobutadiene	ND	0.034	0.10		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
2-Hexanone	ND	0.022	0.50		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Isopropylbenzene	ND	0.0093	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
4-Isopropyltoluene	ND	0.013	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
4-Methyl-2-pentanone	ND	0.058	0.50		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Methylene chloride	ND	0.036	0.15		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
n-Butylbenzene	ND	0.013	0.15		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
n-Propylbenzene	ND	0.0081	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
sec-Butylbenzene	ND	0.041	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Styrene	ND	0.0068	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
tert-Butylbenzene	ND	0.012	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,1,1,2-Tetrachloroethane	ND	0.0073	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,1,2,2-Tetrachloroethane	ND	0.016	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Tetrachloroethene (PCE)	ND	0.014	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
trans-1,2-DCE	ND	0.0097	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
trans-1,3-Dichloropropene	ND	0.012	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,2,3-Trichlorobenzene	ND	0.0077	0.10		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,2,4-Trichlorobenzene	ND	0.017	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,1,1-Trichloroethane	ND	0.011	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,1,2-Trichloroethane	ND	0.013	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Trichloroethene (TCE)	ND	0.0098	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Trichlorofluoromethane	ND	0.011	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
1,2,3-Trichloropropane	ND	0.021	0.10		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Vinyl chloride	ND	0.0095	0.050		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Xylenes, Total	ND	0.026	0.10		mg/Kg	1	8/31/2021 11:13:21 PM	A80948
Surr: Dibromofluoromethane	117		70-130		%Rec	1	8/31/2021 11:13:21 PM	A80948
Surr: 1,2-Dichloroethane-d4	88.4		70-130		%Rec	1	8/31/2021 11:13:21 PM	A80948
Surr: Toluene-d8	98.9		70-130		%Rec	1	8/31/2021 11:13:21 PM	A80948
Surr: 4-Bromofluorobenzene	96.5		70-130		%Rec	1	8/31/2021 11:13:21 PM	A80948

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

ANALYTICAL REPORT

September 01, 2021

Hall Environmental Analysis Laboratory

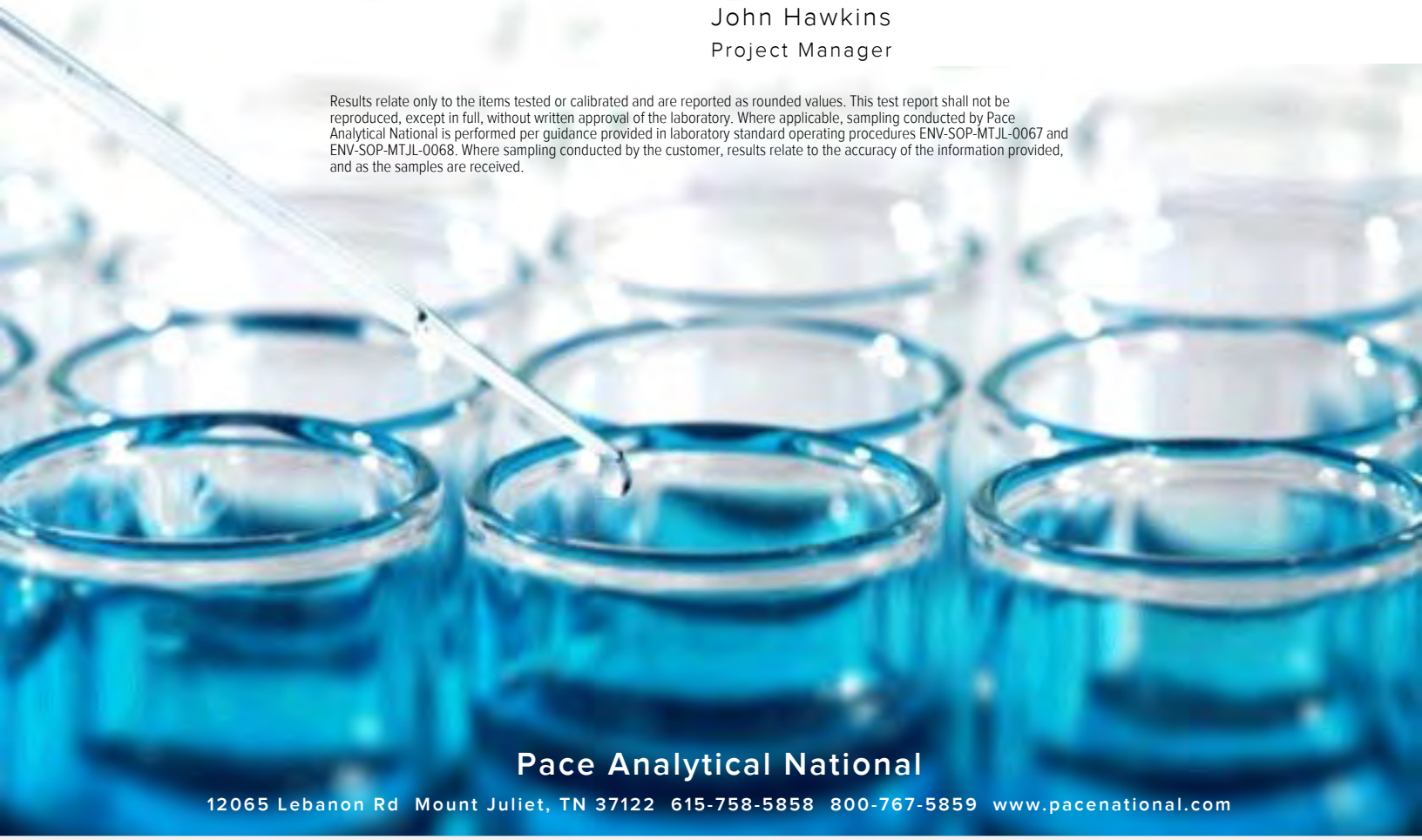
Sample Delivery Group:	L1394947
Samples Received:	08/25/2021
Project Number:	
Description:	

Report To: Jackie Bolte
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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2108B84-B NDD-TW-5 (0-0.5') L1394947-01 Solid

Collected by | Collected date/time 08/19/21 15:45 | Received date/time 08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:29	KEG	Mt. Juliet, TN

2108B84-B NDD-TW-5 (1.5-2') L1394947-02 Solid

Collected by | Collected date/time 08/19/21 16:00 | Received date/time 08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:30	KEG	Mt. Juliet, TN

2108B84-B NDD-TW-5 (18.5-19') L1394947-03 Solid

Collected by | Collected date/time 08/19/21 17:35 | Received date/time 08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:31	KEG	Mt. Juliet, TN

2108B84-B NDD-TW-5 (23-23.5') L1394947-04 Solid

Collected by | Collected date/time 08/19/21 17:45 | Received date/time 08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:32	KEG	Mt. Juliet, TN

2108B84-B NDD-BD4 L1394947-05 Solid

Collected by | Collected date/time 08/19/21 00:00 | Received date/time 08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:35	KEG	Mt. Juliet, TN

2108B84-B NDD-TW-5 (30.5-31) L1394947-06 Solid

Collected by | Collected date/time 08/20/21 08:10 | Received date/time 08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:36	KEG	Mt. Juliet, TN

2108B84-B NDD-SB-2 (0-0.5') L1394947-07 Solid

Collected by | Collected date/time 08/20/21 12:37 | Received date/time 08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:37	KEG	Mt. Juliet, TN

2108B84-B NDD-SB-2 (1.5-2') L1394947-08 Solid

Collected by | Collected date/time 08/20/21 12:50 | Received date/time 08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:38	KEG	Mt. Juliet, TN

2108B84-B NDD-SB-2 (3.5-4') L1394947-09 Solid

Collected by	Collected date/time	Received date/time
	08/20/21 12:55	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:39	KEG	Mt. Juliet, TN

2108B84-B NDD-SB-2 (19-19.5') L1394947-10 Solid

Collected by	Collected date/time	Received date/time
	08/20/21 13:00	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:40	KEG	Mt. Juliet, TN

2108B84-B NDD-SB-1 (0-0.5') L1394947-11 Solid

Collected by	Collected date/time	Received date/time
	08/18/21 14:35	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:44	KEG	Mt. Juliet, TN

2108B84-B NDD-SB-1 (1.5-2') L1394947-12 Solid

Collected by	Collected date/time	Received date/time
	08/18/21 14:54	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:47	KEG	Mt. Juliet, TN

2108B84-B NDD-SB-1 (5-5.5') L1394947-13 Solid

Collected by	Collected date/time	Received date/time
	08/18/21 14:55	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:48	KEG	Mt. Juliet, TN

2108B84-016B NDD-BD3 L1394947-14 Solid

Collected by	Collected date/time	Received date/time
	08/19/21 00:00	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:49	KEG	Mt. Juliet, TN

2108B84-017B NDD-SB-1 (13.5-14') L1394947-15 Solid

Collected by	Collected date/time	Received date/time
	08/19/21 07:30	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:51	KEG	Mt. Juliet, TN

2108B84-018B NDD-TW-3 (0-0.5') L1394947-16 Solid

Collected by	Collected date/time	Received date/time
	08/19/21 08:35	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:52	KEG	Mt. Juliet, TN

SAMPLE SUMMARY

2108B84-019B NDD-TW-3 (1.5-2') L1394947-17 Solid

Collected by	Collected date/time	Received date/time
	08/19/21 08:50	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:53	KEG	Mt. Juliet, TN

2108B84-020B NDD-TW-3 (33.5-34') L1394947-18 Solid

Collected by	Collected date/time	Received date/time
	08/19/21 10:50	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731862	1	08/30/21 18:21	08/31/21 23:08	SDL	Mt. Juliet, TN

2108B84-021B NDD-TW-4 (0-0.5') L1394947-19 Solid

Collected by	Collected date/time	Received date/time
	08/19/21 11:50	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731862	1	08/30/21 18:21	08/31/21 23:09	SDL	Mt. Juliet, TN

2108B84-022B NDD-TW-4 (1.5-2') L1394947-20 Solid

Collected by	Collected date/time	Received date/time
	08/19/21 12:45	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1730165	1	08/30/21 13:22	08/30/21 16:54	KEG	Mt. Juliet, TN

2108B84-023B NDD-TW-4 (15-15.5') L1394947-21 Solid

Collected by	Collected date/time	Received date/time
	08/19/21 13:10	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731862	1	08/30/21 18:21	08/31/21 23:10	SDL	Mt. Juliet, TN

2108B84-024B NDD-TW-4 (31.5-32') L1394947-22 Solid

Collected by	Collected date/time	Received date/time
	08/19/21 14:25	08/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731862	1	08/30/21 18:21	08/31/21 23:11	SDL	Mt. Juliet, TN

CASE NARRATIVE

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.

John V Hawkins

John Hawkins
Project Manager

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:29	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:30	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:31	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:32	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Cyanide	U		0.0733	0.250	1	08/30/2021 16:35	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:36	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:37	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:38	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	0.0755	J	0.0733	0.250	1	08/30/2021 16:39	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:40	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:44	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:47	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:48	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Cyanide	U		0.0733	0.250	1	08/30/2021 16:49	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:51	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:52	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/30/2021 16:53	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Cyanide	U		0.0733	0.250	1	08/31/2021 23:08	WG1731862

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/31/2021 23:09	WG1731862

Collected date/time: 08/19/21 12:45

L1394947

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Cyanide	U		0.0733	0.250	1	08/30/2021 16:54	WG1730165

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	U		0.0733	0.250	1	08/31/2021 23:10	WG1731862

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Cyanide	U		0.0733	0.250	1	08/31/2021 23:11	WG1731862

Method Blank (MB)

(MB) R3698238-1 08/30/21 16:23

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0733	0.250

L1394947-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1394947-10 08/30/21 16:40 • (DUP) R3698238-3 08/30/21 16:41

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	U	U	1	0.000		20

L1394947-20 Original Sample (OS) • Duplicate (DUP)

(OS) L1394947-20 08/30/21 16:54 • (DUP) R3698238-6 08/30/21 16:55

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	U	U	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3698238-2 08/30/21 16:24

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.49	99.7	85.0-115	

L1394947-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1394947-10 08/30/21 16:40 • (MS) R3698238-4 08/30/21 16:42 • (MSD) R3698238-5 08/30/21 16:43

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	1.51	1.60	90.6	96.0	1	75.0-125			5.76	20

L1394947-20 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1394947-20 08/30/21 16:54 • (MS) R3698238-7 08/30/21 16:56 • (MSD) R3698238-8 08/30/21 16:57

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	1.64	1.61	98.4	96.7	1	75.0-125			1.74	20

Method Blank (MB)

(MB) R3698745-1 08/31/21 23:02

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0733	0.250

L1394947-22 Original Sample (OS) • Duplicate (DUP)

(OS) L1394947-22 08/31/21 23:11 • (DUP) R3698745-3 08/31/21 23:17

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	U	U	1	0.000		20

L1395081-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1395081-01 08/31/21 23:23 • (DUP) R3698745-6 08/31/21 23:24

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	U	U	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3698745-2 08/31/21 23:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.58	103	85.0-115	

L1394947-22 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1394947-22 08/31/21 23:11 • (MS) R3698745-4 08/31/21 23:18 • (MSD) R3698745-5 08/31/21 23:19

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	U	1.49	1.56	89.3	93.5	1	75.0-125			4.56	20

L1395081-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395081-01 08/31/21 23:23 • (MS) R3698745-7 08/31/21 23:25 • (MSD) R3698745-8 08/31/21 23:26

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	U	0.518	0.544	31.1	32.6	1	75.0-125	J6	J6	4.75	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.
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.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
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	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 2

ENVIRONMENTAL ANALYSIS LABORATORY

1166

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: clients.hallenvironmental.com

SUB CONTRACTOR:	Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859	
ADDRESS:	12065 Lebanon Rd		ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP:	Mt. Juliet, TN 37122				

L1394947

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	2108B84-001B	NDD-TW-5 (0-0.5')	4OZGU	Soil	8/19/2021 3:45:00 PM	1	Cyanide J and MDL	-01
2	2108B84-002B	NDD-TW-5 (1.5-2')	4OZGU	Soil	8/19/2021 4:00:00 PM	1	Cyanide J and MDL	-02
3	2108B84-003B	NDD-TW-5 (18.5-19')	4OZGU	Soil	8/19/2021 5:35:00 PM	1	Cyanide J and MDL	-03
4	2108B84-004B	NDD-TW-5 (23-23.5')	4OZGU	Soil	8/19/2021 5:45:00 PM	1	Cyanide J and MDL	-04
5	2108B84-005B	NDD-BD4	4OZGU	Soil	8/19/2021	1	Cyanide J and MDL	-05
6	2108B84-008B	NDD-TW-5 (30.5-31)	4OZGU	Soil	8/20/2021 8:10:00 AM	1	Cyanide J and MDL	-06
7	2108B84-009B	NDD-SB-2 (0-0.5')	4OZGU	Soil	8/20/2021 12:37:00 PM	1	Cyanide J and MDL	-07
8	2108B84-010B	NDD-SB-2 (1.5-2')	4OZGU	Soil	8/20/2021 12:50:00 PM	1	Cyanide J and MDL	-08
9	2108B84-011B	NDD-SB-2 (3.5-4')	4OZGU	Soil	8/20/2021 12:55:00 PM	1	Cyanide J and MDL	-09
10	2108B84-012B	NDD-SB-2 (19-19.5')	4OZGU	Soil	8/20/2021 1:00:00 PM	1	Cyanide J and MDL	-10
11	2108B84-013B	NDD-SB-1 (0-0.5')	4OZGU	Soil	8/18/2021 2:35:00 PM	1	Cyanide J and MDL	-11
12	2108B84-014B	NDD-SB-1 (1.5-2')	4OZGU	Soil	8/18/2021 2:45:00 PM	1	Cyanide J and MDL	-12
13	2108B84-015B	NDD-SB-1 (5-5.5')	4OZGU	Soil	8/18/2021 2:55:00 PM	1	Cyanide J and MDL	-13

7746 1130 4101

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: 8/23/2021	Time: 10:14 AM	Received By: Jasmine Fuqua	Date: 8/25/21	Time: 900
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 A2+1 °C Attempt to Cool? _____

Comments 1.6+1=1.7 COC SI

Received by OCD: 9/19/2022 12:31:41 PM

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: clients.hallenvironmental.com

SUB CONTRATOR:	Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX:	(615) 758-5859
ADDRESS:	12065 Lebanon Rd		ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP:	Mt. Juliet, TN 37122				

L1394947

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
14	2108B84-016B	NDD-BD3	4OZGU	Soil	8/19/2021	1	Cyanide J and MDL	- 14
15	2108B84-017B	NDD-SB-1 (13.5-14')	4OZGU	Soil	8/19/2021 7:30:00 AM	1	Cyanide J and MDL	- 15
16	2108B84-018B	NDD-TW-3 (0-0.5')	4OZGU	Soil	8/19/2021 8:35:00 AM	1	Cyanide J and MDL	- 16
17	2108B84-019B	NDD-TW-3 (1.5-2')	4OZGU	Soil	8/19/2021 8:50:00 AM	1	Cyanide J and MDL	- 17
18	2108B84-020B	NDD-TW-3 (33.5-34')	4OZGU	Soil	8/19/2021 10:50:00 AM	1	Cyanide J and MDL	- 18
19	2108B84-021B	NDD-TW-4 (0-0.5')	4OZGU	Soil	8/19/2021 11:50:00 AM	1	Cyanide J and MDL	- 19
20	2108B84-022B	NDD-TW-4 (1.5-2')	4OZGU	Soil	8/19/2021 12:45:00 PM	1	Cyanide J and MDL	- 20
21	2108B84-023B	NDD-TW-4 (15-15.5')	4OZGU	Soil	8/19/2021 1:10:00 PM	1	Cyanide J and MDL	- 21
22	2108B84-024B	NDD-TW-4 (31.5-32')	4OZGU	Soil	8/19/2021 2:25:00 PM	1	Cyanide J and MDL	- 22

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

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: 8/23/2021	Time: 10:14 AM	Received By: Joanne Fuqua	Date: 8/25/21	Time: 900
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 _____ °C Attempt to Cool ? _____

Comments: _____

Released to Imaging: 11/23/2022 1:30:09 PM

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **LCS-62132**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **62132**	RunNo: **80756**
Prep Date: **8/23/2021**	Analysis Date: **8/24/2021**	SeqNo: **2849223** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	105	68.9	141			
Surr: DNOP	5.4		5.000		108	70	130			

Sample ID: **MB-62132**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **62132**	RunNo: **80756**
Prep Date: **8/23/2021**	Analysis Date: **8/24/2021**	SeqNo: **2849224** 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		122	70	130			

Sample ID: **MB-62136**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **62136**	RunNo: **80779**
Prep Date: **8/23/2021**	Analysis Date: **8/24/2021**	SeqNo: **2850197** 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		112	70	130			

Sample ID: **LCS-62136**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **62136**	RunNo: **80779**
Prep Date: **8/23/2021**	Analysis Date: **8/24/2021**	SeqNo: **2850198** 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	94.4	68.9	141			
Surr: DNOP	5.0		5.000		99.7	70	130			

Sample ID: **2108B84-021AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **NDD-TW-4 (0-0.5')**	Batch ID: **62136**	RunNo: **80779**
Prep Date: **8/23/2021**	Analysis Date: **8/24/2021**	SeqNo: **2850200** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	49.75	8.358	89.5	15	184			
Surr: DNOP	5.3		4.975		107	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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2108B84-021AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **NDD-TW-4 (0-0.5')** Batch ID: **62136** RunNo: **80779**
Prep Date: **8/23/2021** Analysis Date: **8/24/2021** SeqNo: **2850201** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	49.80	8.358	80.4	15	184	8.86	23.9	
Surr: DNOP	5.0		4.980		99.9	70	130	0	0	

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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS** Batch ID: **A80915** RunNo: **80915**
Prep Date: Analysis Date: **8/30/2021** SeqNo: **2855839** 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	102	70	130			
Toluene	1.1	0.050	1.000	0	106	70	130			
Chlorobenzene	1.1	0.050	1.000	0	106	70	130			
1,1-Dichloroethene	1.0	0.050	1.000	0	102	70	130			
Trichloroethene (TCE)	0.93	0.050	1.000	0	92.6	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		94.4	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.3	70	130			
Surr: Toluene-d8	0.51		0.5000		102	70	130			
Surr: 4-Bromofluorobenzene	0.51		0.5000		102	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **A80915** RunNo: **80915**
Prep Date: Analysis Date: **8/30/2021** SeqNo: **2855841** 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								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **A80915** RunNo: **80915**
Prep Date: Analysis Date: **8/30/2021** SeqNo: **2855841** Units: **mg/Kg**

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

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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A80915**	RunNo: **80915**
Prep Date:	Analysis Date: **8/30/2021**	SeqNo: **2855841** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.51		0.5000		101	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		89.3	70	130			
Surr: Toluene-d8	0.51		0.5000		101	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		99.2	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **A80948**	RunNo: **80948**
Prep Date:	Analysis Date: **8/31/2021**	SeqNo: **2857118** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	113	70	130			
Toluene	1.1	0.050	1.000	0	105	70	130			
Chlorobenzene	1.0	0.050	1.000	0	103	70	130			
1,1-Dichloroethene	1.1	0.050	1.000	0	105	70	130			
Trichloroethene (TCE)	0.91	0.050	1.000	0	91.0	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		104	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.7	70	130			
Surr: Toluene-d8	0.51		0.5000		102	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.2	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A80948**	RunNo: **80948**
Prep Date:	Analysis Date: **8/31/2021**	SeqNo: **2857119** 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								

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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A80948**	RunNo: **80948**
Prep Date:	Analysis Date: **8/31/2021**	SeqNo: **2857119** Units: **mg/Kg**

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

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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **A80948** RunNo: **80948**
Prep Date: Analysis Date: **8/31/2021** SeqNo: **2857119** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	0.57		0.5000		114	70	130			
Surr: 1,2-Dichloroethane-d4	0.43		0.5000		86.6	70	130			
Surr: Toluene-d8	0.48		0.5000		97.0	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		99.4	70	130			

Sample ID: **2108b84-009ams** SampType: **MS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **NDD-SB-2 (0-0.5')** Batch ID: **A80948** RunNo: **80948**
Prep Date: Analysis Date: **8/31/2021** SeqNo: **2857122** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	3.3	0.085	3.383	0.07679	95.8	70	130			
Toluene	4.2	0.17	3.383	0.9010	98.4	70	130			
Chlorobenzene	3.6	0.17	3.383	0	107	70	130			
1,1-Dichloroethene	2.9	0.17	3.383	0	86.7	49.9	132			
Trichloroethene (TCE)	2.6	0.17	3.383	0	77.5	52.9	126			
Surr: Dibromofluoromethane	1.5		1.692		89.5	70	130			
Surr: 1,2-Dichloroethane-d4	1.5		1.692		86.6	70	130			
Surr: Toluene-d8	1.7		1.692		100	70	130			
Surr: 4-Bromofluorobenzene	1.6		1.692		91.8	70	130			

Sample ID: **2108b84-009amsd** SampType: **MSD** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **NDD-SB-2 (0-0.5')** Batch ID: **A80948** RunNo: **80948**
Prep Date: Analysis Date: **8/31/2021** SeqNo: **2857123** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	3.2	0.085	3.383	0.07679	93.3	70	130	2.58	20	
Toluene	4.1	0.17	3.383	0.9010	94.0	70	130	3.62	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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2108b84-009amsd** SampType: **MSD** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **NDD-SB-2 (0-0.5')** Batch ID: **A80948** RunNo: **80948**
Prep Date: Analysis Date: **8/31/2021** SeqNo: **2857123** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlorobenzene	3.5	0.17	3.383	0	102	70	130	4.87	20	
1,1-Dichloroethene	2.8	0.17	3.383	0	82.2	49.9	132	5.36	20	
Trichloroethene (TCE)	2.6	0.17	3.383	0	75.7	52.9	126	2.41	20	
Surr: Dibromofluoromethane	1.5		1.692		86.7	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	1.5		1.692		86.1	70	130	0	0	
Surr: Toluene-d8	1.7		1.692		99.7	70	130	0	0	
Surr: 4-Bromofluorobenzene	1.5		1.692		89.1	70	130	0	0	

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS** Batch ID: **R80995** RunNo: **80995**
Prep Date: Analysis Date: **9/1/2021** SeqNo: **2858591** 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	70	130			
Toluene	0.90	0.050	1.000	0	90.2	70	130			
Chlorobenzene	0.86	0.050	1.000	0	85.6	70	130			
1,1-Dichloroethene	0.89	0.050	1.000	0	89.2	70	130			
Trichloroethene (TCE)	0.88	0.050	1.000	0	87.7	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: 1,2-Dichloroethane-d4	0.51		0.5000		103	70	130			
Surr: Toluene-d8	0.50		0.5000		100	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.2	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **R80995** RunNo: **80995**
Prep Date: Analysis Date: **9/1/2021** SeqNo: **2858619** 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								

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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **R80995**	RunNo: **80995**
Prep Date:	Analysis Date: **9/1/2021**	SeqNo: **2858619** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **R80995**	RunNo: **80995**
Prep Date:	Analysis Date: **9/1/2021**	SeqNo: **2858619** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	0.53		0.5000		105	70	130			
Surr: Toluene-d8	0.47		0.5000		94.3	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.4	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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62187**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **62187**	RunNo: **80881**
Prep Date: **8/25/2021**	Analysis Date: **8/27/2021**	SeqNo: **2854274** 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	1.0								
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	0.50								
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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62187** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62187** RunNo: **80881**
Prep Date: **8/25/2021** Analysis Date: **8/27/2021** SeqNo: **2854274** 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-Nitrosodimethylamine	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	2.1		3.330		62.8	20.3	74.1			
Surr: Phenol-d5	2.5		3.330		76.3	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.2		3.330		66.6	17.3	122			
Surr: Nitrobenzene-d5	0.98		1.670		59.0	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		70.8	21.5	90.1			
Surr: 4-Terphenyl-d14	1.4		1.670		84.9	15	140			

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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **lcs-62187** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62187** RunNo: **80881**
Prep Date: **8/25/2021** Analysis Date: **8/27/2021** SeqNo: **2854275** 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	86.6	22.9	109			
4-Chloro-3-methylphenol	2.9	0.50	3.330	0	85.8	24.2	109			
2-Chlorophenol	2.5	0.20	3.330	0	75.1	18.8	103			
1,4-Dichlorobenzene	1.1	0.20	1.670	0	64.9	18.8	89.5			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	74.1	20.2	94.5			
N-Nitrosodi-n-propylamine	1.3	0.20	1.670	0	77.4	19.2	96.9			
4-Nitrophenol	3.2	0.25	3.330	0	95.0	25	118			
Pentachlorophenol	2.7	0.40	3.330	0	81.7	24.1	107			
Phenol	2.7	0.20	3.330	0	82.2	17.8	112			
Pyrene	1.7	0.20	1.670	0	102	25.9	125			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	71.0	18.5	92.8			
Surr: 2-Fluorophenol	2.2		3.330		66.8	20.3	74.1			
Surr: Phenol-d5	2.7		3.330		81.8	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.9		3.330		87.6	17.3	122			
Surr: Nitrobenzene-d5	1.1		1.670		68.8	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.4		1.670		81.0	21.5	90.1			
Surr: 4-Terphenyl-d14	1.8		1.670		107	15	140			

Sample ID: **mb-62157** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62157** RunNo: **80881**
Prep Date: **8/24/2021** Analysis Date: **8/27/2021** SeqNo: **2854276** 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	1.0								
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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62157** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62157** RunNo: **80881**
Prep Date: **8/24/2021** Analysis Date: **8/27/2021** SeqNo: **2854276** 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	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	0.50								
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-Nitrosodimethylamine	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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62157** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62157** RunNo: **80881**
Prep Date: **8/24/2021** Analysis Date: **8/27/2021** SeqNo: **2854276** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	2.7		3.330		80.6	20.3	74.1			S
Surr: Phenol-d5	3.5		3.330		104	23.1	92.7			S
Surr: 2,4,6-Tribromophenol	2.9		3.330		86.4	17.3	122			
Surr: Nitrobenzene-d5	1.3		1.670		77.6	24.7	73.2			S
Surr: 2-Fluorobiphenyl	1.4		1.670		84.6	21.5	90.1			
Surr: 4-Terphenyl-d14	1.7		1.670		103	15	140			

Sample ID: **lcs-62157** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62157** RunNo: **80881**
Prep Date: **8/24/2021** Analysis Date: **8/27/2021** SeqNo: **2854277** 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	86.4	22.9	109			
4-Chloro-3-methylphenol	2.8	0.50	3.330	0	85.4	24.2	109			
2-Chlorophenol	2.5	0.20	3.330	0	75.3	18.8	103			
1,4-Dichlorobenzene	1.1	0.20	1.670	0	66.1	18.8	89.5			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	72.1	20.2	94.5			
N-Nitrosodi-n-propylamine	1.3	0.20	1.670	0	80.7	19.2	96.9			
4-Nitrophenol	3.3	0.25	3.330	0	98.0	25	118			
Pentachlorophenol	2.7	0.40	3.330	0	80.1	24.1	107			
Phenol	2.7	0.20	3.330	0	80.9	17.8	112			
Pyrene	1.6	0.20	1.670	0	94.7	25.9	125			
1,2,4-Trichlorobenzene	1.3	0.20	1.670	0	75.8	18.5	92.8			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **lcs-62157** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62157** RunNo: **80881**
Prep Date: **8/24/2021** Analysis Date: **8/27/2021** SeqNo: **2854277** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	2.3		3.330		68.6	20.3	74.1			
Surr: Phenol-d5	2.7		3.330		81.1	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.9		3.330		86.4	17.3	122			
Surr: Nitrobenzene-d5	1.2		1.670		74.8	24.7	73.2			S
Surr: 2-Fluorobiphenyl	1.4		1.670		81.3	21.5	90.1			
Surr: 4-Terphenyl-d14	1.6		1.670		95.1	15	140			

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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62361** SampType: **MBLK** TestCode: **EPA Method 7471B: Mercury**
Client ID: **PBS** Batch ID: **62361** RunNo: **81040**
Prep Date: **9/2/2021** Analysis Date: **9/3/2021** SeqNo: **2860220** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LLLCS-62361** SampType: **LCSLL** TestCode: **EPA Method 7471B: Mercury**
Client ID: **BatchQC** Batch ID: **62361** RunNo: **81040**
Prep Date: **9/2/2021** Analysis Date: **9/3/2021** SeqNo: **2860221** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0060	0.033	0.006660	0	89.4	70	130			J

Sample ID: **LCS-62361** SampType: **LCS** TestCode: **EPA Method 7471B: Mercury**
Client ID: **LCSS** Batch ID: **62361** RunNo: **81040**
Prep Date: **9/2/2021** Analysis Date: **9/3/2021** SeqNo: **2860222** 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-62362** SampType: **MBLK** TestCode: **EPA Method 7471B: Mercury**
Client ID: **PBS** Batch ID: **62362** RunNo: **81040**
Prep Date: **9/2/2021** Analysis Date: **9/3/2021** SeqNo: **2860223** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LLLCS-62362** SampType: **LCSLL** TestCode: **EPA Method 7471B: Mercury**
Client ID: **BatchQC** Batch ID: **62362** RunNo: **81040**
Prep Date: **9/2/2021** Analysis Date: **9/3/2021** SeqNo: **2860224** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0057	0.033	0.006660	0	85.6	70	130			J

Sample ID: **LCS-62362** SampType: **LCS** TestCode: **EPA Method 7471B: Mercury**
Client ID: **LCSS** Batch ID: **62362** RunNo: **81040**
Prep Date: **9/2/2021** Analysis Date: **9/3/2021** SeqNo: **2860225** 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	100	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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2108B84-010AMS** SampType: **MS** TestCode: **EPA Method 7471B: Mercury**
Client ID: **NDD-SB-2 (1.5-2')** Batch ID: **62361** RunNo: **81040**
Prep Date: **9/2/2021** Analysis Date: **9/3/2021** SeqNo: **2860241** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.18	0.033	0.1655	0.004212	104	80	120			

Sample ID: **2108B84-010AMSD** SampType: **MSD** TestCode: **EPA Method 7471B: Mercury**
Client ID: **NDD-SB-2 (1.5-2')** Batch ID: **62361** RunNo: **81040**
Prep Date: **9/2/2021** Analysis Date: **9/3/2021** SeqNo: **2860242** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.18	0.034	0.1697	0.004212	105	80	120	3.11	20	

Sample ID: **2108B84-022AMS** SampType: **MS** TestCode: **EPA Method 7471B: Mercury**
Client ID: **NDD-TW-4 (1.5-2')** Batch ID: **62362** RunNo: **81040**
Prep Date: **9/2/2021** Analysis Date: **9/3/2021** SeqNo: **2860259** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.18	0.033	0.1645	0	109	80	120			

Sample ID: **2108B84-022AMSD** SampType: **MSD** TestCode: **EPA Method 7471B: Mercury**
Client ID: **NDD-TW-4 (1.5-2')** Batch ID: **62362** RunNo: **81040**
Prep Date: **9/2/2021** Analysis Date: **9/3/2021** SeqNo: **2860260** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.18	0.033	0.1669	0	109	80	120	0.844	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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **LCS-62200** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62200** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853109** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	23	2.5	25.00	0	92.6	80	120			
Arsenic	22	2.5	25.00	0	88.8	80	120			
Barium	23	0.10	25.00	0	93.6	80	120			
Beryllium	24	0.15	25.00	0	97.9	80	120			
Cadmium	23	0.10	25.00	0	92.3	80	120			
Chromium	23	0.30	25.00	0	93.4	80	120			
Cobalt	23	0.30	25.00	0	93.6	80	120			
Iron	25	2.5	25.00	0	100	80	120			
Manganese	23	0.20	25.00	0	93.2	80	120			
Nickel	23	0.50	25.00	0	92.9	80	120			
Silver	4.6	0.25	5.000	0	91.4	80	120			
Vanadium	24	2.5	25.00	0	96.0	80	120			
Zinc	23	2.5	25.00	0	91.2	80	120			

Sample ID: **MB-62201** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62201** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853110** 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	0.041	0.15								J
Cadmium	ND	0.10								
Chromium	ND	0.30								
Cobalt	0.062	0.30								J
Iron	ND	2.5								
Manganese	ND	0.20								
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	ND	2.5								

Sample ID: **LCS-62201** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62201** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853112** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	23	2.5	25.00	0	93.7	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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **LCS-62201** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62201** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853112** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	23	2.5	25.00	0	91.5	80	120			
Barium	24	0.10	25.00	0	95.6	80	120			
Beryllium	25	0.15	25.00	0	99.0	80	120			
Cadmium	24	0.10	25.00	0	94.6	80	120			
Chromium	24	0.30	25.00	0	95.5	80	120			
Cobalt	24	0.30	25.00	0	95.9	80	120			
Iron	25	2.5	25.00	0	99.4	80	120			
Manganese	24	0.20	25.00	0	94.4	80	120			
Nickel	24	0.50	25.00	0	95.2	80	120			
Selenium	22	2.5	25.00	0	89.3	80	120			
Silver	4.6	0.25	5.000	0	92.6	80	120			
Vanadium	24	2.5	25.00	0	97.4	80	120			
Zinc	23	2.5	25.00	0	93.2	80	120			

Sample ID: **MB-62200** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62200** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853116** 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	0.033	0.15								J
Cadmium	ND	0.10								
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	ND	2.5								
Manganese	ND	0.20								
Nickel	ND	0.50								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	ND	2.5								

Sample ID: **2108B84-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-5 (0-0.5')** Batch ID: **62200** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853191** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	5.0	4.9	24.37	0	20.5	75	125			S
Arsenic	23	4.9	24.37	0	95.7	75	125			

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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2108B84-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-5 (0-0.5')** Batch ID: **62200** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853191** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	310	0.19	24.37	300.9	28.6	75	125			S
Beryllium	24	0.29	24.37	1.228	95.3	75	125			
Cadmium	21	0.19	24.37	0	86.9	75	125			
Chromium	38	0.58	24.37	11.94	107	75	125			
Cobalt	28	0.58	24.37	5.715	90.6	75	125			
Manganese	400	0.39	24.37	365.2	132	75	125			S
Nickel	35	0.97	24.37	11.77	94.6	75	125			
Silver	2.4	0.49	4.874	0	50.0	75	125			S
Vanadium	50	4.9	24.37	20.94	119	75	125			
Zinc	42	4.9	24.37	19.29	92.1	75	125			

Sample ID: **2108B84-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-5 (0-0.5')** Batch ID: **62200** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853195** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	3.7	4.9	24.41	0	15.2	75	125	29.6	20	JRS
Arsenic	22	4.9	24.41	0	90.3	75	125	5.62	20	
Barium	310	0.20	24.41	300.9	33.5	75	125	0.387	20	S
Beryllium	25	0.29	24.41	1.228	95.6	75	125	0.502	20	
Cadmium	22	0.20	24.41	0	88.2	75	125	1.73	20	
Chromium	39	0.59	24.41	11.94	112	75	125	3.24	20	
Cobalt	29	0.59	24.41	5.715	93.9	75	125	3.02	20	
Manganese	390	0.39	24.41	365.2	113	75	125	1.19	20	
Nickel	36	0.98	24.41	11.77	97.9	75	125	2.40	20	
Silver	2.4	0.49	4.883	0	49.1	75	125	1.64	20	S
Vanadium	51	4.9	24.41	20.94	123	75	125	1.98	20	
Zinc	43	4.9	24.41	19.29	98.9	75	125	3.97	20	

Sample ID: **2108B84-023AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-4 (15-15.5')** Batch ID: **62201** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853223** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	25	0.30	25.34	1.010	93.6	75	125			
Cadmium	23	0.20	25.34	0	91.0	75	125			
Chromium	30	0.61	25.34	10.54	76.8	75	125			
Cobalt	27	0.61	25.34	4.630	87.1	75	125			
Nickel	29	1.0	25.34	9.493	78.7	75	125			
Selenium	21	5.1	25.34	0	84.2	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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2108B84-023AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-4 (15-15.5')** Batch ID: **62201** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853223** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	40	5.1	25.34	19.82	79.3	75	125			

Sample ID: **2108B84-023AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-4 (15-15.5')** Batch ID: **62201** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853224** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	23	0.29	24.19	1.010	92.1	75	125	6.02	20	
Cadmium	21	0.19	24.19	0	88.5	75	125	7.45	20	
Chromium	32	0.58	24.19	10.54	88.2	75	125	6.10	20	
Cobalt	25	0.58	24.19	4.630	85.3	75	125	5.46	20	
Nickel	30	0.97	24.19	9.493	84.1	75	125	1.31	20	
Selenium	19	4.8	24.19	0	77.3	75	125	13.2	20	
Vanadium	44	4.8	24.19	19.82	100	75	125	10.0	20	

Sample ID: **MB-62200** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62200** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2855985** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.30								
Selenium	ND	2.5								

Sample ID: **LCS-62200** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62200** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2855987** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	24	0.30	25.00	0	95.1	80	120			
Selenium	22	2.5	25.00	0	87.2	80	120			

Sample ID: **MB-62201** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62201** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2855988** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.30								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **LCS-62201** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62201** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2855990** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	25	0.30	25.00	0	98.6	80	120			

Sample ID: **2108B84-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-5 (0-0.5')** Batch ID: **62200** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2856026** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	24	0.58	24.37	5.685	76.8	75	125			
Selenium	20	4.9	24.37	0	81.2	75	125			

Sample ID: **2108B84-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-5 (0-0.5')** Batch ID: **62200** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2856027** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	26	0.59	24.41	5.685	84.1	75	125	7.20	20	
Selenium	21	4.9	24.41	0	87.6	75	125	7.80	20	

Sample ID: **2108B84-023AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-4 (15-15.5')** Batch ID: **62201** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2856032** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	23	0.61	25.34	4.218	75.9	75	125			
Zinc	36	5.1	25.34	14.88	81.5	75	125			

Sample ID: **2108B84-023AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-4 (15-15.5')** Batch ID: **62201** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2856033** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	24	0.58	24.19	4.218	83.4	75	125	3.95	20	
Zinc	35	4.8	24.19	14.88	84.9	75	125	0.358	20	

Sample ID: **2108B84-023AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-4 (15-15.5')** Batch ID: **62201** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2856036** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	530	0.51	25.34	639.3	-435	75	125			S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2108B84-023AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-4 (15-15.5')** Batch ID: **62201** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2856036** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	450	1.0	25.34	656.1	-816	75	125			S

Sample ID: **2108B84-023AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-4 (15-15.5')** Batch ID: **62201** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2856037** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	540	0.48	24.19	639.3	-414	75	125	1.89	20	S
Manganese	760	0.97	24.19	656.1	449	75	125	51.9	20	RS

Sample ID: **2108B84-023AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-4 (15-15.5')** Batch ID: **62201** RunNo: **80954**
Prep Date: **8/25/2021** Analysis Date: **8/31/2021** SeqNo: **2857373** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	26	5.1	25.34	0	102	75	125			

Sample ID: **2108B84-023AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-TW-4 (15-15.5')** Batch ID: **62201** RunNo: **80954**
Prep Date: **8/25/2021** Analysis Date: **8/31/2021** SeqNo: **2857374** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	24	4.8	24.19	0	97.5	75	125	8.86	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#: **2108B84**

14-Sep-21

Client: Marathon

Project: North Drainage Ditch Area

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **B80915**	RunNo: **80915**
Prep Date:	Analysis Date: **8/30/2021**	SeqNo: **2855892** 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	90.0	70	130			
Surr: BFB	510		500.0		101	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **B80915**	RunNo: **80915**
Prep Date:	Analysis Date: **8/30/2021**	SeqNo: **2855893** 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	500		500.0		99.3	70	130			

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **B80948**	RunNo: **80948**
Prep Date:	Analysis Date: **8/31/2021**	SeqNo: **2857134** 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	82.8	70	130			
Surr: BFB	510		500.0		101	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **B80948**	RunNo: **80948**
Prep Date:	Analysis Date: **8/31/2021**	SeqNo: **2857135** 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	470		500.0		93.0	70	130			

Sample ID: **2108b84-008ams**	SampType: **MS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **NDD-TW-5 (30.5-31)**	Batch ID: **B80948**	RunNo: **80948**
Prep Date:	Analysis Date: **8/31/2021**	SeqNo: **2857137** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	14	3.1	15.71	0	87.4	64.4	124			
Surr: BFB	320		314.2		102	70	130			

Sample ID: **2108b84-008amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **NDD-TW-5 (30.5-31)**	Batch ID: **B80948**	RunNo: **80948**
Prep Date:	Analysis Date: **8/31/2021**	SeqNo: **2857138** 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#: **2108B84**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2108b84-008amsd** SampType: **MSD** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **NDD-TW-5 (30.5-31)** Batch ID: **B80948** RunNo: **80948**
Prep Date: Analysis Date: **8/31/2021** SeqNo: **2857138** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	13	3.1	15.71	0	81.0	64.4	124	7.55	20	
Surr: BFB	310		314.2		97.5	70	130	0	0	

Sample ID: **2.5ug gro lcs** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **R80995** RunNo: **80995**
Prep Date: Analysis Date: **9/1/2021** SeqNo: **2858623** 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	88.8	70	130			
Surr: BFB	490		500.0		97.5	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **R80995** RunNo: **80995**
Prep Date: Analysis Date: **9/1/2021** SeqNo: **2858637** 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	460		500.0		92.3	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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: **Marathon** Work Order Number: **2108B84** RcptNo: **1**

Received By: **Juan Rojas** **8/20/2021 4:00:00 PM**

Completed By: **Desiree Dominguez** **8/20/2021 4:41:29 PM**

Reviewed By: SPA 8.20.21

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. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	# of preserved bottles checked for pH:
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	(<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
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: JR 8/20/21

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	2.3	Good	Not Present			
2	2.7	Good	Not Present			

Released to Imaging: 11/3/2022 3:30:09 PM

Received by OCD: 9/19/2022 12:31:41 PM

Chain-of-Custody Record

Client: Marathon Gallup Refinery

Mailing Address: 92 Giant Crossing Road
Jamesto NM,87301

Phone #: 808-640-1823

email or Fax#:

QA/QC Package:
X Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

X EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name:
North Drainage Ditch Area

Project #:
697-082-002

Project Manager:
Caitlin Fields

Sampler: Kara Hoppes & Hilario Trejo
On Ice: ☐ Yes ☐ No
# of Coolers: 2
Cooler Temp(including CF): 2.5-0.2=2.3
2.9-0.2=2.7

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 Name	Container Type and #	Preservative Type	HEAL No. 2108B84	TPH-DRO, Method 8015M/D	TPH-GRO, Method 8015D	VOCs, Method 8260B	Total metals, Method 6020	Mercury, Method 7470	SVOCs, Method 827/8270SIM	Cyanide 9/1/21								
8/19/2021	1545	Soil	NDD-TW-5 (0-0.5')	4		-001	x	x	x	x	x	x	X								
8/19/2021	1600	Soil	NDD-TW-5 (1.5-2')	4		-002	x	x	x	x	x	x	X								
8/19/2021	1735	Soil	NDD-TW-5 (18.5-19')	4		-003	x	x	x	x	x	x	X								
8/19/2021	1745	Soil	NDD-TW-5 (23-23.5')	4		-004	x	x	x	x	x	x	X								
8/19/2021		Soil	NDD-BD4	4		-005	x	x	x	x	x	x	X								
8/18/2021	1445	Water	NDD-EB5	2	HCl	-006			x					VOAs not received						9/1/21	
8/19/2021	1735	Water	NDD-EB6	2	HCl	-007			x												
8/20/2021	0810	Soil	NDD-TW-5 (30.5-31')	4		-008	X	X	X	X	X	X	X								
8/20/2021	1237	Soil	NDD-SB-2 (0-0.5')	4		-009	X	X	X	X	X	X	X								
8/20/2021	1250	Soil	NDD-SB-2 (1.5-2')	4		-010	X	X	X	X	X	X	X								
8/20/2021	1255	Soil	NDD-SB-2 (3.5-4')	4		-011	X	X	X	X	X	X	X								
8/20/2021	1300	Soil	NDD-SB-2 (19-19.5')	4		-012	X	X	X	X	X	X	X								

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
8/20/21	2:00 PM	Kara Hoppes		courier	8/20/21	16:00
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks: P.O# 4500273327

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Released to Imaging: 11/3/2022 1:30:09 PM

Chain-of-Custody Record

Client: Marathon Gallup Refinery

Mailing Address: 92 Giant Crossing Road
Jamesto NM,87301

Phone #: 808-640-1823

email or Fax#:

QA/QC Package:
X Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

X EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name:
North Drainage Ditch Area

Project #:
697-082-002

Project Manager:
Caitlin Fields

Sampler: Kara Hoppes & Hilario Trejo
On Ice: ☑ Yes ☐ No
# of Coolers: 2
Cooler Temp(including CF): 2.5-0.2=2.3 2.9-0.2=2.7

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 Name	Container Type and #	Preservative Type	HEAL No. 2108884	TPH-DRO, Method 8015M/D	TPH-GRO, Method 8015D	VOCs, Method 8260B	Total metals, Method 6020	Mercury, Method 7470	SVOCs, Method 827/8270SIM	Cyanide 8/10/21
8/18/2021	1435	Soil	NDD-SB-1 (0-0.5')	4		-013	x	x	x	x	x	x	x
8/18/2021	1445	Soil	NDD-SB-1 (1.5-2')	4		-014	x	x	x	x	x	x	x
8/18/2021	1455	Soil	NDD-SB-1 (5-5.5')	4		-015	x	x	x	x	x	x	x
8/18/2021		Soil	NDD-BD3	4		-016	x	x	x	x	x	x	x
8/19/2021	0730	Soil	NDD-SB-1 (13.5-14')	4		-017	x	x	x	x	x	x	x
8/19/2021	0835	Soil	NDD-TW-3 (0-0.5')	4		-018	x	x	x	x	x	x	x
8/19/2021	0850	Soil	NDD-TW-3 (1.5-2')	4		-019	x	x	x	x	x	x	x
8/19/2021	1050	Soil	NDD-TW-3 (33.5-34')	4		-020	x	x	x	x	x	x	x
8/19/2021	1150	Soil	NDD-TW-4 (0-0.5')	4		-021	x	x	x	x	x	x	x
8/19/2021	1245	Soil	NDD-TW-4 (1.5-2')	4		-022	x	x	x	x	x	x	x
8/19/2021	1310	Soil	NDD-TW-4 (15-15.5')	4		-023	x	x	x	x	x	x	x
8/19/2021	1425	Soil	NDD-TW-4 (31.5-32')	4		-024	x	x	x	x	x	x	x

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
8/20/21	2:00 PM	Kara Hoppes		courier	8/20/21	10:00
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:
PO #4500273327
MeOH Blank-1 -025
MeOH Blank-2 -026 > DAD 8/20/21

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Received by OCD: 9/19/2022 12:31:41 PM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

September 14, 2021

Caitlin Fields

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX:

RE: North Drainage Ditch Area OrderNo.: 2108D42

Dear Caitlin Fields:

Hall Environmental Analysis Laboratory received 27 sample(s) on 8/25/2021 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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (23.5-24')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 2:45:00 PM
Lab ID: 2108D42-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	12	4.7	9.6		mg/Kg	1	8/29/2021 10:01:46 AM	62220
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/29/2021 10:01:46 AM	62220
Surr: DNOP	129	0	70-130		%Rec	1	8/29/2021 10:01:46 AM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0025	0.031		mg/Kg	1	9/7/2021 3:22:08 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	8.0	12		mg/Kg	5	8/31/2021 5:13:11 PM	62279
Arsenic	ND	6.9	12		mg/Kg	5	9/1/2021 2:42:51 PM	62279
Barium	780	0.29	0.49		mg/Kg	5	8/31/2021 5:13:11 PM	62279
Beryllium	0.76	0.14	0.73		mg/Kg	5	8/31/2021 5:13:11 PM	62279
Cadmium	ND	0.24	0.49		mg/Kg	5	8/31/2021 5:13:11 PM	62279
Chromium	9.1	0.73	1.5		mg/Kg	5	8/31/2021 5:13:11 PM	62279
Cobalt	5.4	0.29	1.5		mg/Kg	5	8/31/2021 5:13:11 PM	62279
Iron	12000	240	240		mg/Kg	100	9/1/2021 1:53:40 PM	62279
Lead	ND	1.3	1.5		mg/Kg	5	8/31/2021 5:13:11 PM	62279
Manganese	1000	0.80	0.97		mg/Kg	5	8/31/2021 5:13:11 PM	62279
Nickel	8.1	0.96	2.4		mg/Kg	5	8/31/2021 5:13:11 PM	62279
Selenium	ND	11	12		mg/Kg	5	8/31/2021 5:13:11 PM	62279
Silver	ND	0.71	1.2		mg/Kg	5	8/31/2021 5:13:11 PM	62279
Vanadium	17	0.55	12		mg/Kg	5	9/1/2021 2:42:51 PM	62279
Zinc	19	6.5	12		mg/Kg	5	8/31/2021 5:13:11 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.089	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Acenaphthylene	ND	0.090	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Aniline	ND	0.069	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Anthracene	ND	0.090	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Azobenzene	ND	0.099	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Benz(a)anthracene	ND	0.064	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Benzo(a)pyrene	ND	0.094	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Benzo(b)fluoranthene	ND	0.11	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Benzo(k)fluoranthene	ND	0.075	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Benzoic acid	ND	0.12	1.0		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Benzyl alcohol	ND	0.082	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Bis(2-chloroethoxy)methane	ND	0.076	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Bis(2-ethylhexyl)phthalate	ND	0.21	0.50		mg/Kg	1	9/1/2021 7:27:28 PM	62272

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (23.5-24')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 2:45:00 PM
Lab ID: 2108D42-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Butyl benzyl phthalate	ND	0.061	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Carbazole	ND	0.088	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
4-Chloro-3-methylphenol	ND	0.084	0.50		mg/Kg	1	9/1/2021 7:27:28 PM	62272
4-Chloroaniline	ND	0.097	0.50		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2-Chloronaphthalene	ND	0.094	0.25		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
4-Chlorophenyl phenyl ether	ND	0.085	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Chrysene	ND	0.088	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Di-n-butyl phthalate	ND	0.28	0.40		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Di-n-octyl phthalate	ND	0.13	0.40		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
1,2-Dichlorobenzene	ND	0.081	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
1,3-Dichlorobenzene	ND	0.071	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Diethyl phthalate	ND	0.32	0.50		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Dimethyl phthalate	ND	0.092	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2,4-Dichlorophenol	ND	0.081	0.40		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2,4-Dimethylphenol	ND	0.071	0.30		mg/Kg	1	9/1/2021 7:27:28 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.084	0.40		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2,4-Dinitrophenol	ND	0.050	0.50		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2,6-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Fluoranthene	ND	0.081	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Fluorene	ND	0.089	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Hexachlorobenzene	ND	0.089	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Hexachlorobutadiene	ND	0.093	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Hexachloroethane	ND	0.088	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Isophorone	ND	0.081	0.40		mg/Kg	1	9/1/2021 7:27:28 PM	62272
1-Methylnaphthalene	ND	0.092	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2-Methylnaphthalene	ND	0.082	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2-Methylphenol	ND	0.084	0.40		mg/Kg	1	9/1/2021 7:27:28 PM	62272
3+4-Methylphenol	ND	0.082	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
N-Nitrosodi-n-propylamine	ND	0.092	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (23.5-24')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 2:45:00 PM
Lab ID: 2108D42-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Naphthalene	ND	0.094	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
3-Nitroaniline	ND	0.12	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Nitrobenzene	ND	0.082	0.40		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2-Nitrophenol	ND	0.086	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
4-Nitrophenol	ND	0.082	0.25		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Pentachlorophenol	ND	0.086	0.40		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Phenanthrene	ND	0.10	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Phenol	ND	0.077	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Pyrene	ND	0.076	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Pyridine	ND	0.16	0.40		mg/Kg	1	9/1/2021 7:27:28 PM	62272
1,2,4-Trichlorobenzene	ND	0.091	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
2,4,6-Trichlorophenol	ND	0.086	0.20		mg/Kg	1	9/1/2021 7:27:28 PM	62272
Surr: 2-Fluorophenol	56.0		20.3-74.1		%Rec	1	9/1/2021 7:27:28 PM	62272
Surr: Phenol-d5	69.5		23.1-92.7		%Rec	1	9/1/2021 7:27:28 PM	62272
Surr: 2,4,6-Tribromophenol	78.3		17.3-122		%Rec	1	9/1/2021 7:27:28 PM	62272
Surr: Nitrobenzene-d5	57.7		24.7-73.2		%Rec	1	9/1/2021 7:27:28 PM	62272
Surr: 2-Fluorobiphenyl	62.2		21.5-90.1		%Rec	1	9/1/2021 7:27:28 PM	62272
Surr: 4-Terphenyl-d14	98.5		15-140		%Rec	1	9/1/2021 7:27:28 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0052	0.014		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Toluene	ND	0.0035	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Ethylbenzene	ND	0.0066	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Methyl tert-butyl ether (MTBE)	ND	0.015	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,2,4-Trimethylbenzene	0.087	0.0038	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,3,5-Trimethylbenzene	0.038	0.0061	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,2-Dichloroethane (EDC)	ND	0.0062	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,2-Dibromoethane (EDB)	ND	0.011	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Naphthalene	ND	0.010	0.054		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1-Methylnaphthalene	ND	0.031	0.11		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
2-Methylnaphthalene	0.034	0.025	0.11	J	mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Acetone	ND	0.088	0.41		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Bromobenzene	ND	0.0057	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Bromodichloromethane	ND	0.0034	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Bromoform	ND	0.0065	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Bromomethane	ND	0.045	0.081		mg/Kg	1	8/30/2021 7:43:49 PM	R80915

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-6 (23.5-24')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 2:45:00 PM
Lab ID: 2108D42-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.12	0.27		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Carbon disulfide	ND	0.011	0.27		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Carbon tetrachloride	ND	0.0030	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Chlorobenzene	ND	0.0049	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Chloroethane	ND	0.010	0.054		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Chloroform	ND	0.0038	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Chloromethane	ND	0.0095	0.081		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
2-Chlorotoluene	ND	0.0036	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
4-Chlorotoluene	ND	0.014	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
cis-1,2-DCE	ND	0.013	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
cis-1,3-Dichloropropene	ND	0.0040	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,2-Dibromo-3-chloropropane	ND	0.012	0.054		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Dibromochloromethane	ND	0.0043	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Dibromomethane	ND	0.0063	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,2-Dichlorobenzene	ND	0.0056	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,3-Dichlorobenzene	ND	0.0051	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,4-Dichlorobenzene	ND	0.0072	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Dichlorodifluoromethane	ND	0.010	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,1-Dichloroethane	ND	0.0079	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,1-Dichloroethene	ND	0.0058	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,2-Dichloropropane	ND	0.0053	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,3-Dichloropropane	ND	0.0059	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
2,2-Dichloropropane	ND	0.0038	0.054		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,1-Dichloropropene	ND	0.0033	0.054		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Hexachlorobutadiene	ND	0.018	0.054		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
2-Hexanone	ND	0.012	0.27		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Isopropylbenzene	ND	0.0050	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
4-Isopropyltoluene	ND	0.0070	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
4-Methyl-2-pentanone	ND	0.031	0.27		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Methylene chloride	ND	0.020	0.081		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
n-Butylbenzene	0.0074	0.0072	0.081	J	mg/Kg	1	8/30/2021 7:43:49 PM	R80915
n-Propylbenzene	0.018	0.0044	0.027	J	mg/Kg	1	8/30/2021 7:43:49 PM	R80915
sec-Butylbenzene	ND	0.022	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Styrene	ND	0.0037	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
tert-Butylbenzene	ND	0.0063	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,1,1,2-Tetrachloroethane	ND	0.0040	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,1,2,2-Tetrachloroethane	ND	0.0087	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Tetrachloroethene (PCE)	ND	0.0074	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
trans-1,2-DCE	ND	0.0052	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-6 (23.5-24')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 2:45:00 PM
Lab ID: 2108D42-001
Matrix: MEOH (SOIL)
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0063	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,2,3-Trichlorobenzene	ND	0.0042	0.054		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,2,4-Trichlorobenzene	ND	0.0094	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,1,1-Trichloroethane	ND	0.0060	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,1,2-Trichloroethane	ND	0.0068	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Trichloroethene (TCE)	ND	0.0053	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Trichlorofluoromethane	ND	0.0061	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
1,2,3-Trichloropropane	ND	0.011	0.054		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Vinyl chloride	ND	0.0052	0.027		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Xylenes, Total	ND	0.014	0.054		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Surr: Dibromofluoromethane	93.9		70-130		%Rec	1	8/30/2021 7:43:49 PM	R80915
Surr: 1,2-Dichloroethane-d4	94.3		70-130		%Rec	1	8/30/2021 7:43:49 PM	R80915
Surr: Toluene-d8	101		70-130		%Rec	1	8/30/2021 7:43:49 PM	R80915
Surr: 4-Bromofluorobenzene	95.7		70-130		%Rec	1	8/30/2021 7:43:49 PM	R80915
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	18	0.75	2.7		mg/Kg	1	8/30/2021 7:43:49 PM	R80915
Surr: BFB	106	0	70-130		%Rec	1	8/30/2021 7:43:49 PM	R80915

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 4:30:00 PM
Lab ID: 2108D42-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	23	4.8	9.6		mg/Kg	1	8/29/2021 8:26:39 AM	62220
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/29/2021 8:26:39 AM	62220
Surr: DNOP	129	0	70-130		%Rec	1	8/29/2021 8:26:39 AM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0078	0.0028	0.035	J	mg/Kg	1	9/7/2021 3:28:28 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/31/2021 5:19:50 PM	62279
Arsenic	ND	2.8	5.0		mg/Kg	2	9/1/2021 2:49:20 PM	62279
Barium	330	0.12	0.20		mg/Kg	2	8/31/2021 5:19:50 PM	62279
Beryllium	1.4	0.058	0.30		mg/Kg	2	8/31/2021 5:19:50 PM	62279
Cadmium	ND	0.099	0.20		mg/Kg	2	8/31/2021 5:19:50 PM	62279
Chromium	16	0.30	0.59		mg/Kg	2	8/31/2021 5:19:50 PM	62279
Cobalt	7.0	0.12	0.59		mg/Kg	2	8/31/2021 5:19:50 PM	62279
Iron	20000	250	250		mg/Kg	100	9/1/2021 1:55:16 PM	62279
Lead	4.0	0.53	0.59		mg/Kg	2	8/31/2021 5:19:50 PM	62279
Manganese	420	0.33	0.40		mg/Kg	2	8/31/2021 5:19:50 PM	62279
Nickel	20	0.39	0.99		mg/Kg	2	8/31/2021 5:19:50 PM	62279
Selenium	ND	4.4	5.0		mg/Kg	2	8/31/2021 5:19:50 PM	62279
Silver	ND	0.29	0.50		mg/Kg	2	8/31/2021 5:19:50 PM	62279
Vanadium	37	0.22	5.0		mg/Kg	2	9/1/2021 2:49:20 PM	62279
Zinc	40	2.7	5.0		mg/Kg	2	8/31/2021 5:19:50 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.88	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Acenaphthylene	ND	0.89	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Aniline	ND	0.68	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Anthracene	ND	0.89	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Azobenzene	ND	0.98	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Benz(a)anthracene	ND	0.63	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Benzo(a)pyrene	ND	0.93	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Benzo(b)fluoranthene	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Benzo(k)fluoranthene	ND	0.74	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Benzoic acid	ND	1.2	9.8	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Benzyl alcohol	ND	0.80	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Bis(2-chloroethoxy)methane	ND	0.75	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 4:30:00 PM
Lab ID: 2108D42-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Butyl benzyl phthalate	ND	0.60	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Carbazole	ND	0.86	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
4-Chloro-3-methylphenol	ND	0.83	4.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
4-Chloroaniline	ND	0.96	4.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2-Chloronaphthalene	ND	0.93	2.5	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
4-Chlorophenyl phenyl ether	ND	0.83	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Chrysene	ND	0.87	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Di-n-octyl phthalate	ND	1.3	3.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
1,2-Dichlorobenzene	ND	0.79	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
1,3-Dichlorobenzene	ND	0.70	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
1,4-Dichlorobenzene	ND	0.83	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Dimethyl phthalate	ND	0.91	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2,4-Dichlorophenol	ND	0.80	3.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2,4-Dimethylphenol	ND	0.70	2.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.83	3.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2,4-Dinitrophenol	ND	0.49	4.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2,6-Dinitrotoluene	ND	1.0	4.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Fluoranthene	ND	0.79	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Fluorene	ND	0.88	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Hexachlorobenzene	ND	0.87	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Hexachlorobutadiene	ND	0.92	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Hexachloroethane	ND	0.87	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Isophorone	ND	0.80	3.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
1-Methylnaphthalene	ND	0.90	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2-Methylnaphthalene	ND	0.81	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2-Methylphenol	ND	0.83	3.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
3+4-Methylphenol	ND	0.81	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
N-Nitrosodi-n-propylamine	ND	0.91	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272

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		

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 4:30:00 PM
Lab ID: 2108D42-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Naphthalene	ND	0.92	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
3-Nitroaniline	ND	1.1	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
4-Nitroaniline	ND	1.3	3.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Nitrobenzene	ND	0.81	3.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2-Nitrophenol	ND	0.85	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
4-Nitrophenol	ND	0.81	2.5	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Pentachlorophenol	ND	0.85	3.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Phenol	ND	0.76	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Pyrene	ND	0.74	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Pyridine	ND	1.6	3.9	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
1,2,4-Trichlorobenzene	ND	0.90	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2,4,5-Trichlorophenol	ND	0.63	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
2,4,6-Trichlorophenol	ND	0.85	2.0	D	mg/Kg	10	9/1/2021 8:08:45 PM	62272
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/1/2021 8:08:45 PM	62272
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/1/2021 8:08:45 PM	62272
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/1/2021 8:08:45 PM	62272
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/1/2021 8:08:45 PM	62272
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/1/2021 8:08:45 PM	62272
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/1/2021 8:08:45 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0068	0.018		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Toluene	ND	0.0046	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Ethylbenzene	ND	0.0087	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Methyl tert-butyl ether (MTBE)	ND	0.020	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,2,4-Trimethylbenzene	ND	0.0050	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,3,5-Trimethylbenzene	ND	0.0080	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,2-Dichloroethane (EDC)	ND	0.0081	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,2-Dibromoethane (EDB)	ND	0.014	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Naphthalene	ND	0.013	0.071		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1-Methylnaphthalene	ND	0.041	0.14		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
2-Methylnaphthalene	ND	0.033	0.14		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Acetone	ND	0.12	0.53		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Bromobenzene	ND	0.0075	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Bromodichloromethane	ND	0.0045	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Bromoform	ND	0.0086	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Bromomethane	ND	0.059	0.11		mg/Kg	1	8/25/2021 9:43:14 PM	A80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-5 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 4:30:00 PM
Lab ID: 2108D42-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	0.16	0.15	0.36	J	mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Carbon disulfide	ND	0.015	0.36		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Carbon tetrachloride	ND	0.0040	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Chlorobenzene	ND	0.0064	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Chloroethane	ND	0.013	0.071		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Chloroform	ND	0.0050	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Chloromethane	ND	0.012	0.11		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
2-Chlorotoluene	ND	0.0048	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
4-Chlorotoluene	ND	0.019	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
cis-1,2-DCE	ND	0.018	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
cis-1,3-Dichloropropene	ND	0.0053	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,2-Dibromo-3-chloropropane	ND	0.015	0.071		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Dibromochloromethane	ND	0.0057	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Dibromomethane	ND	0.0083	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,2-Dichlorobenzene	ND	0.0074	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,3-Dichlorobenzene	ND	0.0067	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,4-Dichlorobenzene	ND	0.0095	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Dichlorodifluoromethane	ND	0.014	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,1-Dichloroethane	ND	0.010	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,1-Dichloroethene	ND	0.0076	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,2-Dichloropropane	ND	0.0069	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,3-Dichloropropane	ND	0.0078	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
2,2-Dichloropropane	ND	0.0051	0.071		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,1-Dichloropropene	ND	0.0043	0.071		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Hexachlorobutadiene	ND	0.024	0.071		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
2-Hexanone	ND	0.016	0.36		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Isopropylbenzene	ND	0.0066	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
4-Isopropyltoluene	ND	0.0091	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
4-Methyl-2-pentanone	ND	0.041	0.36		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Methylene chloride	ND	0.026	0.11		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
n-Butylbenzene	ND	0.0095	0.11		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
n-Propylbenzene	ND	0.0057	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
sec-Butylbenzene	ND	0.029	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Styrene	ND	0.0048	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
tert-Butylbenzene	ND	0.0082	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,1,1,2-Tetrachloroethane	ND	0.0052	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,1,2,2-Tetrachloroethane	ND	0.011	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Tetrachloroethene (PCE)	ND	0.0097	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
trans-1,2-DCE	ND	0.0069	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803

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Qualifiers:

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B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-5 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 4:30:00 PM
Lab ID: 2108D42-002
Matrix: MEOH (SOIL)
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0083	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,2,3-Trichlorobenzene	ND	0.0055	0.071		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,2,4-Trichlorobenzene	ND	0.012	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,1,1-Trichloroethane	ND	0.0078	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,1,2-Trichloroethane	ND	0.0089	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Trichloroethene (TCE)	ND	0.0070	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Trichlorofluoromethane	ND	0.0081	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
1,2,3-Trichloropropane	ND	0.015	0.071		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Vinyl chloride	ND	0.0068	0.036		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Xylenes, Total	ND	0.019	0.071		mg/Kg	1	8/25/2021 9:43:14 PM	A80803
Surr: Dibromofluoromethane	120		70-130		%Rec	1	8/25/2021 9:43:14 PM	A80803
Surr: 1,2-Dichloroethane-d4	102		70-130		%Rec	1	8/25/2021 9:43:14 PM	A80803
Surr: Toluene-d8	103		70-130		%Rec	1	8/25/2021 9:43:14 PM	A80803
Surr: 4-Bromofluorobenzene	96.7		70-130		%Rec	1	8/25/2021 9:43:14 PM	A80803
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.99	3.6		mg/Kg	1	8/25/2021 9:43:14 PM	R80803
Surr: BFB	103	0	70-130		%Rec	1	8/25/2021 9:43:14 PM	R80803

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 4:45:00 PM
Lab ID: 2108D42-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	5.3	4.8	9.7	J	mg/Kg	1	8/27/2021 12:02:52 PM	62220
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/27/2021 12:02:52 PM	62220
Surr: DNOP	175	0	70-130	S	%Rec	1	8/27/2021 12:02:52 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0067	0.0027	0.034	J	mg/Kg	1	9/7/2021 3:34:51 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/31/2021 5:21:37 PM	62279
Arsenic	ND	2.8	5.0		mg/Kg	2	9/1/2021 2:50:56 PM	62279
Barium	280	0.12	0.20		mg/Kg	2	8/31/2021 5:21:37 PM	62279
Beryllium	1.3	0.058	0.30		mg/Kg	2	8/31/2021 5:21:37 PM	62279
Cadmium	ND	0.099	0.20		mg/Kg	2	8/31/2021 5:21:37 PM	62279
Chromium	15	0.30	0.60		mg/Kg	2	8/31/2021 5:21:37 PM	62279
Cobalt	6.5	0.12	0.60		mg/Kg	2	8/31/2021 5:21:37 PM	62279
Iron	19000	250	250		mg/Kg	100	9/1/2021 2:02:36 PM	62279
Lead	3.0	0.53	0.60		mg/Kg	2	8/31/2021 5:21:37 PM	62279
Manganese	400	0.33	0.40		mg/Kg	2	8/31/2021 5:21:37 PM	62279
Nickel	14	0.39	0.99		mg/Kg	2	8/31/2021 5:21:37 PM	62279
Selenium	ND	4.4	5.0		mg/Kg	2	8/31/2021 5:21:37 PM	62279
Silver	ND	0.29	0.50		mg/Kg	2	8/31/2021 5:21:37 PM	62279
Vanadium	27	0.22	5.0		mg/Kg	2	9/1/2021 2:50:56 PM	62279
Zinc	24	2.7	5.0		mg/Kg	2	8/31/2021 5:21:37 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.89	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Acenaphthylene	ND	0.90	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Aniline	ND	0.69	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Anthracene	ND	0.90	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Azobenzene	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Benz(a)anthracene	ND	0.64	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Benzo(a)pyrene	ND	0.94	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Benzo(b)fluoranthene	ND	1.1	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Benzo(k)fluoranthene	ND	0.75	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Benzoic acid	ND	1.2	10	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Benzyl alcohol	ND	0.82	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Bis(2-chloroethoxy)methane	ND	0.76	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Bis(2-ethylhexyl)phthalate	ND	2.1	5.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272

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Qualifiers:

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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 4:45:00 PM
Lab ID: 2108D42-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Butyl benzyl phthalate	ND	0.61	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Carbazole	ND	0.88	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
4-Chloro-3-methylphenol	ND	0.84	5.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
4-Chloroaniline	ND	0.97	5.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2-Chloronaphthalene	ND	0.94	2.5	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
4-Chlorophenyl phenyl ether	ND	0.85	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Chrysene	ND	0.88	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Di-n-butyl phthalate	ND	2.8	4.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Di-n-octyl phthalate	ND	1.3	4.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
1,2-Dichlorobenzene	ND	0.81	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
1,3-Dichlorobenzene	ND	0.71	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
1,4-Dichlorobenzene	ND	0.84	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Diethyl phthalate	ND	3.2	5.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Dimethyl phthalate	ND	0.92	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2,4-Dichlorophenol	ND	0.81	4.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2,4-Dimethylphenol	ND	0.71	3.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2,4-Dinitrophenol	ND	0.50	5.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2,4-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2,6-Dinitrotoluene	ND	1.0	5.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Fluoranthene	ND	0.81	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Fluorene	ND	0.89	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Hexachlorobenzene	ND	0.89	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Hexachlorobutadiene	ND	0.93	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Hexachloroethane	ND	0.88	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Isophorone	ND	0.81	4.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
1-Methylnaphthalene	ND	0.92	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2-Methylnaphthalene	ND	0.82	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2-Methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
3+4-Methylphenol	ND	0.82	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
N-Nitrosodi-n-propylamine	ND	0.92	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272

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		

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 4:45:00 PM
Lab ID: 2108D42-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Naphthalene	ND	0.94	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
3-Nitroaniline	ND	1.2	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Nitrobenzene	ND	0.82	4.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2-Nitrophenol	ND	0.86	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
4-Nitrophenol	ND	0.82	2.5	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Pentachlorophenol	ND	0.86	4.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Phenol	ND	0.77	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Pyrene	ND	0.76	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Pyridine	ND	1.6	4.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
1,2,4-Trichlorobenzene	ND	0.91	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2,4,5-Trichlorophenol	ND	0.63	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
2,4,6-Trichlorophenol	ND	0.86	2.0	D	mg/Kg	10	9/1/2021 8:49:57 PM	62272
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/1/2021 8:49:57 PM	62272
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/1/2021 8:49:57 PM	62272
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/1/2021 8:49:57 PM	62272
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/1/2021 8:49:57 PM	62272
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/1/2021 8:49:57 PM	62272
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/1/2021 8:49:57 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0066	0.017		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Toluene	ND	0.0044	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Ethylbenzene	ND	0.0083	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Methyl tert-butyl ether (MTBE)	ND	0.019	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,2,4-Trimethylbenzene	ND	0.0048	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,3,5-Trimethylbenzene	ND	0.0077	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,2-Dichloroethane (EDC)	ND	0.0078	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,2-Dibromoethane (EDB)	ND	0.013	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Naphthalene	ND	0.013	0.068		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1-Methylnaphthalene	ND	0.039	0.14		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
2-Methylnaphthalene	ND	0.032	0.14		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Acetone	ND	0.11	0.51		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Bromobenzene	ND	0.0073	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Bromodichloromethane	ND	0.0043	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Bromoform	ND	0.0082	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Bromomethane	ND	0.057	0.10		mg/Kg	1	8/25/2021 11:09:26 PM	A80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-5 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 4:45:00 PM
Lab ID: 2108D42-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.15	0.34		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Carbon disulfide	ND	0.014	0.34		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Carbon tetrachloride	ND	0.0038	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Chlorobenzene	ND	0.0061	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Chloroethane	ND	0.013	0.068		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Chloroform	ND	0.0049	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Chloromethane	ND	0.012	0.10		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
2-Chlorotoluene	ND	0.0046	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
4-Chlorotoluene	ND	0.018	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
cis-1,2-DCE	ND	0.017	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
cis-1,3-Dichloropropene	ND	0.0051	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,2-Dibromo-3-chloropropane	ND	0.015	0.068		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Dibromochloromethane	ND	0.0055	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Dibromomethane	ND	0.0080	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,2-Dichlorobenzene	ND	0.0071	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,3-Dichlorobenzene	ND	0.0065	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,4-Dichlorobenzene	ND	0.0091	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Dichlorodifluoromethane	ND	0.013	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,1-Dichloroethane	ND	0.0099	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,1-Dichloroethene	ND	0.0073	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,2-Dichloropropane	ND	0.0067	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,3-Dichloropropane	ND	0.0075	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
2,2-Dichloropropane	ND	0.0049	0.068		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,1-Dichloropropene	ND	0.0041	0.068		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Hexachlorobutadiene	ND	0.023	0.068		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
2-Hexanone	ND	0.015	0.34		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Isopropylbenzene	ND	0.0063	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
4-Isopropyltoluene	ND	0.0088	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
4-Methyl-2-pentanone	ND	0.040	0.34		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Methylene chloride	ND	0.025	0.10		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
n-Butylbenzene	ND	0.0091	0.10		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
n-Propylbenzene	ND	0.0055	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
sec-Butylbenzene	ND	0.028	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Styrene	ND	0.0047	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
tert-Butylbenzene	ND	0.0079	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,1,1,2-Tetrachloroethane	ND	0.0050	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,1,2,2-Tetrachloroethane	ND	0.011	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Tetrachloroethene (PCE)	ND	0.0094	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
trans-1,2-DCE	ND	0.0066	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-5 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 4:45:00 PM
Lab ID: 2108D42-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0080	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,2,3-Trichlorobenzene	ND	0.0053	0.068		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,2,4-Trichlorobenzene	ND	0.012	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,1,1-Trichloroethane	ND	0.0075	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,1,2-Trichloroethane	ND	0.0086	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Trichloroethene (TCE)	ND	0.0067	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Trichlorofluoromethane	ND	0.0078	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
1,2,3-Trichloropropane	ND	0.014	0.068		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Vinyl chloride	ND	0.0065	0.034		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Xylenes, Total	ND	0.018	0.068		mg/Kg	1	8/25/2021 11:09:26 PM	A80803
Surr: Dibromofluoromethane	115		70-130		%Rec	1	8/25/2021 11:09:26 PM	A80803
Surr: 1,2-Dichloroethane-d4	95.7		70-130		%Rec	1	8/25/2021 11:09:26 PM	A80803
Surr: Toluene-d8	106		70-130		%Rec	1	8/25/2021 11:09:26 PM	A80803
Surr: 4-Bromofluorobenzene	96.9		70-130		%Rec	1	8/25/2021 11:09:26 PM	A80803
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.95	3.4		mg/Kg	1	8/25/2021 11:09:26 PM	R80803
Surr: BFB	103	0	70-130		%Rec	1	8/25/2021 11:09:26 PM	R80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD5
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021
Lab ID: 2108D42-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	1600	49	99		mg/Kg	10	8/30/2021 9:14:45 PM	62220
Motor Oil Range Organics (MRO)	ND	500	500	D	mg/Kg	10	8/30/2021 9:14:45 PM	62220
Surr: DNOP	0	0	70-130	S	%Rec	10	8/30/2021 9:14:45 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0077	0.0024	0.031	J	mg/Kg	1	9/7/2021 3:36:58 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/31/2021 5:31:41 PM	62279
Arsenic	ND	2.8	4.9		mg/Kg	2	9/1/2021 2:52:38 PM	62279
Barium	980	0.59	0.98		mg/Kg	10	9/1/2021 2:54:23 PM	62279
Beryllium	1.0	0.057	0.29		mg/Kg	2	8/31/2021 5:31:41 PM	62279
Cadmium	ND	0.098	0.20		mg/Kg	2	8/31/2021 5:31:41 PM	62279
Chromium	10	0.29	0.59		mg/Kg	2	8/31/2021 5:31:41 PM	62279
Cobalt	4.5	0.12	0.59		mg/Kg	2	8/31/2021 5:31:41 PM	62279
Iron	16000	250	250		mg/Kg	100	9/1/2021 2:04:13 PM	62279
Lead	3.2	0.52	0.59		mg/Kg	2	8/31/2021 5:31:41 PM	62279
Manganese	660	1.6	2.0		mg/Kg	10	9/1/2021 2:54:23 PM	62279
Nickel	9.2	0.39	0.98		mg/Kg	2	8/31/2021 5:31:41 PM	62279
Selenium	ND	4.3	4.9		mg/Kg	2	8/31/2021 5:31:41 PM	62279
Silver	ND	0.29	0.49		mg/Kg	2	8/31/2021 5:31:41 PM	62279
Vanadium	19	0.22	4.9		mg/Kg	2	9/1/2021 2:52:38 PM	62279
Zinc	16	2.6	4.9		mg/Kg	2	8/31/2021 5:31:41 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Acenaphthylene	ND	0.90	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Aniline	ND	0.69	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Anthracene	ND	0.90	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Azobenzene	ND	0.99	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Benz(a)anthracene	ND	0.64	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Benzo(a)pyrene	ND	0.94	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Benzo(b)fluoranthene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Benzo(k)fluoranthene	ND	0.75	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Benzoic acid	ND	1.2	9.9	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Benzyl alcohol	ND	0.82	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Bis(2-chloroethoxy)methane	ND	0.76	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Bis(2-ethylhexyl)phthalate	ND	2.1	5.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272

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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
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD5
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021
Lab ID: 2108D42-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Butyl benzyl phthalate	ND	0.61	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Carbazole	ND	0.87	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
4-Chloro-3-methylphenol	ND	0.84	5.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
4-Chloroaniline	ND	0.97	5.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2-Chloronaphthalene	ND	0.94	2.5	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
4-Chlorophenyl phenyl ether	ND	0.84	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Chrysene	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Di-n-butyl phthalate	ND	2.8	4.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Di-n-octyl phthalate	ND	1.3	4.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
1,2-Dichlorobenzene	ND	0.80	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
1,3-Dichlorobenzene	ND	0.71	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
1,4-Dichlorobenzene	ND	0.84	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Diethyl phthalate	ND	3.2	5.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Dimethyl phthalate	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2,4-Dichlorophenol	ND	0.81	4.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2,4-Dimethylphenol	ND	0.71	3.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2,4-Dinitrophenol	ND	0.50	5.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2,4-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2,6-Dinitrotoluene	ND	1.0	5.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Fluoranthene	ND	0.80	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Fluorene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Hexachlorobenzene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Hexachlorobutadiene	ND	0.93	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Hexachloroethane	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Isophorone	ND	0.81	4.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
1-Methylnaphthalene	4.5	0.92	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2-Methylnaphthalene	6.6	0.82	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2-Methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
3+4-Methylphenol	ND	0.82	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
N-Nitrosodi-n-propylamine	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272

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		

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD5
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021
Lab ID: 2108D42-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Naphthalene	2.6	0.94	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
3-Nitroaniline	ND	1.2	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Nitrobenzene	ND	0.82	4.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2-Nitrophenol	ND	0.86	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
4-Nitrophenol	ND	0.82	2.5	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Pentachlorophenol	ND	0.86	4.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Phenol	ND	0.77	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Pyrene	ND	0.75	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Pyridine	ND	1.6	4.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
1,2,4-Trichlorobenzene	ND	0.91	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2,4,5-Trichlorophenol	ND	0.63	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
2,4,6-Trichlorophenol	ND	0.86	2.0	D	mg/Kg	10	9/7/2021 2:33:00 PM	62272
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/7/2021 2:33:00 PM	62272
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/7/2021 2:33:00 PM	62272
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/7/2021 2:33:00 PM	62272
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/7/2021 2:33:00 PM	62272
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/7/2021 2:33:00 PM	62272
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/7/2021 2:33:00 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	0.95	0.055	0.14		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Toluene	0.13	0.037	0.28	J	mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Ethylbenzene	1.9	0.069	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Methyl tert-butyl ether (MTBE)	ND	0.16	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,2,4-Trimethylbenzene	7.2	0.040	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,3,5-Trimethylbenzene	2.1	0.064	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,2-Dichloroethane (EDC)	ND	0.065	0.14		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,2-Dibromoethane (EDB)	ND	0.11	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Naphthalene	1.5	0.11	0.57		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1-Methylnaphthalene	2.1	0.33	1.1		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
2-Methylnaphthalene	3.2	0.26	1.1		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Acetone	ND	0.93	4.3		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Bromobenzene	ND	0.060	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Bromodichloromethane	ND	0.036	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Bromoform	ND	0.068	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Bromomethane	ND	0.47	0.85		mg/Kg	10	8/25/2021 11:38:06 PM	A80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD5
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021
Lab ID: 2108D42-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	1.2	2.8		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Carbon disulfide	ND	0.12	2.8		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Carbon tetrachloride	ND	0.032	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Chlorobenzene	ND	0.051	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Chloroethane	ND	0.11	0.57		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Chloroform	ND	0.040	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Chloromethane	ND	0.099	0.85		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
2-Chlorotoluene	ND	0.038	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
4-Chlorotoluene	ND	0.15	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
cis-1,2-DCE	ND	0.14	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
cis-1,3-Dichloropropene	ND	0.042	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,2-Dibromo-3-chloropropane	ND	0.12	0.57		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Dibromochloromethane	ND	0.045	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Dibromomethane	ND	0.066	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,2-Dichlorobenzene	ND	0.059	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,3-Dichlorobenzene	ND	0.054	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,4-Dichlorobenzene	ND	0.076	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Dichlorodifluoromethane	ND	0.11	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,1-Dichloroethane	ND	0.083	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,1-Dichloroethene	ND	0.061	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,2-Dichloropropane	ND	0.055	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,3-Dichloropropane	ND	0.062	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
2,2-Dichloropropane	ND	0.040	0.57		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,1-Dichloropropene	ND	0.034	0.57		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Hexachlorobutadiene	ND	0.19	0.57		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
2-Hexanone	ND	0.12	2.8		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Isopropylbenzene	0.28	0.053	0.28	J	mg/Kg	10	8/25/2021 11:38:06 PM	A80803
4-Isopropyltoluene	0.26	0.073	0.28	J	mg/Kg	10	8/25/2021 11:38:06 PM	A80803
4-Methyl-2-pentanone	ND	0.33	2.8		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Methylene chloride	ND	0.21	0.85		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
n-Butylbenzene	0.69	0.076	0.85	J	mg/Kg	10	8/25/2021 11:38:06 PM	A80803
n-Propylbenzene	0.98	0.046	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
sec-Butylbenzene	ND	0.23	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Styrene	ND	0.039	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
tert-Butylbenzene	ND	0.066	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,1,1,2-Tetrachloroethane	ND	0.042	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,1,2,2-Tetrachloroethane	ND	0.092	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Tetrachloroethene (PCE)	ND	0.078	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
trans-1,2-DCE	ND	0.055	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD5
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021
Lab ID: 2108D42-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.067	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,2,3-Trichlorobenzene	ND	0.044	0.57		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,2,4-Trichlorobenzene	ND	0.099	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,1,1-Trichloroethane	ND	0.063	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,1,2-Trichloroethane	ND	0.071	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Trichloroethene (TCE)	ND	0.056	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Trichlorofluoromethane	ND	0.064	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
1,2,3-Trichloropropane	ND	0.12	0.57		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Vinyl chloride	ND	0.054	0.28		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Xylenes, Total	12	0.15	0.57		mg/Kg	10	8/25/2021 11:38:06 PM	A80803
Surr: Dibromofluoromethane	103		70-130		%Rec	10	8/25/2021 11:38:06 PM	A80803
Surr: 1,2-Dichloroethane-d4	95.7		70-130		%Rec	10	8/25/2021 11:38:06 PM	A80803
Surr: Toluene-d8	104		70-130		%Rec	10	8/25/2021 11:38:06 PM	A80803
Surr: 4-Bromofluorobenzene	95.8		70-130		%Rec	10	8/25/2021 11:38:06 PM	A80803
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	440	7.9	28		mg/Kg	10	8/25/2021 11:38:06 PM	R80803
Surr: BFB	101	0	70-130		%Rec	10	8/25/2021 11:38:06 PM	R80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD6
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021
Lab ID: 2108D42-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 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	4.7	9.6		mg/Kg	1	8/27/2021 12:59:02 PM	62220
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/27/2021 12:59:02 PM	62220
Surr: DNOP	132	0	70-130	S	%Rec	1	8/27/2021 12:59:02 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0042	0.0028	0.035	J	mg/Kg	1	9/7/2021 3:39:06 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/31/2021 5:33:30 PM	62279
Arsenic	ND	2.8	5.0		mg/Kg	2	9/1/2021 2:55:58 PM	62279
Barium	280	0.12	0.20		mg/Kg	2	8/31/2021 5:33:30 PM	62279
Beryllium	0.92	0.058	0.30		mg/Kg	2	8/31/2021 5:33:30 PM	62279
Cadmium	ND	0.10	0.20		mg/Kg	2	8/31/2021 5:33:30 PM	62279
Chromium	9.7	0.30	0.60		mg/Kg	2	8/31/2021 5:33:30 PM	62279
Cobalt	4.7	0.12	0.60		mg/Kg	2	8/31/2021 5:33:30 PM	62279
Iron	13000	250	250		mg/Kg	100	9/1/2021 2:05:49 PM	62279
Lead	2.2	0.54	0.60		mg/Kg	2	8/31/2021 5:33:30 PM	62279
Manganese	470	0.33	0.40		mg/Kg	2	8/31/2021 5:33:30 PM	62279
Nickel	8.8	0.39	1.0		mg/Kg	2	8/31/2021 5:33:30 PM	62279
Selenium	ND	4.4	5.0		mg/Kg	2	8/31/2021 5:33:30 PM	62279
Silver	ND	0.29	0.50		mg/Kg	2	8/31/2021 5:33:30 PM	62279
Vanadium	21	0.23	5.0		mg/Kg	2	9/1/2021 2:55:58 PM	62279
Zinc	16	2.7	5.0		mg/Kg	2	8/31/2021 5:33:30 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.089	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Acenaphthylene	ND	0.090	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Aniline	ND	0.069	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Anthracene	ND	0.090	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Azobenzene	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Benz(a)anthracene	ND	0.064	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Benzo(a)pyrene	ND	0.094	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Benzo(b)fluoranthene	ND	0.11	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Benzo(k)fluoranthene	ND	0.075	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Benzoic acid	ND	0.12	1.0		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Benzyl alcohol	ND	0.082	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Bis(2-chloroethoxy)methane	ND	0.076	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Bis(2-ethylhexyl)phthalate	ND	0.21	0.50		mg/Kg	1	9/7/2021 3:14:44 PM	62272

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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
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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD6
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021
Lab ID: 2108D42-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Butyl benzyl phthalate	ND	0.061	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Carbazole	ND	0.088	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
4-Chloro-3-methylphenol	ND	0.084	0.50		mg/Kg	1	9/7/2021 3:14:44 PM	62272
4-Chloroaniline	ND	0.097	0.50		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2-Chloronaphthalene	ND	0.095	0.25		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
4-Chlorophenyl phenyl ether	ND	0.085	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Chrysene	ND	0.088	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Di-n-butyl phthalate	ND	0.28	0.40		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Di-n-octyl phthalate	ND	0.13	0.40		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
1,2-Dichlorobenzene	ND	0.081	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
1,3-Dichlorobenzene	ND	0.071	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
1,4-Dichlorobenzene	ND	0.085	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Diethyl phthalate	ND	0.33	0.50		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Dimethyl phthalate	ND	0.092	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2,4-Dichlorophenol	ND	0.081	0.40		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2,4-Dimethylphenol	ND	0.071	0.30		mg/Kg	1	9/7/2021 3:14:44 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.084	0.40		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2,4-Dinitrophenol	ND	0.050	0.50		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2,6-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Fluoranthene	ND	0.081	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Fluorene	ND	0.089	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Hexachlorobenzene	ND	0.089	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Hexachlorobutadiene	ND	0.094	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Hexachloroethane	ND	0.088	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Indeno(1,2,3-cd)pyrene	ND	0.12	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Isophorone	ND	0.082	0.40		mg/Kg	1	9/7/2021 3:14:44 PM	62272
1-Methylnaphthalene	ND	0.092	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2-Methylnaphthalene	ND	0.082	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2-Methylphenol	ND	0.084	0.40		mg/Kg	1	9/7/2021 3:14:44 PM	62272
3+4-Methylphenol	ND	0.082	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
N-Nitrosodi-n-propylamine	ND	0.092	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD6
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021
Lab ID: 2108D42-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Naphthalene	ND	0.094	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
3-Nitroaniline	ND	0.12	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Nitrobenzene	ND	0.082	0.40		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2-Nitrophenol	ND	0.086	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
4-Nitrophenol	ND	0.082	0.25		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Pentachlorophenol	ND	0.086	0.40		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Phenanthrene	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Phenol	ND	0.077	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Pyrene	ND	0.076	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Pyridine	ND	0.16	0.40		mg/Kg	1	9/7/2021 3:14:44 PM	62272
1,2,4-Trichlorobenzene	ND	0.092	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2,4,5-Trichlorophenol	ND	0.064	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
2,4,6-Trichlorophenol	ND	0.086	0.20		mg/Kg	1	9/7/2021 3:14:44 PM	62272
Surr: 2-Fluorophenol	68.9		20.3-74.1		%Rec	1	9/7/2021 3:14:44 PM	62272
Surr: Phenol-d5	80.5		23.1-92.7		%Rec	1	9/7/2021 3:14:44 PM	62272
Surr: 2,4,6-Tribromophenol	81.5		17.3-122		%Rec	1	9/7/2021 3:14:44 PM	62272
Surr: Nitrobenzene-d5	59.6		24.7-73.2		%Rec	1	9/7/2021 3:14:44 PM	62272
Surr: 2-Fluorobiphenyl	60.7		21.5-90.1		%Rec	1	9/7/2021 3:14:44 PM	62272
Surr: 4-Terphenyl-d14	99.8		15-140		%Rec	1	9/7/2021 3:14:44 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0048	0.013		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Toluene	ND	0.0032	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Ethylbenzene	ND	0.0061	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Methyl tert-butyl ether (MTBE)	ND	0.014	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,2,4-Trimethylbenzene	ND	0.0035	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,3,5-Trimethylbenzene	ND	0.0056	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,2-Dichloroethane (EDC)	ND	0.0057	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,2-Dibromoethane (EDB)	ND	0.0098	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Naphthalene	ND	0.0093	0.050		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1-Methylnaphthalene	ND	0.029	0.10		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
2-Methylnaphthalene	ND	0.023	0.10		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Acetone	ND	0.082	0.38		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Bromobenzene	ND	0.0053	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Bromodichloromethane	ND	0.0032	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Bromoform	ND	0.0060	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Bromomethane	ND	0.041	0.075		mg/Kg	1	8/26/2021 12:35:20 AM	A80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD6
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021
Lab ID: 2108D42-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.11	0.25		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Carbon disulfide	ND	0.010	0.25		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Carbon tetrachloride	ND	0.0028	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Chlorobenzene	ND	0.0045	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Chloroethane	ND	0.0094	0.050		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Chloroform	ND	0.0036	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Chloromethane	ND	0.0088	0.075		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
2-Chlorotoluene	ND	0.0034	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
4-Chlorotoluene	ND	0.013	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
cis-1,2-DCE	ND	0.012	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
cis-1,3-Dichloropropene	ND	0.0037	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,2-Dibromo-3-chloropropane	ND	0.011	0.050		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Dibromochloromethane	ND	0.0040	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Dibromomethane	ND	0.0058	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,2-Dichlorobenzene	ND	0.0052	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,3-Dichlorobenzene	ND	0.0047	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,4-Dichlorobenzene	ND	0.0067	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Dichlorodifluoromethane	ND	0.0097	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,1-Dichloroethane	ND	0.0073	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,1-Dichloroethene	ND	0.0054	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,2-Dichloropropane	ND	0.0049	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,3-Dichloropropane	ND	0.0055	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
2,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,1-Dichloropropene	ND	0.0030	0.050		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Hexachlorobutadiene	ND	0.017	0.050		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
2-Hexanone	ND	0.011	0.25		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Isopropylbenzene	ND	0.0046	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
4-Isopropyltoluene	ND	0.0064	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
4-Methyl-2-pentanone	ND	0.029	0.25		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Methylene chloride	ND	0.018	0.075		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
n-Butylbenzene	ND	0.0067	0.075		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
n-Propylbenzene	ND	0.0040	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
sec-Butylbenzene	ND	0.021	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Styrene	ND	0.0034	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
tert-Butylbenzene	ND	0.0058	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,1,1,2-Tetrachloroethane	ND	0.0037	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,1,2,2-Tetrachloroethane	ND	0.0081	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Tetrachloroethene (PCE)	ND	0.0069	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
trans-1,2-DCE	ND	0.0048	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD6
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021
Lab ID: 2108D42-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0059	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,2,3-Trichlorobenzene	ND	0.0039	0.050		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,2,4-Trichlorobenzene	ND	0.0087	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,1,1-Trichloroethane	ND	0.0055	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,1,2-Trichloroethane	ND	0.0063	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Trichloroethene (TCE)	ND	0.0049	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Trichlorofluoromethane	ND	0.0057	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
1,2,3-Trichloropropane	ND	0.011	0.050		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Vinyl chloride	ND	0.0048	0.025		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Xylenes, Total	ND	0.013	0.050		mg/Kg	1	8/26/2021 12:35:20 AM	A80803
Surr: Dibromofluoromethane	115		70-130		%Rec	1	8/26/2021 12:35:20 AM	A80803
Surr: 1,2-Dichloroethane-d4	106		70-130		%Rec	1	8/26/2021 12:35:20 AM	A80803
Surr: Toluene-d8	109		70-130		%Rec	1	8/26/2021 12:35:20 AM	A80803
Surr: 4-Bromofluorobenzene	94.0		70-130		%Rec	1	8/26/2021 12:35:20 AM	A80803
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	0.76	0.70	2.5	J	mg/Kg	1	8/26/2021 12:35:20 AM	R80803
Surr: BFB	102	0	70-130		%Rec	1	8/26/2021 12:35:20 AM	R80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB7
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 1:00:00 PM
Lab ID: 2108D42-006
Matrix: AQUEOUS
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Benzene	ND	0.23	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Toluene	ND	0.20	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Ethylbenzene	ND	0.21	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Naphthalene	ND	0.50	2.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Acetone	ND	2.5	10		µg/L	1	8/28/2021 8:36:00 PM	R80878
Bromobenzene	ND	0.28	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Bromodichloromethane	ND	0.20	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Bromoform	ND	0.31	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Bromomethane	ND	0.85	3.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
2-Butanone	ND	2.0	10		µg/L	1	8/28/2021 8:36:00 PM	R80878
Carbon disulfide	ND	0.59	10		µg/L	1	8/28/2021 8:36:00 PM	R80878
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Chlorobenzene	ND	0.16	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Chloroethane	ND	0.38	2.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Chloroform	ND	0.13	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Chloromethane	ND	0.41	3.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Dibromochloromethane	ND	0.28	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Dibromomethane	ND	0.31	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	8/28/2021 8:36:00 PM	R80878

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB7
Project: North Drainage Ditch Area
Collection Date: 8/20/2021 1:00:00 PM
Lab ID: 2108D42-006
Matrix: AQUEOUS
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
2-Hexanone	ND	1.8	10		µg/L	1	8/28/2021 8:36:00 PM	R80878
Isopropylbenzene	ND	0.18	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	8/28/2021 8:36:00 PM	R80878
Methylene Chloride	ND	0.50	3.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
n-Butylbenzene	ND	0.25	3.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
n-Propylbenzene	ND	0.18	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Styrene	ND	0.14	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Vinyl chloride	ND	0.32	1.0		µg/L	1	8/28/2021 8:36:00 PM	R80878
Xylenes, Total	ND	0.37	1.5		µg/L	1	8/28/2021 8:36:00 PM	R80878
Surr: 1,2-Dichloroethane-d4	84.5	0	70-130		%Rec	1	8/28/2021 8:36:00 PM	R80878
Surr: 4-Bromofluorobenzene	98.4	0	70-130		%Rec	1	8/28/2021 8:36:00 PM	R80878
Surr: Dibromofluoromethane	85.0	0	70-130		%Rec	1	8/28/2021 8:36:00 PM	R80878
Surr: Toluene-d8	96.7	0	70-130		%Rec	1	8/28/2021 8:36:00 PM	R80878

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-EB8
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 4:45:00 PM
Lab ID: 2108D42-007 **Matrix:** AQUEOUS **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Benzene	ND	0.23	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Toluene	ND	0.20	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Ethylbenzene	ND	0.21	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Naphthalene	ND	0.50	2.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Acetone	ND	2.5	10		µg/L	1	8/28/2021 8:59:00 PM	R80878
Bromobenzene	ND	0.28	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Bromodichloromethane	ND	0.20	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Bromoform	ND	0.31	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Bromomethane	ND	0.85	3.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
2-Butanone	ND	2.0	10		µg/L	1	8/28/2021 8:59:00 PM	R80878
Carbon disulfide	ND	0.59	10		µg/L	1	8/28/2021 8:59:00 PM	R80878
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Chlorobenzene	ND	0.16	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Chloroethane	ND	0.38	2.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Chloroform	ND	0.13	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Chloromethane	ND	0.41	3.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Dibromochloromethane	ND	0.28	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Dibromomethane	ND	0.31	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	8/28/2021 8:59:00 PM	R80878

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB8
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 4:45:00 PM
Lab ID: 2108D42-007
Matrix: AQUEOUS
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
2-Hexanone	ND	1.8	10		µg/L	1	8/28/2021 8:59:00 PM	R80878
Isopropylbenzene	ND	0.18	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	8/28/2021 8:59:00 PM	R80878
Methylene Chloride	ND	0.50	3.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
n-Butylbenzene	ND	0.25	3.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
n-Propylbenzene	ND	0.18	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Styrene	ND	0.14	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Vinyl chloride	ND	0.32	1.0		µg/L	1	8/28/2021 8:59:00 PM	R80878
Xylenes, Total	ND	0.37	1.5		µg/L	1	8/28/2021 8:59:00 PM	R80878
Surr: 1,2-Dichloroethane-d4	83.9	0	70-130		%Rec	1	8/28/2021 8:59:00 PM	R80878
Surr: 4-Bromofluorobenzene	98.6	0	70-130		%Rec	1	8/28/2021 8:59:00 PM	R80878
Surr: Dibromofluoromethane	84.6	0	70-130		%Rec	1	8/28/2021 8:59:00 PM	R80878
Surr: Toluene-d8	96.4	0	70-130		%Rec	1	8/28/2021 8:59:00 PM	R80878

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (9.5-10')
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021 8:15:00 AM
Lab ID: 2108D42-008 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 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	4.6	9.3		mg/Kg	1	8/27/2021 1:23:23 PM	62220
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/27/2021 1:23:23 PM	62220
Surr: DNOP	108	0	70-130		%Rec	1	8/27/2021 1:23:23 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0025	0.031		mg/Kg	1	9/7/2021 3:41:15 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/31/2021 5:35:16 PM	62279
Arsenic	ND	2.8	4.9		mg/Kg	2	9/1/2021 2:57:35 PM	62279
Barium	350	0.12	0.19		mg/Kg	2	8/31/2021 5:35:16 PM	62279
Beryllium	0.85	0.057	0.29		mg/Kg	2	8/31/2021 5:35:16 PM	62279
Cadmium	ND	0.097	0.19		mg/Kg	2	8/31/2021 5:35:16 PM	62279
Chromium	9.1	0.29	0.58		mg/Kg	2	8/31/2021 5:35:16 PM	62279
Cobalt	4.6	0.12	0.58		mg/Kg	2	8/31/2021 5:35:16 PM	62279
Iron	13000	240	240		mg/Kg	100	9/1/2021 2:07:25 PM	62279
Lead	2.2	0.52	0.58		mg/Kg	2	8/31/2021 5:35:16 PM	62279
Manganese	420	0.32	0.39		mg/Kg	2	8/31/2021 5:35:16 PM	62279
Nickel	7.9	0.38	0.97		mg/Kg	2	8/31/2021 5:35:16 PM	62279
Selenium	ND	4.3	4.9		mg/Kg	2	8/31/2021 5:35:16 PM	62279
Silver	ND	0.28	0.49		mg/Kg	2	8/31/2021 5:35:16 PM	62279
Vanadium	19	0.22	4.9		mg/Kg	2	9/1/2021 2:57:35 PM	62279
Zinc	15	2.6	4.9		mg/Kg	2	8/31/2021 5:35:16 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Aniline	ND	0.068	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Anthracene	ND	0.089	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Azobenzene	ND	0.098	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Benzo(a)pyrene	ND	0.093	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Benzoic acid	ND	0.12	0.98		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Benzyl alcohol	ND	0.081	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	9/7/2021 3:56:47 PM	62272

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (9.5-10')
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021 8:15:00 AM
Lab ID: 2108D42-008 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Carbazole	ND	0.087	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	9/7/2021 3:56:47 PM	62272
4-Chloroaniline	ND	0.096	0.49		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2-Chloronaphthalene	ND	0.093	0.25		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
4-Chlorophenyl phenyl ether	ND	0.084	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Chrysene	ND	0.087	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
1,2-Dichlorobenzene	ND	0.080	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2,4-Dimethylphenol	ND	0.070	0.30		mg/Kg	1	9/7/2021 3:56:47 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Fluoranthene	ND	0.080	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Fluorene	ND	0.088	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Hexachlorobenzene	ND	0.088	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Isophorone	ND	0.080	0.39		mg/Kg	1	9/7/2021 3:56:47 PM	62272
1-Methylnaphthalene	ND	0.091	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2-Methylphenol	ND	0.083	0.39		mg/Kg	1	9/7/2021 3:56:47 PM	62272
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (9.5-10')
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021 8:15:00 AM
Lab ID: 2108D42-008 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Naphthalene	ND	0.093	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Nitrobenzene	ND	0.081	0.39		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2-Nitrophenol	ND	0.085	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
4-Nitrophenol	ND	0.081	0.25		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Phenanthrene	ND	0.10	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Phenol	ND	0.076	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Pyrene	ND	0.075	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Pyridine	ND	0.16	0.39		mg/Kg	1	9/7/2021 3:56:47 PM	62272
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
2,4,6-Trichlorophenol	ND	0.085	0.20		mg/Kg	1	9/7/2021 3:56:47 PM	62272
Surr: 2-Fluorophenol	59.2		20.3-74.1		%Rec	1	9/7/2021 3:56:47 PM	62272
Surr: Phenol-d5	71.4		23.1-92.7		%Rec	1	9/7/2021 3:56:47 PM	62272
Surr: 2,4,6-Tribromophenol	72.8		17.3-122		%Rec	1	9/7/2021 3:56:47 PM	62272
Surr: Nitrobenzene-d5	56.5		24.7-73.2		%Rec	1	9/7/2021 3:56:47 PM	62272
Surr: 2-Fluorobiphenyl	63.3		21.5-90.1		%Rec	1	9/7/2021 3:56:47 PM	62272
Surr: 4-Terphenyl-d14	94.0		15-140		%Rec	1	9/7/2021 3:56:47 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0047	0.012		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Toluene	ND	0.0031	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Ethylbenzene	ND	0.0060	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Methyl tert-butyl ether (MTBE)	ND	0.014	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,2,4-Trimethylbenzene	ND	0.0035	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,3,5-Trimethylbenzene	ND	0.0055	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,2-Dichloroethane (EDC)	ND	0.0056	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,2-Dibromoethane (EDB)	ND	0.0096	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Naphthalene	ND	0.0091	0.049		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1-Methylnaphthalene	ND	0.028	0.098		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
2-Methylnaphthalene	ND	0.023	0.098		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Acetone	ND	0.080	0.37		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Bromobenzene	ND	0.0052	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Bromodichloromethane	ND	0.0031	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Bromoform	ND	0.0059	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Bromomethane	ND	0.040	0.073		mg/Kg	1	8/26/2021 1:03:55 AM	A80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-5 (9.5-10')
Project: North Drainage Ditch Area
Collection Date: 8/24/2021 8:15:00 AM
Lab ID: 2108D42-008 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.11	0.24		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Carbon disulfide	ND	0.010	0.24		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Carbon tetrachloride	ND	0.0027	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Chlorobenzene	ND	0.0044	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Chloroethane	ND	0.0091	0.049		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Chloroform	ND	0.0035	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Chloromethane	ND	0.0086	0.073		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
2-Chlorotoluene	ND	0.0033	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
4-Chlorotoluene	ND	0.013	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
cis-1,2-DCE	ND	0.012	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
cis-1,3-Dichloropropene	ND	0.0036	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,2-Dibromo-3-chloropropane	ND	0.011	0.049		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Dibromochloromethane	ND	0.0039	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Dibromomethane	ND	0.0057	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,2-Dichlorobenzene	ND	0.0051	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,3-Dichlorobenzene	ND	0.0046	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,4-Dichlorobenzene	ND	0.0065	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Dichlorodifluoromethane	ND	0.0094	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,1-Dichloroethane	ND	0.0071	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,1-Dichloroethene	ND	0.0052	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,2-Dichloropropane	ND	0.0048	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,3-Dichloropropane	ND	0.0054	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
2,2-Dichloropropane	ND	0.0035	0.049		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,1-Dichloropropene	ND	0.0030	0.049		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Hexachlorobutadiene	ND	0.017	0.049		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
2-Hexanone	ND	0.011	0.24		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Isopropylbenzene	ND	0.0045	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
4-Isopropyltoluene	ND	0.0063	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
4-Methyl-2-pentanone	ND	0.028	0.24		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Methylene chloride	ND	0.018	0.073		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
n-Butylbenzene	ND	0.0065	0.073		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
n-Propylbenzene	ND	0.0039	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
sec-Butylbenzene	ND	0.020	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Styrene	ND	0.0033	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
tert-Butylbenzene	ND	0.0057	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,1,1,2-Tetrachloroethane	ND	0.0036	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,1,2,2-Tetrachloroethane	ND	0.0079	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Tetrachloroethene (PCE)	ND	0.0067	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
trans-1,2-DCE	ND	0.0047	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-5 (9.5-10')
Project: North Drainage Ditch Area
Collection Date: 8/24/2021 8:15:00 AM
Lab ID: 2108D42-008 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0057	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,2,3-Trichlorobenzene	ND	0.0038	0.049		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,2,4-Trichlorobenzene	ND	0.0085	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,1,1-Trichloroethane	ND	0.0054	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,1,2-Trichloroethane	ND	0.0061	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Trichloroethene (TCE)	ND	0.0048	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Trichlorofluoromethane	ND	0.0055	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
1,2,3-Trichloropropane	ND	0.010	0.049		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Vinyl chloride	ND	0.0047	0.024		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Xylenes, Total	ND	0.013	0.049		mg/Kg	1	8/26/2021 1:03:55 AM	A80803
Surr: Dibromofluoromethane	115		70-130		%Rec	1	8/26/2021 1:03:55 AM	A80803
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	8/26/2021 1:03:55 AM	A80803
Surr: Toluene-d8	104		70-130		%Rec	1	8/26/2021 1:03:55 AM	A80803
Surr: 4-Bromofluorobenzene	94.9		70-130		%Rec	1	8/26/2021 1:03:55 AM	A80803
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.68	2.4		mg/Kg	1	8/26/2021 1:03:55 AM	R80803
Surr: BFB	99.2	0	70-130		%Rec	1	8/26/2021 1:03:55 AM	R80803

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-5 (12-12.5')
Project: North Drainage Ditch Area
Collection Date: 8/24/2021 8:30:00 AM
Lab ID: 2108D42-009 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 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	4.8	9.7		mg/Kg	1	8/27/2021 1:48:10 PM	62220
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/27/2021 1:48:10 PM	62220
Surr: DNOP	111	0	70-130		%Rec	1	8/27/2021 1:48:10 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0042	0.0025	0.031	J	mg/Kg	1	9/7/2021 3:43:23 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	1.6	2.5		mg/Kg	1	8/31/2021 4:28:26 PM	62279
Arsenic	ND	2.8	5.0		mg/Kg	2	9/1/2021 3:04:51 PM	62279
Barium	320	0.12	0.20		mg/Kg	2	8/31/2021 5:37:03 PM	62279
Beryllium	0.83	0.029	0.15		mg/Kg	1	8/31/2021 4:28:26 PM	62279
Cadmium	ND	0.050	0.099		mg/Kg	1	8/31/2021 4:28:26 PM	62279
Chromium	9.1	0.15	0.30		mg/Kg	1	8/31/2021 4:28:26 PM	62279
Cobalt	4.3	0.060	0.30		mg/Kg	1	8/31/2021 4:28:26 PM	62279
Iron	13000	250	250		mg/Kg	100	9/1/2021 2:09:03 PM	62279
Lead	0.99	0.27	0.30		mg/Kg	1	8/31/2021 4:28:26 PM	62279
Manganese	450	0.33	0.40		mg/Kg	2	8/31/2021 5:37:03 PM	62279
Nickel	7.8	0.20	0.50		mg/Kg	1	8/31/2021 4:28:26 PM	62279
Selenium	ND	2.2	2.5		mg/Kg	1	8/31/2021 4:28:26 PM	62279
Silver	ND	0.14	0.25		mg/Kg	1	8/31/2021 4:28:26 PM	62279
Vanadium	20	0.22	5.0		mg/Kg	2	9/1/2021 3:04:51 PM	62279
Zinc	17	2.7	5.0		mg/Kg	2	8/31/2021 5:37:03 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.089	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Acenaphthylene	ND	0.090	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Aniline	ND	0.069	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Anthracene	ND	0.090	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Azobenzene	ND	0.10	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Benz(a)anthracene	ND	0.064	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Benzo(a)pyrene	ND	0.094	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Benzo(b)fluoranthene	ND	0.11	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Benzo(k)fluoranthene	ND	0.075	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Benzoic acid	ND	0.12	1.0		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Benzyl alcohol	ND	0.082	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Bis(2-chloroethoxy)methane	ND	0.076	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Bis(2-ethylhexyl)phthalate	ND	0.21	0.50		mg/Kg	1	9/7/2021 4:38:38 PM	62272

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (12-12.5')
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021 8:30:00 AM
Lab ID: 2108D42-009 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Butyl benzyl phthalate	ND	0.061	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Carbazole	ND	0.088	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
4-Chloro-3-methylphenol	ND	0.084	0.50		mg/Kg	1	9/7/2021 4:38:38 PM	62272
4-Chloroaniline	ND	0.097	0.50		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2-Chloronaphthalene	ND	0.095	0.25		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
4-Chlorophenyl phenyl ether	ND	0.085	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Chrysene	ND	0.088	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Di-n-butyl phthalate	ND	0.28	0.40		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Di-n-octyl phthalate	ND	0.13	0.40		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
1,2-Dichlorobenzene	ND	0.081	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
1,3-Dichlorobenzene	ND	0.071	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
1,4-Dichlorobenzene	ND	0.085	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Diethyl phthalate	ND	0.33	0.50		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Dimethyl phthalate	ND	0.092	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2,4-Dichlorophenol	ND	0.081	0.40		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2,4-Dimethylphenol	ND	0.071	0.30		mg/Kg	1	9/7/2021 4:38:38 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.084	0.40		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2,4-Dinitrophenol	ND	0.050	0.50		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2,6-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Fluoranthene	ND	0.081	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Fluorene	ND	0.089	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Hexachlorobenzene	ND	0.089	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Hexachlorobutadiene	ND	0.094	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Hexachloroethane	ND	0.088	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Isophorone	ND	0.081	0.40		mg/Kg	1	9/7/2021 4:38:38 PM	62272
1-Methylnaphthalene	ND	0.092	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2-Methylnaphthalene	ND	0.082	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2-Methylphenol	ND	0.084	0.40		mg/Kg	1	9/7/2021 4:38:38 PM	62272
3+4-Methylphenol	ND	0.082	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
N-Nitrosodi-n-propylamine	ND	0.092	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (12-12.5')
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021 8:30:00 AM
Lab ID: 2108D42-009 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Naphthalene	ND	0.094	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
3-Nitroaniline	ND	0.12	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Nitrobenzene	ND	0.082	0.40		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2-Nitrophenol	ND	0.086	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
4-Nitrophenol	ND	0.082	0.25		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Pentachlorophenol	ND	0.086	0.40		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Phenanthrene	ND	0.10	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Phenol	ND	0.077	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Pyrene	ND	0.076	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Pyridine	ND	0.16	0.40		mg/Kg	1	9/7/2021 4:38:38 PM	62272
1,2,4-Trichlorobenzene	ND	0.091	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2,4,5-Trichlorophenol	ND	0.064	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
2,4,6-Trichlorophenol	ND	0.086	0.20		mg/Kg	1	9/7/2021 4:38:38 PM	62272
Surr: 2-Fluorophenol	69.8		20.3-74.1		%Rec	1	9/7/2021 4:38:38 PM	62272
Surr: Phenol-d5	81.0		23.1-92.7		%Rec	1	9/7/2021 4:38:38 PM	62272
Surr: 2,4,6-Tribromophenol	79.7		17.3-122		%Rec	1	9/7/2021 4:38:38 PM	62272
Surr: Nitrobenzene-d5	58.2		24.7-73.2		%Rec	1	9/7/2021 4:38:38 PM	62272
Surr: 2-Fluorobiphenyl	56.2		21.5-90.1		%Rec	1	9/7/2021 4:38:38 PM	62272
Surr: 4-Terphenyl-d14	89.5		15-140		%Rec	1	9/7/2021 4:38:38 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	0.023	0.0051	0.013		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Toluene	ND	0.0034	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Ethylbenzene	0.035	0.0064	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Methyl tert-butyl ether (MTBE)	ND	0.015	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,2,4-Trimethylbenzene	0.0045	0.0037	0.026	J	mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,3,5-Trimethylbenzene	ND	0.0059	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,2-Dichloroethane (EDC)	ND	0.0060	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,2-Dibromoethane (EDB)	ND	0.010	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Naphthalene	ND	0.0098	0.053		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1-Methylnaphthalene	ND	0.030	0.11		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
2-Methylnaphthalene	ND	0.024	0.11		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Acetone	ND	0.086	0.40		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Bromobenzene	ND	0.0056	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Bromodichloromethane	ND	0.0034	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Bromoform	ND	0.0064	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Bromomethane	ND	0.044	0.079		mg/Kg	1	8/26/2021 1:32:28 AM	A80803

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Qualifiers:

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-5 (12-12.5')
Project: North Drainage Ditch Area
Collection Date: 8/24/2021 8:30:00 AM
Lab ID: 2108D42-009 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.11	0.26		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Carbon disulfide	ND	0.011	0.26		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Carbon tetrachloride	ND	0.0029	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Chlorobenzene	ND	0.0047	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Chloroethane	ND	0.0099	0.053		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Chloroform	ND	0.0037	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Chloromethane	ND	0.0092	0.079		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
2-Chlorotoluene	ND	0.0035	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
4-Chlorotoluene	ND	0.014	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
cis-1,2-DCE	ND	0.013	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
cis-1,3-Dichloropropene	ND	0.0039	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,2-Dibromo-3-chloropropane	ND	0.011	0.053		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Dibromochloromethane	ND	0.0042	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Dibromomethane	ND	0.0062	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,2-Dichlorobenzene	ND	0.0055	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,3-Dichlorobenzene	ND	0.0050	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,4-Dichlorobenzene	ND	0.0070	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Dichlorodifluoromethane	ND	0.010	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,1-Dichloroethane	ND	0.0077	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,1-Dichloroethene	ND	0.0057	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,2-Dichloropropane	ND	0.0051	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,3-Dichloropropane	ND	0.0058	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
2,2-Dichloropropane	ND	0.0037	0.053		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,1-Dichloropropene	ND	0.0032	0.053		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Hexachlorobutadiene	ND	0.018	0.053		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
2-Hexanone	ND	0.012	0.26		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Isopropylbenzene	0.012	0.0049	0.026	J	mg/Kg	1	8/26/2021 1:32:28 AM	A80803
4-Isopropyltoluene	ND	0.0068	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
4-Methyl-2-pentanone	ND	0.031	0.26		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Methylene chloride	ND	0.019	0.079		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
n-Butylbenzene	0.0090	0.0070	0.079	J	mg/Kg	1	8/26/2021 1:32:28 AM	A80803
n-Propylbenzene	0.012	0.0043	0.026	J	mg/Kg	1	8/26/2021 1:32:28 AM	A80803
sec-Butylbenzene	ND	0.022	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Styrene	ND	0.0036	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
tert-Butylbenzene	ND	0.0061	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,1,1,2-Tetrachloroethane	ND	0.0039	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,1,2,2-Tetrachloroethane	ND	0.0085	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Tetrachloroethene (PCE)	ND	0.0072	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
trans-1,2-DCE	ND	0.0051	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803

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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
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-5 (12-12.5')
Project: North Drainage Ditch Area
Collection Date: 8/24/2021 8:30:00 AM
Lab ID: 2108D42-009
Matrix: MEOH (SOIL)
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0062	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,2,3-Trichlorobenzene	ND	0.0041	0.053		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,2,4-Trichlorobenzene	ND	0.0092	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,1,1-Trichloroethane	ND	0.0058	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,1,2-Trichloroethane	ND	0.0066	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Trichloroethene (TCE)	ND	0.0052	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Trichlorofluoromethane	ND	0.0060	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
1,2,3-Trichloropropane	ND	0.011	0.053		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Vinyl chloride	ND	0.0050	0.026		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Xylenes, Total	ND	0.014	0.053		mg/Kg	1	8/26/2021 1:32:28 AM	A80803
Surr: Dibromofluoromethane	109		70-130		%Rec	1	8/26/2021 1:32:28 AM	A80803
Surr: 1,2-Dichloroethane-d4	107		70-130		%Rec	1	8/26/2021 1:32:28 AM	A80803
Surr: Toluene-d8	99.9		70-130		%Rec	1	8/26/2021 1:32:28 AM	A80803
Surr: 4-Bromofluorobenzene	90.5		70-130		%Rec	1	8/26/2021 1:32:28 AM	A80803
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	2.1	0.73	2.6	J	mg/Kg	1	8/26/2021 1:32:28 AM	R80803
Surr: BFB	92.8	0	70-130		%Rec	1	8/26/2021 1:32:28 AM	R80803

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (17.5-18')
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021 9:20:00 AM
Lab ID: 2108D42-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 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	4.9	9.9		mg/Kg	1	8/27/2021 2:12:27 PM	62220
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	8/27/2021 2:12:27 PM	62220
Surr: DNOP	106	0	70-130		%Rec	1	8/27/2021 2:12:27 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0027	0.034		mg/Kg	1	9/7/2021 3:45:33 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	1.6	2.5		mg/Kg	1	8/31/2021 4:38:35 PM	62279
Arsenic	ND	2.8	5.0		mg/Kg	2	9/1/2021 3:06:28 PM	62279
Barium	58	0.12	0.20		mg/Kg	2	8/31/2021 5:38:48 PM	62279
Beryllium	1.0	0.029	0.15		mg/Kg	1	8/31/2021 4:38:35 PM	62279
Cadmium	ND	0.050	0.10		mg/Kg	1	8/31/2021 4:38:35 PM	62279
Chromium	18	0.15	0.30		mg/Kg	1	8/31/2021 4:38:35 PM	62279
Cobalt	11	0.060	0.30		mg/Kg	1	8/31/2021 4:38:35 PM	62279
Iron	18000	250	250		mg/Kg	100	9/1/2021 2:10:37 PM	62279
Lead	ND	0.27	0.30		mg/Kg	1	8/31/2021 4:38:35 PM	62279
Manganese	290	0.33	0.40		mg/Kg	2	8/31/2021 5:38:48 PM	62279
Nickel	15	0.20	0.50		mg/Kg	1	8/31/2021 4:38:35 PM	62279
Selenium	ND	2.2	2.5		mg/Kg	1	8/31/2021 4:38:35 PM	62279
Silver	ND	0.15	0.25		mg/Kg	1	8/31/2021 4:38:35 PM	62279
Vanadium	38	0.23	5.0		mg/Kg	2	9/1/2021 3:06:28 PM	62279
Zinc	36	2.7	5.0		mg/Kg	2	8/31/2021 5:38:48 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.087	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Acenaphthylene	ND	0.088	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Aniline	ND	0.068	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Anthracene	ND	0.088	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Azobenzene	ND	0.098	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Benzo(a)pyrene	ND	0.092	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Benzo(k)fluoranthene	ND	0.073	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Benzoic acid	ND	0.12	0.98		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Benzyl alcohol	ND	0.080	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Bis(2-chloroisopropyl)ether	ND	0.099	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	9/7/2021 5:20:33 PM	62272

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (17.5-18')
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021 9:20:00 AM
Lab ID: 2108D42-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Butyl benzyl phthalate	ND	0.059	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Carbazole	ND	0.086	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
4-Chloro-3-methylphenol	ND	0.082	0.49		mg/Kg	1	9/7/2021 5:20:33 PM	62272
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2-Chloronaphthalene	ND	0.093	0.24		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2-Chlorophenol	ND	0.10	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Chrysene	ND	0.086	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Di-n-butyl phthalate	0.29	0.27	0.39	J	mg/Kg	1	9/7/2021 5:20:33 PM	62272
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Dimethyl phthalate	ND	0.090	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	9/7/2021 5:20:33 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2,6-Dinitrotoluene	ND	0.099	0.49		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Fluoranthene	ND	0.079	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Fluorene	ND	0.087	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Hexachloroethane	ND	0.086	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Isophorone	ND	0.080	0.39		mg/Kg	1	9/7/2021 5:20:33 PM	62272
1-Methylnaphthalene	ND	0.090	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2-Methylphenol	ND	0.082	0.39		mg/Kg	1	9/7/2021 5:20:33 PM	62272
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
N-Nitrosodi-n-propylamine	ND	0.090	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-5 (17.5-18')
Project: North Drainage Ditch Area **Collection Date:** 8/24/2021 9:20:00 AM
Lab ID: 2108D42-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Naphthalene	ND	0.092	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2-Nitrophenol	ND	0.084	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Pentachlorophenol	ND	0.084	0.39		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Phenanthrene	ND	0.10	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Phenol	ND	0.075	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Pyrene	ND	0.074	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Pyridine	ND	0.16	0.39		mg/Kg	1	9/7/2021 5:20:33 PM	62272
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2,4,5-Trichlorophenol	ND	0.062	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
2,4,6-Trichlorophenol	ND	0.084	0.20		mg/Kg	1	9/7/2021 5:20:33 PM	62272
Surr: 2-Fluorophenol	41.4		20.3-74.1		%Rec	1	9/7/2021 5:20:33 PM	62272
Surr: Phenol-d5	49.9		23.1-92.7		%Rec	1	9/7/2021 5:20:33 PM	62272
Surr: 2,4,6-Tribromophenol	78.4		17.3-122		%Rec	1	9/7/2021 5:20:33 PM	62272
Surr: Nitrobenzene-d5	38.7		24.7-73.2		%Rec	1	9/7/2021 5:20:33 PM	62272
Surr: 2-Fluorobiphenyl	42.4		21.5-90.1		%Rec	1	9/7/2021 5:20:33 PM	62272
Surr: 4-Terphenyl-d14	99.4		15-140		%Rec	1	9/7/2021 5:20:33 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0079	0.021		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Toluene	ND	0.0053	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Ethylbenzene	ND	0.010	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.023	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,2,4-Trimethylbenzene	ND	0.0058	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,3,5-Trimethylbenzene	ND	0.0092	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,2-Dichloroethane (EDC)	ND	0.0093	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,2-Dibromoethane (EDB)	ND	0.016	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Naphthalene	ND	0.015	0.082		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1-Methylnaphthalene	ND	0.047	0.16		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
2-Methylnaphthalene	ND	0.038	0.16		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Acetone	ND	0.13	0.62		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Bromobenzene	ND	0.0087	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Bromodichloromethane	ND	0.0052	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Bromoform	ND	0.0099	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Bromomethane	ND	0.068	0.12		mg/Kg	1	9/1/2021 7:45:52 PM	R80995

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-5 (17.5-18')
Project: North Drainage Ditch Area
Collection Date: 8/24/2021 9:20:00 AM
Lab ID: 2108D42-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.18	0.41		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Carbon disulfide	ND	0.017	0.41		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Carbon tetrachloride	ND	0.0046	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Chlorobenzene	ND	0.0074	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Chloroethane	ND	0.015	0.082		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Chloroform	ND	0.0058	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Chloromethane	ND	0.014	0.12		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
2-Chlorotoluene	ND	0.0055	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
4-Chlorotoluene	ND	0.022	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
cis-1,2-DCE	ND	0.020	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
cis-1,3-Dichloropropene	ND	0.0061	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,2-Dibromo-3-chloropropane	ND	0.018	0.082		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Dibromochloromethane	ND	0.0066	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Dibromomethane	ND	0.0096	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,2-Dichlorobenzene	ND	0.0085	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,3-Dichlorobenzene	ND	0.0077	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,4-Dichlorobenzene	ND	0.011	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Dichlorodifluoromethane	ND	0.016	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,1-Dichloroethane	ND	0.012	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,1-Dichloroethene	ND	0.0088	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,2-Dichloropropane	ND	0.0080	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,3-Dichloropropane	ND	0.0090	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
2,2-Dichloropropane	ND	0.0058	0.082		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,1-Dichloropropene	ND	0.0050	0.082		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Hexachlorobutadiene	ND	0.028	0.082		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
2-Hexanone	ND	0.018	0.41		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Isopropylbenzene	ND	0.0076	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
4-Isopropyltoluene	ND	0.011	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
4-Methyl-2-pentanone	ND	0.048	0.41		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Methylene chloride	ND	0.030	0.12		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
n-Butylbenzene	ND	0.011	0.12		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
n-Propylbenzene	ND	0.0066	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
sec-Butylbenzene	ND	0.034	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Styrene	ND	0.0056	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
tert-Butylbenzene	ND	0.0095	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,1,1,2-Tetrachloroethane	ND	0.0060	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,1,2,2-Tetrachloroethane	ND	0.013	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Tetrachloroethene (PCE)	ND	0.011	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
trans-1,2-DCE	ND	0.0079	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995

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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
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S	% Recovery outside of range due to dilution or matrix

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-5 (17.5-18')
Project: North Drainage Ditch Area
Collection Date: 8/24/2021 9:20:00 AM
Lab ID: 2108D42-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0096	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,2,3-Trichlorobenzene	ND	0.0063	0.082		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,2,4-Trichlorobenzene	ND	0.014	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,1,1-Trichloroethane	ND	0.0091	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,1,2-Trichloroethane	ND	0.010	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Trichloroethene (TCE)	ND	0.0080	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Trichlorofluoromethane	ND	0.0093	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
1,2,3-Trichloropropane	ND	0.017	0.082		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Vinyl chloride	ND	0.0078	0.041		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Xylenes, Total	ND	0.022	0.082		mg/Kg	1	9/1/2021 7:45:52 PM	R80995
Surr: Dibromofluoromethane	106		70-130		%Rec	1	9/1/2021 7:45:52 PM	R80995
Surr: 1,2-Dichloroethane-d4	102		70-130		%Rec	1	9/1/2021 7:45:52 PM	R80995
Surr: Toluene-d8	98.2		70-130		%Rec	1	9/1/2021 7:45:52 PM	R80995
Surr: 4-Bromofluorobenzene	90.7		70-130		%Rec	1	9/1/2021 7:45:52 PM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	1.1	4.1		mg/Kg	1	9/1/2021 1:36:31 AM	B80948
Surr: BFB	100	0	70-130		%Rec	1	9/1/2021 1:36:31 AM	B80948

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB9
Project: North Drainage Ditch Area
Collection Date: 8/24/2021 9:20:00 AM
Lab ID: 2108D42-011
Matrix: AQUEOUS
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Benzene	ND	0.23	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Toluene	ND	0.20	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Ethylbenzene	ND	0.21	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Naphthalene	ND	0.50	2.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Acetone	ND	2.5	10		µg/L	1	8/28/2021 9:22:00 PM	R80878
Bromobenzene	ND	0.28	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Bromodichloromethane	ND	0.20	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Bromoform	ND	0.31	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Bromomethane	ND	0.85	3.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
2-Butanone	ND	2.0	10		µg/L	1	8/28/2021 9:22:00 PM	R80878
Carbon disulfide	ND	0.59	10		µg/L	1	8/28/2021 9:22:00 PM	R80878
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Chlorobenzene	ND	0.16	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Chloroethane	ND	0.38	2.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Chloroform	ND	0.13	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Chloromethane	ND	0.41	3.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Dibromochloromethane	ND	0.28	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Dibromomethane	ND	0.31	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	8/28/2021 9:22:00 PM	R80878

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB9
Project: North Drainage Ditch Area
Collection Date: 8/24/2021 9:20:00 AM
Lab ID: 2108D42-011
Matrix: AQUEOUS
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
2-Hexanone	ND	1.8	10		µg/L	1	8/28/2021 9:22:00 PM	R80878
Isopropylbenzene	ND	0.18	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	8/28/2021 9:22:00 PM	R80878
Methylene Chloride	ND	0.50	3.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
n-Butylbenzene	ND	0.25	3.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
n-Propylbenzene	ND	0.18	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Styrene	ND	0.14	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Vinyl chloride	ND	0.32	1.0		µg/L	1	8/28/2021 9:22:00 PM	R80878
Xylenes, Total	ND	0.37	1.5		µg/L	1	8/28/2021 9:22:00 PM	R80878
Surr: 1,2-Dichloroethane-d4	84.4	0	70-130		%Rec	1	8/28/2021 9:22:00 PM	R80878
Surr: 4-Bromofluorobenzene	97.4	0	70-130		%Rec	1	8/28/2021 9:22:00 PM	R80878
Surr: Dibromofluoromethane	82.2	0	70-130		%Rec	1	8/28/2021 9:22:00 PM	R80878
Surr: Toluene-d8	97.4	0	70-130		%Rec	1	8/28/2021 9:22:00 PM	R80878

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-3 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 9:05:00 AM
Lab ID: 2108D42-012 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 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	4.9	10		mg/Kg	1	8/27/2021 2:36:52 PM	62220
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	8/27/2021 2:36:52 PM	62220
Surr: DNOP	113	0	70-130		%Rec	1	8/27/2021 2:36:52 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.023	0.0026	0.033	J	mg/Kg	1	9/7/2021 3:47:42 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/31/2021 5:40:37 PM	62279
Arsenic	ND	2.8	4.9		mg/Kg	2	9/1/2021 3:08:12 PM	62279
Barium	410	0.12	0.20		mg/Kg	2	8/31/2021 5:40:37 PM	62279
Beryllium	0.96	0.057	0.29		mg/Kg	2	8/31/2021 5:40:37 PM	62279
Cadmium	ND	0.098	0.20		mg/Kg	2	8/31/2021 5:40:37 PM	62279
Chromium	12	0.29	0.59		mg/Kg	2	8/31/2021 5:40:37 PM	62279
Cobalt	4.9	0.12	0.59		mg/Kg	2	8/31/2021 5:40:37 PM	62279
Iron	15000	250	250		mg/Kg	100	9/1/2021 2:12:12 PM	62279
Lead	3.0	0.52	0.59		mg/Kg	2	8/31/2021 5:40:37 PM	62279
Manganese	460	0.32	0.39		mg/Kg	2	8/31/2021 5:40:37 PM	62279
Nickel	10	0.39	0.98		mg/Kg	2	8/31/2021 5:40:37 PM	62279
Selenium	ND	4.3	4.9		mg/Kg	2	8/31/2021 5:40:37 PM	62279
Silver	ND	0.28	0.49		mg/Kg	2	8/31/2021 5:40:37 PM	62279
Vanadium	25	0.22	4.9		mg/Kg	2	9/1/2021 3:08:12 PM	62279
Zinc	21	2.6	4.9		mg/Kg	2	8/31/2021 5:40:37 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Acenaphthylene	ND	0.90	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Aniline	ND	0.69	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Anthracene	ND	0.90	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Azobenzene	ND	0.99	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Benz(a)anthracene	ND	0.64	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Benzo(a)pyrene	ND	0.93	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Benzo(b)fluoranthene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Benzo(k)fluoranthene	ND	0.74	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Benzoic acid	ND	1.2	9.9	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Benzyl alcohol	ND	0.81	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Bis(2-chloroethoxy)methane	ND	0.76	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Bis(2-ethylhexyl)phthalate	ND	2.1	5.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272

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
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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-3 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 9:05:00 AM
Lab ID: 2108D42-012 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Butyl benzyl phthalate	ND	0.60	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Carbazole	ND	0.87	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
4-Chloro-3-methylphenol	ND	0.84	5.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
4-Chloroaniline	ND	0.96	5.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2-Chloronaphthalene	ND	0.94	2.5	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
4-Chlorophenyl phenyl ether	ND	0.84	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Chrysene	ND	0.87	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Di-n-butyl phthalate	ND	2.8	4.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Di-n-octyl phthalate	ND	1.3	4.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
1,2-Dichlorobenzene	ND	0.80	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
1,3-Dichlorobenzene	ND	0.71	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
1,4-Dichlorobenzene	ND	0.84	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Diethyl phthalate	ND	3.2	5.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Dimethyl phthalate	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2,4-Dichlorophenol	ND	0.81	4.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2,4-Dimethylphenol	ND	0.70	3.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2,4-Dinitrophenol	ND	0.50	5.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2,4-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2,6-Dinitrotoluene	ND	1.0	5.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Fluoranthene	ND	0.80	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Fluorene	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Hexachlorobenzene	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Hexachlorobutadiene	ND	0.93	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Hexachloroethane	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Isophorone	ND	0.81	4.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
1-Methylnaphthalene	ND	0.91	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2-Methylnaphthalene	ND	0.82	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2-Methylphenol	ND	0.83	4.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
3+4-Methylphenol	ND	0.82	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
N-Nitrosodi-n-propylamine	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272

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		

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-3 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 9:05:00 AM
Lab ID: 2108D42-012 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Naphthalene	ND	0.93	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
3-Nitroaniline	ND	1.2	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Nitrobenzene	ND	0.81	4.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2-Nitrophenol	ND	0.85	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
4-Nitrophenol	ND	0.81	2.5	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Pentachlorophenol	ND	0.86	4.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Phenol	ND	0.76	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Pyrene	ND	0.75	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Pyridine	ND	1.6	4.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
1,2,4-Trichlorobenzene	ND	0.91	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2,4,5-Trichlorophenol	ND	0.63	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
2,4,6-Trichlorophenol	ND	0.85	2.0	D	mg/Kg	10	9/7/2021 6:02:16 PM	62272
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/7/2021 6:02:16 PM	62272
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/7/2021 6:02:16 PM	62272
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/7/2021 6:02:16 PM	62272
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/7/2021 6:02:16 PM	62272
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/7/2021 6:02:16 PM	62272
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/7/2021 6:02:16 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0056	0.015		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Toluene	ND	0.0038	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Ethylbenzene	ND	0.0071	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.017	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,2,4-Trimethylbenzene	ND	0.0041	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,3,5-Trimethylbenzene	ND	0.0066	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,2-Dichloroethane (EDC)	ND	0.0067	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,2-Dibromoethane (EDB)	ND	0.012	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Naphthalene	ND	0.011	0.059		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1-Methylnaphthalene	ND	0.034	0.12		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
2-Methylnaphthalene	ND	0.027	0.12		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Acetone	ND	0.096	0.44		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Bromobenzene	ND	0.0062	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Bromodichloromethane	ND	0.0037	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Bromoform	ND	0.0071	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Bromomethane	ND	0.049	0.088		mg/Kg	1	9/1/2021 9:07:02 PM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-3 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 9:05:00 AM
Lab ID: 2108D42-012 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.13	0.29		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Carbon disulfide	ND	0.012	0.29		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Carbon tetrachloride	ND	0.0033	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Chlorobenzene	ND	0.0053	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Chloroethane	ND	0.011	0.059		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Chloroform	ND	0.0042	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Chloromethane	ND	0.010	0.088		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
2-Chlorotoluene	ND	0.0039	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
4-Chlorotoluene	ND	0.015	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
cis-1,2-DCE	ND	0.015	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
cis-1,3-Dichloropropene	ND	0.0044	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,2-Dibromo-3-chloropropane	ND	0.013	0.059		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Dibromochloromethane	ND	0.0047	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Dibromomethane	ND	0.0069	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,2-Dichlorobenzene	ND	0.0061	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,3-Dichlorobenzene	ND	0.0055	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,4-Dichlorobenzene	ND	0.0078	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Dichlorodifluoromethane	ND	0.011	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,1-Dichloroethane	ND	0.0085	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,1-Dichloroethene	ND	0.0063	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,2-Dichloropropane	ND	0.0057	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,3-Dichloropropane	ND	0.0064	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
2,2-Dichloropropane	ND	0.0042	0.059		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,1-Dichloropropene	ND	0.0035	0.059		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Hexachlorobutadiene	ND	0.020	0.059		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
2-Hexanone	ND	0.013	0.29		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Isopropylbenzene	ND	0.0054	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
4-Isopropyltoluene	ND	0.0076	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
4-Methyl-2-pentanone	ND	0.034	0.29		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Methylene chloride	ND	0.021	0.088		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
n-Butylbenzene	ND	0.0078	0.088		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
n-Propylbenzene	ND	0.0047	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
sec-Butylbenzene	ND	0.024	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Styrene	ND	0.0040	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
tert-Butylbenzene	ND	0.0068	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,1,1,2-Tetrachloroethane	ND	0.0043	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,1,2,2-Tetrachloroethane	ND	0.0095	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Tetrachloroethene (PCE)	ND	0.0080	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
trans-1,2-DCE	ND	0.0057	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-3 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 9:05:00 AM
Lab ID: 2108D42-012 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0069	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,2,3-Trichlorobenzene	ND	0.0045	0.059		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,2,4-Trichlorobenzene	ND	0.010	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,1,1-Trichloroethane	ND	0.0065	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,1,2-Trichloroethane	ND	0.0073	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Trichloroethene (TCE)	ND	0.0057	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Trichlorofluoromethane	ND	0.0067	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
1,2,3-Trichloropropane	ND	0.012	0.059		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Vinyl chloride	ND	0.0056	0.029		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Xylenes, Total	ND	0.015	0.059		mg/Kg	1	9/1/2021 9:07:02 PM	R80995
Surr: Dibromofluoromethane	120		70-130		%Rec	1	9/1/2021 9:07:02 PM	R80995
Surr: 1,2-Dichloroethane-d4	112		70-130		%Rec	1	9/1/2021 9:07:02 PM	R80995
Surr: Toluene-d8	101		70-130		%Rec	1	9/1/2021 9:07:02 PM	R80995
Surr: 4-Bromofluorobenzene	98.5		70-130		%Rec	1	9/1/2021 9:07:02 PM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.82	2.9		mg/Kg	1	9/1/2021 2:05:11 AM	B80948
Surr: BFB	101	0	70-130		%Rec	1	9/1/2021 2:05:11 AM	B80948

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-3 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 9:10:00 AM
Lab ID: 2108D42-013 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 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	4.5	9.2		mg/Kg	1	8/27/2021 3:01:09 PM	62220
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/27/2021 3:01:09 PM	62220
Surr: DNOP	114	0	70-130		%Rec	1	8/27/2021 3:01:09 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.011	0.0026	0.033	J	mg/Kg	1	9/7/2021 3:49:53 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/31/2021 5:42:24 PM	62279
Arsenic	ND	2.8	5.0		mg/Kg	2	9/1/2021 3:09:49 PM	62279
Barium	580	0.60	1.0		mg/Kg	10	9/1/2021 3:11:31 PM	62279
Beryllium	0.95	0.058	0.30		mg/Kg	2	8/31/2021 5:42:24 PM	62279
Cadmium	ND	0.10	0.20		mg/Kg	2	8/31/2021 5:42:24 PM	62279
Chromium	10	0.30	0.60		mg/Kg	2	8/31/2021 5:42:24 PM	62279
Cobalt	4.6	0.12	0.60		mg/Kg	2	8/31/2021 5:42:24 PM	62279
Iron	14000	250	250		mg/Kg	100	9/1/2021 2:13:48 PM	62279
Lead	1.9	0.53	0.60		mg/Kg	2	8/31/2021 5:42:24 PM	62279
Manganese	710	1.7	2.0		mg/Kg	10	9/1/2021 3:11:31 PM	62279
Nickel	9.3	0.39	1.0		mg/Kg	2	8/31/2021 5:42:24 PM	62279
Selenium	ND	4.4	5.0		mg/Kg	2	8/31/2021 5:42:24 PM	62279
Silver	ND	0.29	0.50		mg/Kg	2	8/31/2021 5:42:24 PM	62279
Vanadium	22	0.23	5.0		mg/Kg	2	9/1/2021 3:09:49 PM	62279
Zinc	18	2.7	5.0		mg/Kg	2	8/31/2021 5:42:24 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Acenaphthylene	ND	0.90	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Aniline	ND	0.69	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Anthracene	ND	0.90	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Azobenzene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Benz(a)anthracene	ND	0.64	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Benzo(a)pyrene	ND	0.94	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Benzo(b)fluoranthene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Benzo(k)fluoranthene	ND	0.75	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Benzoic acid	ND	1.2	10	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Benzyl alcohol	ND	0.82	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Bis(2-chloroethoxy)methane	ND	0.76	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Bis(2-ethylhexyl)phthalate	ND	2.1	5.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-3 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 9:10:00 AM
Lab ID: 2108D42-013 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Butyl benzyl phthalate	ND	0.61	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Carbazole	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
4-Chloro-3-methylphenol	ND	0.84	5.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
4-Chloroaniline	ND	0.97	5.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2-Chloronaphthalene	ND	0.95	2.5	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
4-Chlorophenyl phenyl ether	ND	0.85	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Chrysene	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Di-n-butyl phthalate	ND	2.8	4.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Di-n-octyl phthalate	ND	1.3	4.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
1,2-Dichlorobenzene	ND	0.81	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
1,3-Dichlorobenzene	ND	0.71	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
1,4-Dichlorobenzene	ND	0.85	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Diethyl phthalate	ND	3.3	5.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Dimethyl phthalate	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2,4-Dichlorophenol	ND	0.81	4.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2,4-Dimethylphenol	ND	0.71	3.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2,4-Dinitrophenol	ND	0.50	5.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2,4-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2,6-Dinitrotoluene	ND	1.0	5.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Fluoranthene	ND	0.81	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Fluorene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Hexachlorobenzene	ND	0.89	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Hexachlorobutadiene	ND	0.94	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Hexachloroethane	ND	0.88	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Isophorone	ND	0.81	4.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
1-Methylnaphthalene	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2-Methylnaphthalene	ND	0.82	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2-Methylphenol	ND	0.84	4.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
3+4-Methylphenol	ND	0.82	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
N-Nitrosodi-n-propylamine	ND	0.92	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-3 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 9:10:00 AM
Lab ID: 2108D42-013 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Naphthalene	ND	0.94	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
3-Nitroaniline	ND	1.2	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
4-Nitroaniline	ND	1.3	4.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Nitrobenzene	ND	0.82	4.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2-Nitrophenol	ND	0.86	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
4-Nitrophenol	ND	0.82	2.5	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Pentachlorophenol	ND	0.86	4.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Phenol	ND	0.77	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Pyrene	ND	0.76	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Pyridine	ND	1.6	4.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
1,2,4-Trichlorobenzene	ND	0.91	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2,4,5-Trichlorophenol	ND	0.64	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
2,4,6-Trichlorophenol	ND	0.86	2.0	D	mg/Kg	10	9/7/2021 6:43:56 PM	62272
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/7/2021 6:43:56 PM	62272
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/7/2021 6:43:56 PM	62272
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/7/2021 6:43:56 PM	62272
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/7/2021 6:43:56 PM	62272
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/7/2021 6:43:56 PM	62272
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/7/2021 6:43:56 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0058	0.015		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Toluene	ND	0.0039	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Ethylbenzene	ND	0.0074	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.017	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,2,4-Trimethylbenzene	ND	0.0043	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,3,5-Trimethylbenzene	ND	0.0068	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,2-Dichloroethane (EDC)	ND	0.0069	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,2-Dibromoethane (EDB)	ND	0.012	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Naphthalene	ND	0.011	0.061		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1-Methylnaphthalene	ND	0.035	0.12		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
2-Methylnaphthalene	ND	0.028	0.12		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Acetone	ND	0.099	0.46		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Bromobenzene	ND	0.0064	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Bromodichloromethane	ND	0.0039	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Bromoform	ND	0.0073	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Bromomethane	ND	0.050	0.091		mg/Kg	1	9/1/2021 9:34:01 PM	R80995

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-3 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 9:10:00 AM
Lab ID: 2108D42-013 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.13	0.30		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Carbon disulfide	ND	0.012	0.30		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Carbon tetrachloride	ND	0.0034	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Chlorobenzene	ND	0.0055	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Chloroethane	ND	0.011	0.061		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Chloroform	ND	0.0043	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Chloromethane	ND	0.011	0.091		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
2-Chlorotoluene	ND	0.0041	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
4-Chlorotoluene	ND	0.016	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
cis-1,2-DCE	ND	0.015	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
cis-1,3-Dichloropropene	ND	0.0045	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,2-Dibromo-3-chloropropane	ND	0.013	0.061		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Dibromochloromethane	ND	0.0049	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Dibromomethane	ND	0.0071	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,2-Dichlorobenzene	ND	0.0063	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,3-Dichlorobenzene	ND	0.0057	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,4-Dichlorobenzene	ND	0.0081	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Dichlorodifluoromethane	ND	0.012	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,1-Dichloroethane	ND	0.0088	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,1-Dichloroethene	ND	0.0065	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,2-Dichloropropane	ND	0.0059	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,3-Dichloropropane	ND	0.0067	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
2,2-Dichloropropane	ND	0.0043	0.061		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,1-Dichloropropene	ND	0.0037	0.061		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Hexachlorobutadiene	ND	0.021	0.061		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
2-Hexanone	ND	0.013	0.30		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Isopropylbenzene	ND	0.0056	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
4-Isopropyltoluene	ND	0.0078	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
4-Methyl-2-pentanone	ND	0.035	0.30		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Methylene chloride	ND	0.022	0.091		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
n-Butylbenzene	ND	0.0081	0.091		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
n-Propylbenzene	ND	0.0049	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
sec-Butylbenzene	ND	0.025	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Styrene	ND	0.0041	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
tert-Butylbenzene	ND	0.0070	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,1,1,2-Tetrachloroethane	ND	0.0045	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,1,2,2-Tetrachloroethane	ND	0.0098	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Tetrachloroethene (PCE)	ND	0.0083	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
trans-1,2-DCE	ND	0.0059	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-3 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 9:10:00 AM
Lab ID: 2108D42-013 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0071	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,2,3-Trichlorobenzene	ND	0.0047	0.061		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,2,4-Trichlorobenzene	ND	0.011	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,1,1-Trichloroethane	ND	0.0067	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,1,2-Trichloroethane	ND	0.0076	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Trichloroethene (TCE)	ND	0.0059	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Trichlorofluoromethane	ND	0.0069	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
1,2,3-Trichloropropane	ND	0.013	0.061		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Vinyl chloride	ND	0.0058	0.030		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Xylenes, Total	ND	0.016	0.061		mg/Kg	1	9/1/2021 9:34:01 PM	R80995
Surr: Dibromofluoromethane	101		70-130		%Rec	1	9/1/2021 9:34:01 PM	R80995
Surr: 1,2-Dichloroethane-d4	96.2		70-130		%Rec	1	9/1/2021 9:34:01 PM	R80995
Surr: Toluene-d8	98.7		70-130		%Rec	1	9/1/2021 9:34:01 PM	R80995
Surr: 4-Bromofluorobenzene	87.2		70-130		%Rec	1	9/1/2021 9:34:01 PM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.84	3.0		mg/Kg	1	9/1/2021 3:02:28 AM	B80948
Surr: BFB	101	0	70-130		%Rec	1	9/1/2021 3:02:28 AM	B80948

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-3 (6-6.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 9:25:00 AM
Lab ID: 2108D42-014 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	1500	46	94		mg/Kg	10	8/30/2021 9:38:37 PM	62220
Motor Oil Range Organics (MRO)	ND	470	470	D	mg/Kg	10	8/30/2021 9:38:37 PM	62220
Surr: DNOP	0	0	70-130	S	%Rec	10	8/30/2021 9:38:37 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0064	0.0028	0.036	J	mg/Kg	1	9/7/2021 3:52:00 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/31/2021 5:44:17 PM	62279
Arsenic	ND	2.8	4.9		mg/Kg	2	9/1/2021 3:13:07 PM	62279
Barium	620	0.59	0.98		mg/Kg	10	9/1/2021 3:14:44 PM	62279
Beryllium	0.98	0.057	0.29		mg/Kg	2	8/31/2021 5:44:17 PM	62279
Cadmium	ND	0.098	0.20		mg/Kg	2	8/31/2021 5:44:17 PM	62279
Chromium	6.7	0.29	0.59		mg/Kg	2	8/31/2021 5:44:17 PM	62279
Cobalt	5.4	0.12	0.59		mg/Kg	2	8/31/2021 5:44:17 PM	62279
Iron	12000	240	240		mg/Kg	100	9/1/2021 2:15:23 PM	62279
Lead	1.8	0.52	0.59		mg/Kg	2	8/31/2021 5:44:17 PM	62279
Manganese	380	0.32	0.39		mg/Kg	2	8/31/2021 5:44:17 PM	62279
Nickel	9.5	0.39	0.98		mg/Kg	2	8/31/2021 5:44:17 PM	62279
Selenium	ND	4.3	4.9		mg/Kg	2	8/31/2021 5:44:17 PM	62279
Silver	ND	0.28	0.49		mg/Kg	2	8/31/2021 5:44:17 PM	62279
Vanadium	11	0.22	4.9		mg/Kg	2	9/1/2021 3:13:07 PM	62279
Zinc	17	2.6	4.9		mg/Kg	2	8/31/2021 5:44:17 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.84	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Acenaphthylene	ND	0.85	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Aniline	ND	0.65	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Anthracene	ND	0.85	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Azobenzene	ND	0.94	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Benz(a)anthracene	ND	0.61	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Benzo(a)pyrene	ND	0.89	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Benzo(b)fluoranthene	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Benzo(g,h,i)perylene	ND	0.96	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Benzo(k)fluoranthene	ND	0.71	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Benzoic acid	ND	1.2	9.4	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Benzyl alcohol	ND	0.77	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Bis(2-chloroethoxy)methane	ND	0.72	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Bis(2-chloroethyl)ether	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Bis(2-chloroisopropyl)ether	ND	0.96	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Bis(2-ethylhexyl)phthalate	ND	2.0	4.7	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272

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Qualifiers:

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B	Analyte detected in the associated Method Blank
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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-3 (6-6.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 9:25:00 AM
Lab ID: 2108D42-014 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.98	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Butyl benzyl phthalate	ND	0.57	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Carbazole	ND	0.83	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
4-Chloro-3-methylphenol	ND	0.80	4.7	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
4-Chloroaniline	ND	0.92	4.7	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2-Chloronaphthalene	ND	0.89	2.4	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2-Chlorophenol	ND	1.0	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
4-Chlorophenyl phenyl ether	ND	0.80	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Chrysene	ND	0.83	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Di-n-butyl phthalate	ND	2.6	3.8	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Di-n-octyl phthalate	ND	1.2	3.8	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Dibenz(a,h)anthracene	ND	0.99	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Dibenzofuran	ND	0.98	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
1,2-Dichlorobenzene	ND	0.76	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
1,3-Dichlorobenzene	ND	0.67	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
1,4-Dichlorobenzene	ND	0.80	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
3,3´-Dichlorobenzidine	ND	1.4	2.4	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Diethyl phthalate	ND	3.1	4.7	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Dimethyl phthalate	ND	0.87	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2,4-Dichlorophenol	ND	0.77	3.8	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2,4-Dimethylphenol	ND	0.67	2.8	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.79	3.8	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2,4-Dinitrophenol	ND	0.47	4.7	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2,4-Dinitrotoluene	ND	1.1	4.7	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2,6-Dinitrotoluene	ND	0.96	4.7	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Fluoranthene	ND	0.76	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Fluorene	ND	0.84	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Hexachlorobenzene	ND	0.84	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Hexachlorobutadiene	ND	0.88	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Hexachlorocyclopentadiene	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Hexachloroethane	ND	0.83	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Isophorone	ND	0.77	3.8	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
1-Methylnaphthalene	4.6	0.87	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2-Methylnaphthalene	6.7	0.78	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2-Methylphenol	ND	0.79	3.8	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
3+4-Methylphenol	ND	0.78	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
N-Nitrosodi-n-propylamine	ND	0.87	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
N-Nitrosodimethylamine	ND	1.4	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-3 (6-6.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 9:25:00 AM
Lab ID: 2108D42-014 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.98	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Naphthalene	2.7	0.89	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2-Nitroaniline	ND	0.96	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
3-Nitroaniline	ND	1.1	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
4-Nitroaniline	ND	1.2	3.8	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Nitrobenzene	ND	0.77	3.8	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2-Nitrophenol	ND	0.81	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
4-Nitrophenol	ND	0.78	2.4	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Pentachlorophenol	ND	0.81	3.8	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Phenanthrene	ND	0.96	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Phenol	ND	0.73	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Pyrene	ND	0.71	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Pyridine	ND	1.5	3.8	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
1,2,4-Trichlorobenzene	ND	0.87	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2,4,5-Trichlorophenol	ND	0.60	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
2,4,6-Trichlorophenol	ND	0.81	1.9	D	mg/Kg	10	9/7/2021 7:25:27 PM	62272
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	9/7/2021 7:25:27 PM	62272
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	9/7/2021 7:25:27 PM	62272
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	9/7/2021 7:25:27 PM	62272
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	9/7/2021 7:25:27 PM	62272
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	9/7/2021 7:25:27 PM	62272
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	9/7/2021 7:25:27 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	0.65	0.054	0.14	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Toluene	0.061	0.036	0.28	JD	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Ethylbenzene	0.79	0.068	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.16	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,2,4-Trimethylbenzene	2.8	0.040	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,3,5-Trimethylbenzene	0.84	0.063	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,2-Dichloroethane (EDC)	ND	0.064	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,2-Dibromoethane (EDB)	ND	0.11	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Naphthalene	0.65	0.10	0.56	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1-Methylnaphthalene	0.77	0.32	1.1	JD	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
2-Methylnaphthalene	1.2	0.26	1.1	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Acetone	ND	0.91	4.2	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Bromobenzene	ND	0.059	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Bromodichloromethane	0.091	0.036	0.28	JD	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Bromoform	ND	0.068	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Bromomethane	ND	0.46	0.84	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-3 (6-6.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 9:25:00 AM
Lab ID: 2108D42-014 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	1.2	2.8	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Carbon disulfide	ND	0.12	2.8	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Carbon tetrachloride	ND	0.031	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Chlorobenzene	0.051	0.050	0.28	JD	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Chloroethane	ND	0.10	0.56	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Chloroform	ND	0.040	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Chloromethane	ND	0.098	0.84	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
2-Chlorotoluene	ND	0.038	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
4-Chlorotoluene	ND	0.15	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
cis-1,2-DCE	ND	0.14	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
cis-1,3-Dichloropropene	ND	0.042	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,2-Dibromo-3-chloropropane	ND	0.12	0.56	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Dibromochloromethane	ND	0.045	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Dibromomethane	ND	0.065	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,2-Dichlorobenzene	ND	0.058	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,3-Dichlorobenzene	ND	0.053	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,4-Dichlorobenzene	ND	0.075	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Dichlorodifluoromethane	ND	0.11	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,1-Dichloroethane	ND	0.082	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,1-Dichloroethene	ND	0.060	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,2-Dichloropropane	ND	0.055	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,3-Dichloropropane	ND	0.062	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
2,2-Dichloropropane	ND	0.040	0.56	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,1-Dichloropropene	ND	0.034	0.56	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Hexachlorobutadiene	ND	0.19	0.56	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
2-Hexanone	0.48	0.12	2.8	JD	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Isopropylbenzene	0.14	0.052	0.28	JD	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
4-Isopropyltoluene	0.085	0.072	0.28	JD	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
4-Methyl-2-pentanone	1.8	0.33	2.8	JD	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Methylene chloride	ND	0.20	0.84	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
n-Butylbenzene	0.33	0.075	0.84	JD	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
n-Propylbenzene	0.41	0.045	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
sec-Butylbenzene	ND	0.23	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Styrene	ND	0.038	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
tert-Butylbenzene	ND	0.065	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,1,1,2-Tetrachloroethane	ND	0.041	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,1,2,2-Tetrachloroethane	ND	0.091	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Tetrachloroethene (PCE)	ND	0.077	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
trans-1,2-DCE	ND	0.054	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-3 (6-6.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 9:25:00 AM
Lab ID: 2108D42-014 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.066	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,2,3-Trichlorobenzene	ND	0.043	0.56	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,2,4-Trichlorobenzene	ND	0.097	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,1,1-Trichloroethane	ND	0.062	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,1,2-Trichloroethane	ND	0.070	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Trichloroethene (TCE)	ND	0.055	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Trichlorofluoromethane	ND	0.064	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
1,2,3-Trichloropropane	ND	0.12	0.56	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Vinyl chloride	ND	0.053	0.28	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Xylenes, Total	4.8	0.15	0.56	D	mg/Kg	10	9/1/2021 10:01:00 PM	R80995
Surr: Dibromofluoromethane	107		70-130	D	%Rec	10	9/1/2021 10:01:00 PM	R80995
Surr: 1,2-Dichloroethane-d4	101		70-130	D	%Rec	10	9/1/2021 10:01:00 PM	R80995
Surr: Toluene-d8	94.8		70-130	D	%Rec	10	9/1/2021 10:01:00 PM	R80995
Surr: 4-Bromofluorobenzene	94.4		70-130	D	%Rec	10	9/1/2021 10:01:00 PM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	210	7.8	28		mg/Kg	10	9/1/2021 3:59:46 AM	B80948
Surr: BFB	98.1	0	70-130		%Rec	10	9/1/2021 3:59:46 AM	B80948

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-3 (9.5-10')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 10:10:00 AM
Lab ID: 2108D42-015 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 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	4.9	9.9		mg/Kg	1	8/27/2021 3:49:50 PM	62220
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	8/27/2021 3:49:50 PM	62220
Surr: DNOP	114	0	70-130		%Rec	1	8/27/2021 3:49:50 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0027	0.034		mg/Kg	1	9/7/2021 3:54:08 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/31/2021 5:46:04 PM	62279
Arsenic	ND	2.8	5.0		mg/Kg	2	9/1/2021 3:16:20 PM	62279
Barium	340	0.12	0.20		mg/Kg	2	8/31/2021 5:46:04 PM	62279
Beryllium	1.2	0.058	0.30		mg/Kg	2	8/31/2021 5:46:04 PM	62279
Cadmium	ND	0.10	0.20		mg/Kg	2	8/31/2021 5:46:04 PM	62279
Chromium	10	0.30	0.60		mg/Kg	2	8/31/2021 5:46:04 PM	62279
Cobalt	5.6	0.12	0.60		mg/Kg	2	8/31/2021 5:46:04 PM	62279
Iron	14000	250	250		mg/Kg	100	9/1/2021 2:16:58 PM	62279
Lead	ND	0.53	0.60		mg/Kg	2	8/31/2021 5:46:04 PM	62279
Manganese	460	0.33	0.40		mg/Kg	2	8/31/2021 5:46:04 PM	62279
Nickel	11	0.39	1.0		mg/Kg	2	8/31/2021 5:46:04 PM	62279
Selenium	ND	4.4	5.0		mg/Kg	2	8/31/2021 5:46:04 PM	62279
Silver	ND	0.29	0.50		mg/Kg	2	8/31/2021 5:46:04 PM	62279
Vanadium	13	0.23	5.0		mg/Kg	2	9/1/2021 3:16:20 PM	62279
Zinc	20	2.7	5.0		mg/Kg	2	8/31/2021 5:46:04 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.086	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Acenaphthylene	ND	0.087	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Aniline	ND	0.067	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Anthracene	ND	0.087	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Azobenzene	ND	0.096	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Benz(a)anthracene	ND	0.062	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Benzo(a)pyrene	ND	0.091	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Benzo(g,h,i)perylene	ND	0.098	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Benzo(k)fluoranthene	ND	0.072	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Benzoic acid	ND	0.12	0.96		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Benzyl alcohol	ND	0.079	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Bis(2-chloroethoxy)methane	ND	0.074	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Bis(2-chloroisopropyl)ether	ND	0.098	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Bis(2-ethylhexyl)phthalate	ND	0.21	0.48		mg/Kg	1	9/8/2021 11:50:13 AM	62272

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-3 (9.5-10')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 10:10:00 AM
Lab ID: 2108D42-015
Matrix: MEOH (SOIL)
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Butyl benzyl phthalate	ND	0.059	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Carbazole	ND	0.085	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
4-Chloro-3-methylphenol	ND	0.081	0.48		mg/Kg	1	9/8/2021 11:50:13 AM	62272
4-Chloroaniline	ND	0.094	0.48		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2-Chloronaphthalene	ND	0.091	0.24		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
4-Chlorophenyl phenyl ether	ND	0.082	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Chrysene	ND	0.085	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Di-n-octyl phthalate	ND	0.12	0.39		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
1,2-Dichlorobenzene	ND	0.078	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
1,3-Dichlorobenzene	ND	0.069	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
1,4-Dichlorobenzene	ND	0.082	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Diethyl phthalate	ND	0.31	0.48		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Dimethyl phthalate	ND	0.089	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2,4-Dichlorophenol	ND	0.078	0.39		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	9/8/2021 11:50:13 AM	62272
4,6-Dinitro-2-methylphenol	ND	0.081	0.39		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2,4-Dinitrophenol	ND	0.048	0.48		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2,6-Dinitrotoluene	ND	0.098	0.48		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Fluoranthene	ND	0.078	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Fluorene	ND	0.086	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Hexachlorobenzene	ND	0.086	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Hexachlorobutadiene	ND	0.090	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Hexachloroethane	ND	0.085	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Isophorone	ND	0.079	0.39		mg/Kg	1	9/8/2021 11:50:13 AM	62272
1-Methylnaphthalene	ND	0.089	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2-Methylnaphthalene	ND	0.080	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2-Methylphenol	ND	0.081	0.39		mg/Kg	1	9/8/2021 11:50:13 AM	62272
3+4-Methylphenol	ND	0.080	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
N-Nitrosodi-n-propylamine	ND	0.089	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-3 (9.5-10')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 10:10:00 AM
Lab ID: 2108D42-015 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Naphthalene	ND	0.091	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2-Nitroaniline	ND	0.099	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Nitrobenzene	ND	0.079	0.39		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2-Nitrophenol	ND	0.083	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
4-Nitrophenol	ND	0.079	0.24		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Pentachlorophenol	ND	0.083	0.39		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Phenanthrene	ND	0.098	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Phenol	ND	0.074	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Pyrene	ND	0.073	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Pyridine	ND	0.16	0.39		mg/Kg	1	9/8/2021 11:50:13 AM	62272
1,2,4-Trichlorobenzene	ND	0.088	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2,4,5-Trichlorophenol	ND	0.061	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
2,4,6-Trichlorophenol	ND	0.083	0.19		mg/Kg	1	9/8/2021 11:50:13 AM	62272
Surr: 2-Fluorophenol	53.9		20.3-74.1		%Rec	1	9/8/2021 11:50:13 AM	62272
Surr: Phenol-d5	65.4		23.1-92.7		%Rec	1	9/8/2021 11:50:13 AM	62272
Surr: 2,4,6-Tribromophenol	85.1		17.3-122		%Rec	1	9/8/2021 11:50:13 AM	62272
Surr: Nitrobenzene-d5	50.5		24.7-73.2		%Rec	1	9/8/2021 11:50:13 AM	62272
Surr: 2-Fluorobiphenyl	64.7		21.5-90.1		%Rec	1	9/8/2021 11:50:13 AM	62272
Surr: 4-Terphenyl-d14	105		15-140		%Rec	1	9/8/2021 11:50:13 AM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	0.059	0.0064	0.017		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Toluene	ND	0.0043	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Ethylbenzene	ND	0.0081	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.019	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,2,4-Trimethylbenzene	ND	0.0047	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,3,5-Trimethylbenzene	ND	0.0074	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,2-Dichloroethane (EDC)	0.016	0.0075	0.033	J	mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,2-Dibromoethane (EDB)	ND	0.013	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Naphthalene	ND	0.012	0.066		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1-Methylnaphthalene	ND	0.038	0.13		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
2-Methylnaphthalene	ND	0.031	0.13		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Acetone	ND	0.11	0.50		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Bromobenzene	ND	0.0070	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Bromodichloromethane	ND	0.0042	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Bromoform	ND	0.0080	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Bromomethane	ND	0.055	0.099		mg/Kg	1	9/1/2021 10:28:11 PM	R80995

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-3 (9.5-10')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 10:10:00 AM
Lab ID: 2108D42-015 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.14	0.33		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Carbon disulfide	ND	0.014	0.33		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Carbon tetrachloride	ND	0.0037	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Chlorobenzene	ND	0.0060	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Chloroethane	ND	0.012	0.066		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Chloroform	ND	0.0047	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Chloromethane	ND	0.012	0.099		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
2-Chlorotoluene	ND	0.0044	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
4-Chlorotoluene	ND	0.017	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
cis-1,2-DCE	ND	0.016	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
cis-1,3-Dichloropropene	ND	0.0049	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,2-Dibromo-3-chloropropane	ND	0.014	0.066		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Dibromochloromethane	ND	0.0053	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Dibromomethane	ND	0.0077	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,2-Dichlorobenzene	ND	0.0069	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,3-Dichlorobenzene	ND	0.0063	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,4-Dichlorobenzene	ND	0.0088	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Dichlorodifluoromethane	ND	0.013	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,1-Dichloroethane	ND	0.0096	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,1-Dichloroethene	ND	0.0071	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,2-Dichloropropane	ND	0.0064	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,3-Dichloropropane	ND	0.0073	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
2,2-Dichloropropane	ND	0.0047	0.066		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,1-Dichloropropene	ND	0.0040	0.066		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Hexachlorobutadiene	ND	0.023	0.066		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
2-Hexanone	ND	0.014	0.33		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Isopropylbenzene	ND	0.0061	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
4-Isopropyltoluene	ND	0.0085	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
4-Methyl-2-pentanone	ND	0.039	0.33		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Methylene chloride	ND	0.024	0.099		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
n-Butylbenzene	ND	0.0088	0.099		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
n-Propylbenzene	ND	0.0053	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
sec-Butylbenzene	ND	0.027	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Styrene	ND	0.0045	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
tert-Butylbenzene	ND	0.0077	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,1,1,2-Tetrachloroethane	ND	0.0049	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,1,2,2-Tetrachloroethane	ND	0.011	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Tetrachloroethene (PCE)	ND	0.0091	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
trans-1,2-DCE	ND	0.0064	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-3 (9.5-10')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 10:10:00 AM
Lab ID: 2108D42-015 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0078	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,2,3-Trichlorobenzene	ND	0.0051	0.066		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,2,4-Trichlorobenzene	ND	0.012	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,1,1-Trichloroethane	ND	0.0073	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,1,2-Trichloroethane	ND	0.0083	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Trichloroethene (TCE)	ND	0.0065	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Trichlorofluoromethane	ND	0.0075	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
1,2,3-Trichloropropane	ND	0.014	0.066		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Vinyl chloride	ND	0.0063	0.033		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Xylenes, Total	ND	0.017	0.066		mg/Kg	1	9/1/2021 10:28:11 PM	R80995
Surr: Dibromofluoromethane	109		70-130		%Rec	1	9/1/2021 10:28:11 PM	R80995
Surr: 1,2-Dichloroethane-d4	102		70-130		%Rec	1	9/1/2021 10:28:11 PM	R80995
Surr: Toluene-d8	98.4		70-130		%Rec	1	9/1/2021 10:28:11 PM	R80995
Surr: 4-Bromofluorobenzene	92.4		70-130		%Rec	1	9/1/2021 10:28:11 PM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.92	3.3		mg/Kg	1	9/1/2021 4:57:04 AM	B80948
Surr: BFB	100	0	70-130		%Rec	1	9/1/2021 4:57:04 AM	B80948

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (1-1.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:05:00 AM
Lab ID: 2108D42-016 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 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)	240	4.9	9.9		mg/Kg	1	8/27/2021 4:14:13 PM	62220
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	8/27/2021 4:14:13 PM	62220
Surr: DNOP	116	0	70-130		%Rec	1	8/27/2021 4:14:13 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.055	0.0026	0.033		mg/Kg	1	9/7/2021 4:00:32 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	1.6	2.4		mg/Kg	1	8/31/2021 4:47:56 PM	62279
Arsenic	ND	2.8	4.9		mg/Kg	2	9/1/2021 3:17:57 PM	62279
Barium	390	0.12	0.20		mg/Kg	2	8/31/2021 5:47:51 PM	62279
Beryllium	1.1	0.029	0.15		mg/Kg	1	8/31/2021 4:47:56 PM	62279
Cadmium	ND	0.049	0.098		mg/Kg	1	8/31/2021 4:47:56 PM	62279
Chromium	20	0.15	0.29		mg/Kg	1	8/31/2021 4:47:56 PM	62279
Cobalt	5.9	0.059	0.29		mg/Kg	1	8/31/2021 4:47:56 PM	62279
Iron	18000	240	240		mg/Kg	100	9/1/2021 2:24:17 PM	62279
Lead	11	0.26	0.29		mg/Kg	1	8/31/2021 4:47:56 PM	62279
Manganese	440	0.32	0.39		mg/Kg	2	8/31/2021 5:47:51 PM	62279
Nickel	20	0.19	0.49		mg/Kg	1	8/31/2021 4:47:56 PM	62279
Selenium	ND	2.1	2.4		mg/Kg	1	8/31/2021 4:47:56 PM	62279
Silver	ND	0.14	0.24		mg/Kg	1	8/31/2021 4:47:56 PM	62279
Vanadium	32	0.22	4.9		mg/Kg	2	9/1/2021 3:17:57 PM	62279
Zinc	56	2.6	4.9		mg/Kg	2	8/31/2021 5:47:51 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.88	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Acenaphthylene	ND	0.89	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Aniline	ND	0.68	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Anthracene	ND	0.89	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Azobenzene	ND	0.98	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Benz(a)anthracene	ND	0.63	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Benzo(a)pyrene	ND	0.93	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Benzo(b)fluoranthene	ND	1.0	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Benzo(g,h,i)perylene	ND	1.0	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Benzo(k)fluoranthene	ND	0.74	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Benzoic acid	ND	1.2	9.8		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Benzyl alcohol	ND	0.81	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Bis(2-chloroethoxy)methane	ND	0.75	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Bis(2-chloroethyl)ether	ND	1.0	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Bis(2-chloroisopropyl)ether	ND	1.0	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (1-1.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:05:00 AM
Lab ID: 2108D42-016 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Butyl benzyl phthalate	ND	0.60	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Carbazole	ND	0.87	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
4-Chloro-3-methylphenol	ND	0.83	4.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
4-Chloroaniline	ND	0.96	4.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2-Chloronaphthalene	ND	0.93	2.5		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2-Chlorophenol	ND	1.1	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
4-Chlorophenyl phenyl ether	ND	0.84	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Chrysene	ND	0.87	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Di-n-butyl phthalate	ND	2.7	3.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Di-n-octyl phthalate	ND	1.3	3.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Dibenz(a,h)anthracene	ND	1.0	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Dibenzofuran	ND	1.0	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
1,2-Dichlorobenzene	ND	0.80	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
1,3-Dichlorobenzene	ND	0.70	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
1,4-Dichlorobenzene	ND	0.84	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
3,3´-Dichlorobenzidine	ND	1.5	2.5		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Diethyl phthalate	ND	3.2	4.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Dimethyl phthalate	ND	0.91	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2,4-Dichlorophenol	ND	0.80	3.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2,4-Dimethylphenol	ND	0.70	3.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.83	3.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2,4-Dinitrophenol	ND	0.50	4.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2,4-Dinitrotoluene	ND	1.2	4.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2,6-Dinitrotoluene	ND	1.0	4.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Fluoranthene	ND	0.80	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Fluorene	ND	0.88	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Hexachlorobenzene	ND	0.88	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Hexachlorobutadiene	ND	0.92	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Hexachlorocyclopentadiene	ND	1.1	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Hexachloroethane	ND	0.87	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Isophorone	ND	0.80	3.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
1-Methylnaphthalene	2.5	0.91	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2-Methylnaphthalene	3.5	0.81	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2-Methylphenol	ND	0.83	3.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
3+4-Methylphenol	ND	0.81	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
N-Nitrosodi-n-propylamine	ND	0.91	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
N-Nitrosodimethylamine	ND	1.5	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (1-1.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:05:00 AM
Lab ID: 2108D42-016 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Naphthalene	2.1	0.93	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2-Nitroaniline	ND	1.0	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
3-Nitroaniline	ND	1.1	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
4-Nitroaniline	ND	1.3	3.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Nitrobenzene	ND	0.81	3.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2-Nitrophenol	ND	0.85	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
4-Nitrophenol	ND	0.81	2.5		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Pentachlorophenol	ND	0.85	3.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Phenanthrene	ND	1.0	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Phenol	ND	0.76	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Pyrene	ND	0.75	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Pyridine	ND	1.6	3.9		mg/Kg	10	9/8/2021 12:31:52 PM	62272
1,2,4-Trichlorobenzene	ND	0.90	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2,4,5-Trichlorophenol	ND	0.63	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
2,4,6-Trichlorophenol	ND	0.85	2.0		mg/Kg	10	9/8/2021 12:31:52 PM	62272
Surr: 2-Fluorophenol	0		20.3-74.1	S	%Rec	10	9/8/2021 12:31:52 PM	62272
Surr: Phenol-d5	0		23.1-92.7	S	%Rec	10	9/8/2021 12:31:52 PM	62272
Surr: 2,4,6-Tribromophenol	0		17.3-122	S	%Rec	10	9/8/2021 12:31:52 PM	62272
Surr: Nitrobenzene-d5	0		24.7-73.2	S	%Rec	10	9/8/2021 12:31:52 PM	62272
Surr: 2-Fluorobiphenyl	0		21.5-90.1	S	%Rec	10	9/8/2021 12:31:52 PM	62272
Surr: 4-Terphenyl-d14	0		15-140	S	%Rec	10	9/8/2021 12:31:52 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	1.3	0.059	0.15	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Toluene	7.4	0.040	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Ethylbenzene	3.1	0.075	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.17	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,2,4-Trimethylbenzene	15	0.044	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,3,5-Trimethylbenzene	6.0	0.069	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,2-Dichloroethane (EDC)	ND	0.070	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,2-Dibromoethane (EDB)	ND	0.12	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Naphthalene	2.2	0.11	0.62	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1-Methylnaphthalene	2.2	0.35	1.2	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
2-Methylnaphthalene	3.3	0.29	1.2	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Acetone	ND	1.0	4.6	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Bromobenzene	ND	0.066	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Bromodichloromethane	ND	0.039	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Bromoform	ND	0.075	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Bromomethane	ND	0.51	0.93	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995

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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
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P	Sample pH Not In Range
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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (1-1.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:05:00 AM
Lab ID: 2108D42-016 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	1.3	3.1	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Carbon disulfide	ND	0.13	3.1	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Carbon tetrachloride	ND	0.034	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Chlorobenzene	0.068	0.056	0.31	JD	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Chloroethane	0.16	0.12	0.62	JD	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Chloroform	ND	0.044	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Chloromethane	ND	0.11	0.93	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
2-Chlorotoluene	ND	0.041	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
4-Chlorotoluene	ND	0.16	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
cis-1,2-DCE	ND	0.15	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
cis-1,3-Dichloropropene	ND	0.046	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,2-Dibromo-3-chloropropane	ND	0.13	0.62	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Dibromochloromethane	ND	0.049	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Dibromomethane	ND	0.072	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,2-Dichlorobenzene	ND	0.064	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,3-Dichlorobenzene	ND	0.058	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,4-Dichlorobenzene	ND	0.083	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Dichlorodifluoromethane	ND	0.12	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,1-Dichloroethane	ND	0.090	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,1-Dichloroethene	ND	0.066	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,2-Dichloropropane	ND	0.060	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,3-Dichloropropane	ND	0.068	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
2,2-Dichloropropane	ND	0.044	0.62	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,1-Dichloropropene	ND	0.037	0.62	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Hexachlorobutadiene	ND	0.21	0.62	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
2-Hexanone	ND	0.13	3.1	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Isopropylbenzene	0.76	0.057	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
4-Isopropyltoluene	0.76	0.080	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
4-Methyl-2-pentanone	ND	0.36	3.1	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Methylene chloride	ND	0.22	0.93	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
n-Butylbenzene	0.71	0.083	0.93	JD	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
n-Propylbenzene	1.3	0.050	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
sec-Butylbenzene	0.50	0.25	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Styrene	ND	0.042	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
tert-Butylbenzene	ND	0.072	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,1,1,2-Tetrachloroethane	ND	0.045	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,1,2,2-Tetrachloroethane	ND	0.10	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Tetrachloroethene (PCE)	ND	0.085	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
trans-1,2-DCE	ND	0.060	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995

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		

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-4 (1-1.5')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 11:05:00 AM
Lab ID: 2108D42-016
Matrix: MEOH (SOIL)
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.072	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,2,3-Trichlorobenzene	ND	0.048	0.62	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,2,4-Trichlorobenzene	ND	0.11	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,1,1-Trichloroethane	ND	0.068	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,1,2-Trichloroethane	ND	0.077	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Trichloroethene (TCE)	ND	0.061	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Trichlorofluoromethane	ND	0.070	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
1,2,3-Trichloropropane	ND	0.13	0.62	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Vinyl chloride	ND	0.059	0.31	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Xylenes, Total	42	0.16	0.62	D	mg/Kg	10	9/1/2021 10:55:15 PM	R80995
Surr: Dibromofluoromethane	95.2		70-130	D	%Rec	10	9/1/2021 10:55:15 PM	R80995
Surr: 1,2-Dichloroethane-d4	93.7		70-130	D	%Rec	10	9/1/2021 10:55:15 PM	R80995
Surr: Toluene-d8	104		70-130	D	%Rec	10	9/1/2021 10:55:15 PM	R80995
Surr: 4-Bromofluorobenzene	108		70-130	D	%Rec	10	9/1/2021 10:55:15 PM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	1100	4.3	15		mg/Kg	5	9/1/2021 5:54:16 AM	B80948
Surr: BFB	96.0	0	70-130		%Rec	5	9/1/2021 5:54:16 AM	B80948

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
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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (2-2.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:12:00 AM
Lab ID: 2108D42-017 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	3000	48	97		mg/Kg	10	8/30/2021 10:02:26 PM	62220
Motor Oil Range Organics (MRO)	ND	490	490	D	mg/Kg	10	8/30/2021 10:02:26 PM	62220
Surr: DNOP	0	0	70-130	S	%Rec	10	8/30/2021 10:02:26 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0068	0.0028	0.035	J	mg/Kg	1	9/7/2021 4:02:40 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/31/2021 5:55:13 PM	62279
Arsenic	ND	2.8	4.9		mg/Kg	2	9/1/2021 3:19:40 PM	62279
Barium	390	0.12	0.20		mg/Kg	2	8/31/2021 5:55:13 PM	62279
Beryllium	1.0	0.057	0.29		mg/Kg	2	8/31/2021 5:55:13 PM	62279
Cadmium	ND	0.098	0.20		mg/Kg	2	8/31/2021 5:55:13 PM	62279
Chromium	14	0.29	0.59		mg/Kg	2	8/31/2021 5:55:13 PM	62279
Cobalt	5.0	0.12	0.59		mg/Kg	2	8/31/2021 5:55:13 PM	62279
Iron	16000	250	250		mg/Kg	100	9/1/2021 2:25:56 PM	62279
Lead	5.5	0.52	0.59		mg/Kg	2	8/31/2021 5:55:13 PM	62279
Manganese	420	0.33	0.39		mg/Kg	2	8/31/2021 5:55:13 PM	62279
Nickel	11	0.39	0.98		mg/Kg	2	8/31/2021 5:55:13 PM	62279
Selenium	ND	4.3	4.9		mg/Kg	2	8/31/2021 5:55:13 PM	62279
Silver	ND	0.29	0.49		mg/Kg	2	8/31/2021 5:55:13 PM	62279
Vanadium	24	0.22	4.9		mg/Kg	2	9/1/2021 3:19:40 PM	62279
Zinc	26	2.6	4.9		mg/Kg	2	8/31/2021 5:55:13 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.89	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Acenaphthylene	ND	0.91	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Aniline	ND	0.69	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Anthracene	ND	0.91	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Azobenzene	ND	1.0	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Benz(a)anthracene	ND	0.64	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Benzo(a)pyrene	ND	0.94	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Benzo(b)fluoranthene	ND	1.1	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Benzo(g,h,i)perylene	ND	1.0	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Benzo(k)fluoranthene	ND	0.75	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Benzoic acid	ND	1.3	10		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Benzyl alcohol	ND	0.82	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Bis(2-chloroethoxy)methane	ND	0.76	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Bis(2-chloroethyl)ether	ND	1.0	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Bis(2-chloroisopropyl)ether	ND	1.0	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Bis(2-ethylhexyl)phthalate	ND	2.2	5.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (2-2.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:12:00 AM
Lab ID: 2108D42-017 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Butyl benzyl phthalate	ND	0.61	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Carbazole	ND	0.88	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
4-Chloro-3-methylphenol	ND	0.84	5.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
4-Chloroaniline	ND	0.97	5.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2-Chloronaphthalene	ND	0.95	2.5		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2-Chlorophenol	ND	1.1	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
4-Chlorophenyl phenyl ether	ND	0.85	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Chrysene	ND	0.88	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Di-n-butyl phthalate	ND	2.8	4.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Di-n-octyl phthalate	ND	1.3	4.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Dibenz(a,h)anthracene	ND	1.0	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Dibenzofuran	ND	1.0	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
1,2-Dichlorobenzene	ND	0.81	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
1,3-Dichlorobenzene	ND	0.71	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
1,4-Dichlorobenzene	ND	0.85	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
3,3´-Dichlorobenzidine	ND	1.5	2.5		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Diethyl phthalate	ND	3.3	5.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Dimethyl phthalate	ND	0.93	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2,4-Dichlorophenol	ND	0.81	4.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2,4-Dimethylphenol	ND	0.71	3.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.84	4.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2,4-Dinitrophenol	ND	0.50	5.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2,4-Dinitrotoluene	ND	1.2	5.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2,6-Dinitrotoluene	ND	1.0	5.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Fluoranthene	ND	0.81	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Fluorene	ND	0.89	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Hexachlorobenzene	ND	0.89	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Hexachlorobutadiene	ND	0.94	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Hexachlorocyclopentadiene	ND	1.1	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Hexachloroethane	ND	0.88	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Indeno(1,2,3-cd)pyrene	ND	1.2	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Isophorone	ND	0.82	4.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
1-Methylnaphthalene	9.6	0.92	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2-Methylnaphthalene	14	0.83	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2-Methylphenol	ND	0.84	4.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
3+4-Methylphenol	ND	0.83	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
N-Nitrosodi-n-propylamine	ND	0.93	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
N-Nitrosodimethylamine	ND	1.5	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272

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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		

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (2-2.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:12:00 AM
Lab ID: 2108D42-017 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Naphthalene	5.0	0.94	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2-Nitroaniline	ND	1.0	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
3-Nitroaniline	ND	1.2	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
4-Nitroaniline	ND	1.3	4.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Nitrobenzene	ND	0.82	4.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2-Nitrophenol	ND	0.86	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
4-Nitrophenol	ND	0.82	2.5		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Pentachlorophenol	ND	0.86	4.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Phenanthrene	ND	1.0	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Phenol	ND	0.77	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Pyrene	ND	0.76	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Pyridine	ND	1.6	4.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
1,2,4-Trichlorobenzene	ND	0.92	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2,4,5-Trichlorophenol	ND	0.64	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
2,4,6-Trichlorophenol	ND	0.86	2.0		mg/Kg	10	9/8/2021 1:13:14 PM	62272
Surr: 2-Fluorophenol	0		20.3-74.1	S	%Rec	10	9/8/2021 1:13:14 PM	62272
Surr: Phenol-d5	0		23.1-92.7	S	%Rec	10	9/8/2021 1:13:14 PM	62272
Surr: 2,4,6-Tribromophenol	0		17.3-122	S	%Rec	10	9/8/2021 1:13:14 PM	62272
Surr: Nitrobenzene-d5	0		24.7-73.2	S	%Rec	10	9/8/2021 1:13:14 PM	62272
Surr: 2-Fluorobiphenyl	0		21.5-90.1	S	%Rec	10	9/8/2021 1:13:14 PM	62272
Surr: 4-Terphenyl-d14	0		15-140	S	%Rec	10	9/8/2021 1:13:14 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	0.25	0.029	0.075	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Toluene	0.47	0.019	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Ethylbenzene	0.34	0.037	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.085	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,2,4-Trimethylbenzene	1.7	0.021	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,3,5-Trimethylbenzene	0.60	0.034	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,2-Dichloroethane (EDC)	ND	0.034	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,2-Dibromoethane (EDB)	ND	0.059	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Naphthalene	0.43	0.056	0.30	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1-Methylnaphthalene	0.51	0.17	0.60	JD	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
2-Methylnaphthalene	0.77	0.14	0.60	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Acetone	ND	0.49	2.3	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Bromobenzene	ND	0.032	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Bromodichloromethane	ND	0.019	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Bromoform	ND	0.036	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Bromomethane	ND	0.25	0.45	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995

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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (2-2.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:12:00 AM
Lab ID: 2108D42-017 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.65	1.5	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Carbon disulfide	ND	0.062	1.5	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Carbon tetrachloride	ND	0.017	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Chlorobenzene	ND	0.027	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Chloroethane	ND	0.056	0.30	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Chloroform	0.12	0.021	0.15	JD	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Chloromethane	ND	0.053	0.45	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
2-Chlorotoluene	ND	0.020	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
4-Chlorotoluene	ND	0.079	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
cis-1,2-DCE	ND	0.074	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
cis-1,3-Dichloropropene	ND	0.022	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,2-Dibromo-3-chloropropane	ND	0.065	0.30	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Dibromochloromethane	ND	0.024	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Dibromomethane	ND	0.035	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,2-Dichlorobenzene	ND	0.031	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,3-Dichlorobenzene	ND	0.028	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,4-Dichlorobenzene	ND	0.040	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Dichlorodifluoromethane	ND	0.058	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,1-Dichloroethane	ND	0.044	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,1-Dichloroethene	ND	0.032	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,2-Dichloropropane	ND	0.029	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,3-Dichloropropane	ND	0.033	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
2,2-Dichloropropane	ND	0.021	0.30	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,1-Dichloropropene	ND	0.018	0.30	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Hexachlorobutadiene	ND	0.10	0.30	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
2-Hexanone	ND	0.066	1.5	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Isopropylbenzene	0.072	0.028	0.15	JD	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
4-Isopropyltoluene	0.074	0.039	0.15	JD	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
4-Methyl-2-pentanone	ND	0.17	1.5	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Methylene chloride	ND	0.11	0.45	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
n-Butylbenzene	0.13	0.040	0.45	JD	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
n-Propylbenzene	0.18	0.024	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
sec-Butylbenzene	ND	0.12	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Styrene	ND	0.020	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
tert-Butylbenzene	ND	0.035	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,1,1,2-Tetrachloroethane	ND	0.022	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,1,2,2-Tetrachloroethane	ND	0.049	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Tetrachloroethene (PCE)	ND	0.041	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
trans-1,2-DCE	ND	0.029	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (2-2.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:12:00 AM
Lab ID: 2108D42-017 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.035	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,2,3-Trichlorobenzene	ND	0.023	0.30	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,2,4-Trichlorobenzene	ND	0.052	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,1,1-Trichloroethane	ND	0.033	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,1,2-Trichloroethane	ND	0.038	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Trichloroethene (TCE)	ND	0.029	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Trichlorofluoromethane	ND	0.034	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
1,2,3-Trichloropropane	ND	0.063	0.30	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Vinyl chloride	ND	0.029	0.15	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Xylenes, Total	3.2	0.079	0.30	D	mg/Kg	5	9/1/2021 11:22:17 PM	R80995
Surr: Dibromofluoromethane	108		70-130	D	%Rec	5	9/1/2021 11:22:17 PM	R80995
Surr: 1,2-Dichloroethane-d4	111		70-130	D	%Rec	5	9/1/2021 11:22:17 PM	R80995
Surr: Toluene-d8	98.1		70-130	D	%Rec	5	9/1/2021 11:22:17 PM	R80995
Surr: 4-Bromofluorobenzene	116		70-130	D	%Rec	5	9/1/2021 11:22:17 PM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	180	4.2	15		mg/Kg	5	9/1/2021 6:51:31 AM	B80948
Surr: BFB	98.4	0	70-130		%Rec	5	9/1/2021 6:51:31 AM	B80948

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.

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

CLIENT: Marathon
Client Sample ID: NDD-SB-4 (2.5-3')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 11:20:00 AM
Lab ID: 2108D42-018 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	1700	47	95		mg/Kg	10	8/31/2021 6:35:58 PM	62220
Motor Oil Range Organics (MRO)	ND	470	470	D	mg/Kg	10	8/31/2021 6:35:58 PM	62220
Surr: DNOP	0	0	70-130	S	%Rec	10	8/31/2021 6:35:58 PM	62220
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.018	0.0026	0.032	J	mg/Kg	1	9/7/2021 4:04:48 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	1.7	2.5		mg/Kg	1	8/31/2021 4:51:42 PM	62279
Arsenic	ND	2.8	5.0		mg/Kg	2	9/1/2021 3:26:57 PM	62279
Barium	400	0.12	0.20		mg/Kg	2	8/31/2021 5:57:00 PM	62279
Beryllium	0.72	0.029	0.15		mg/Kg	1	8/31/2021 4:51:42 PM	62279
Cadmium	ND	0.050	0.10		mg/Kg	1	8/31/2021 4:51:42 PM	62279
Chromium	9.3	0.15	0.30		mg/Kg	1	8/31/2021 4:51:42 PM	62279
Cobalt	3.6	0.061	0.30		mg/Kg	1	8/31/2021 4:51:42 PM	62279
Iron	13000	250	250		mg/Kg	100	9/1/2021 2:27:32 PM	62279
Lead	2.4	0.27	0.30		mg/Kg	1	8/31/2021 4:51:42 PM	62279
Manganese	470	0.33	0.40		mg/Kg	2	8/31/2021 5:57:00 PM	62279
Nickel	7.5	0.20	0.50		mg/Kg	1	8/31/2021 4:51:42 PM	62279
Selenium	ND	2.2	2.5		mg/Kg	1	8/31/2021 4:51:42 PM	62279
Silver	ND	0.15	0.25		mg/Kg	1	8/31/2021 4:51:42 PM	62279
Vanadium	21	0.23	5.0		mg/Kg	2	9/1/2021 3:26:57 PM	62279
Zinc	15	2.7	5.0		mg/Kg	2	8/31/2021 5:57:00 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.84	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Acenaphthylene	ND	0.85	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Aniline	ND	0.65	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Anthracene	ND	0.85	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Azobenzene	ND	0.94	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Benz(a)anthracene	ND	0.60	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Benzo(a)pyrene	ND	0.89	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Benzo(b)fluoranthene	ND	1.0	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Benzo(g,h,i)perylene	ND	0.96	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Benzo(k)fluoranthene	ND	0.71	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Benzoic acid	ND	1.2	9.4		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Benzyl alcohol	ND	0.77	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Bis(2-chloroethoxy)methane	ND	0.72	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Bis(2-chloroethyl)ether	ND	0.98	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Bis(2-chloroisopropyl)ether	ND	0.95	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Bis(2-ethylhexyl)phthalate	ND	2.0	4.7		mg/Kg	10	9/8/2021 1:54:42 PM	62272

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (2.5-3')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:20:00 AM
Lab ID: 2108D42-018 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.98	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Butyl benzyl phthalate	ND	0.57	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Carbazole	ND	0.83	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
4-Chloro-3-methylphenol	ND	0.79	4.7		mg/Kg	10	9/8/2021 1:54:42 PM	62272
4-Chloroaniline	ND	0.91	4.7		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2-Chloronaphthalene	ND	0.89	2.3		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2-Chlorophenol	ND	1.0	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
4-Chlorophenyl phenyl ether	ND	0.80	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Chrysene	ND	0.83	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Di-n-butyl phthalate	ND	2.6	3.8		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Di-n-octyl phthalate	ND	1.2	3.8		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Dibenz(a,h)anthracene	ND	0.99	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Dibenzofuran	ND	0.98	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
1,2-Dichlorobenzene	ND	0.76	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
1,3-Dichlorobenzene	ND	0.67	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
1,4-Dichlorobenzene	ND	0.80	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
3,3´-Dichlorobenzidine	ND	1.4	2.3		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Diethyl phthalate	ND	3.1	4.7		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Dimethyl phthalate	ND	0.87	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2,4-Dichlorophenol	ND	0.76	3.8		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2,4-Dimethylphenol	ND	0.67	2.8		mg/Kg	10	9/8/2021 1:54:42 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.79	3.8		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2,4-Dinitrophenol	ND	0.47	4.7		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2,4-Dinitrotoluene	ND	1.1	4.7		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2,6-Dinitrotoluene	ND	0.96	4.7		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Fluoranthene	ND	0.76	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Fluorene	ND	0.84	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Hexachlorobenzene	ND	0.84	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Hexachlorobutadiene	ND	0.88	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Hexachlorocyclopentadiene	ND	1.1	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Hexachloroethane	ND	0.83	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Isophorone	ND	0.77	3.8		mg/Kg	10	9/8/2021 1:54:42 PM	62272
1-Methylnaphthalene	7.7	0.86	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2-Methylnaphthalene	12	0.78	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2-Methylphenol	ND	0.79	3.8		mg/Kg	10	9/8/2021 1:54:42 PM	62272
3+4-Methylphenol	ND	0.78	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
N-Nitrosodi-n-propylamine	ND	0.87	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
N-Nitrosodimethylamine	ND	1.4	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272

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		

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (2.5-3')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:20:00 AM
Lab ID: 2108D42-018 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.98	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Naphthalene	5.2	0.88	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2-Nitroaniline	ND	0.96	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
3-Nitroaniline	ND	1.1	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
4-Nitroaniline	ND	1.2	3.8		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Nitrobenzene	ND	0.77	3.8		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2-Nitrophenol	ND	0.81	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
4-Nitrophenol	ND	0.77	2.3		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Pentachlorophenol	ND	0.81	3.8		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Phenanthrene	ND	0.96	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Phenol	ND	0.72	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Pyrene	ND	0.71	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Pyridine	ND	1.5	3.8		mg/Kg	10	9/8/2021 1:54:42 PM	62272
1,2,4-Trichlorobenzene	ND	0.86	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2,4,5-Trichlorophenol	ND	0.60	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
2,4,6-Trichlorophenol	ND	0.81	1.9		mg/Kg	10	9/8/2021 1:54:42 PM	62272
Surr: 2-Fluorophenol	0		20.3-74.1	S	%Rec	10	9/8/2021 1:54:42 PM	62272
Surr: Phenol-d5	0		23.1-92.7	S	%Rec	10	9/8/2021 1:54:42 PM	62272
Surr: 2,4,6-Tribromophenol	0		17.3-122	S	%Rec	10	9/8/2021 1:54:42 PM	62272
Surr: Nitrobenzene-d5	0		24.7-73.2	S	%Rec	10	9/8/2021 1:54:42 PM	62272
Surr: 2-Fluorobiphenyl	0		21.5-90.1	S	%Rec	10	9/8/2021 1:54:42 PM	62272
Surr: 4-Terphenyl-d14	0		15-140	S	%Rec	10	9/8/2021 1:54:42 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	1.8	0.059	0.15	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Toluene	4.9	0.039	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Ethylbenzene	4.3	0.075	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.17	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,2,4-Trimethylbenzene	19	0.043	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,3,5-Trimethylbenzene	6.2	0.069	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,2-Dichloroethane (EDC)	ND	0.070	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,2-Dibromoethane (EDB)	ND	0.12	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Naphthalene	4.0	0.11	0.61	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1-Methylnaphthalene	4.5	0.35	1.2	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
2-Methylnaphthalene	7.1	0.28	1.2	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Acetone	ND	1.0	4.6	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Bromobenzene	ND	0.065	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Bromodichloromethane	ND	0.039	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Bromoform	ND	0.074	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Bromomethane	ND	0.51	0.92	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (2.5-3')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:20:00 AM
Lab ID: 2108D42-018 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	1.3	3.1	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Carbon disulfide	ND	0.13	3.1	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Carbon tetrachloride	ND	0.034	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Chlorobenzene	0.097	0.055	0.31	JD	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Chloroethane	ND	0.11	0.61	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Chloroform	ND	0.044	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Chloromethane	ND	0.11	0.92	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
2-Chlorotoluene	ND	0.041	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
4-Chlorotoluene	ND	0.16	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
cis-1,2-DCE	ND	0.15	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
cis-1,3-Dichloropropene	ND	0.046	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,2-Dibromo-3-chloropropane	ND	0.13	0.61	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Dibromochloromethane	ND	0.049	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Dibromomethane	ND	0.072	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,2-Dichlorobenzene	ND	0.064	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,3-Dichlorobenzene	ND	0.058	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,4-Dichlorobenzene	ND	0.082	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Dichlorodifluoromethane	ND	0.12	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,1-Dichloroethane	ND	0.089	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,1-Dichloroethene	ND	0.066	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,2-Dichloropropane	ND	0.060	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,3-Dichloropropane	ND	0.067	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
2,2-Dichloropropane	ND	0.044	0.61	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,1-Dichloropropene	ND	0.037	0.61	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Hexachlorobutadiene	ND	0.21	0.61	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
2-Hexanone	ND	0.13	3.1	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Isopropylbenzene	0.95	0.057	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
4-Isopropyltoluene	0.86	0.079	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
4-Methyl-2-pentanone	ND	0.36	3.1	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Methylene chloride	ND	0.22	0.92	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
n-Butylbenzene	1.4	0.082	0.92	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
n-Propylbenzene	2.5	0.049	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
sec-Butylbenzene	0.78	0.25	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Styrene	ND	0.042	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
tert-Butylbenzene	ND	0.071	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,1,1,2-Tetrachloroethane	ND	0.045	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,1,2,2-Tetrachloroethane	ND	0.099	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Tetrachloroethene (PCE)	ND	0.084	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
trans-1,2-DCE	ND	0.059	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-4 (2.5-3')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 11:20:00 AM
Lab ID: 2108D42-018
Matrix: MEOH (SOIL)
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.072	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,2,3-Trichlorobenzene	ND	0.047	0.61	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,2,4-Trichlorobenzene	ND	0.11	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,1,1-Trichloroethane	ND	0.068	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,1,2-Trichloroethane	ND	0.077	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Trichloroethene (TCE)	ND	0.060	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Trichlorofluoromethane	ND	0.070	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
1,2,3-Trichloropropane	ND	0.13	0.61	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Vinyl chloride	ND	0.058	0.31	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Xylenes, Total	35	0.16	0.61	D	mg/Kg	10	9/1/2021 11:49:21 PM	R80995
Surr: Dibromofluoromethane	105		70-130	D	%Rec	10	9/1/2021 11:49:21 PM	R80995
Surr: 1,2-Dichloroethane-d4	104		70-130	D	%Rec	10	9/1/2021 11:49:21 PM	R80995
Surr: Toluene-d8	106		70-130	D	%Rec	10	9/1/2021 11:49:21 PM	R80995
Surr: 4-Bromofluorobenzene	120		70-130	D	%Rec	10	9/1/2021 11:49:21 PM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	1100	4.3	15		mg/Kg	5	9/1/2021 7:48:48 AM	B80948
Surr: BFB	98.7	0	70-130		%Rec	5	9/1/2021 7:48:48 AM	B80948

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (19.5-20')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:35:00 AM
Lab ID: 2108D42-019 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	6.3	4.5	9.2	J	mg/Kg	1	8/27/2021 9:10:16 AM	62222
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/27/2021 9:10:16 AM	62222
Surr: DNOP	149	0	70-130	S	%Rec	1	8/27/2021 9:10:16 AM	62222
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0026	0.033		mg/Kg	1	9/7/2021 4:06:57 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	1.6	2.4		mg/Kg	1	8/31/2021 4:53:36 PM	62279
Arsenic	ND	2.8	4.9		mg/Kg	2	9/1/2021 3:28:36 PM	62279
Barium	130	0.29	0.49		mg/Kg	5	8/31/2021 5:58:46 PM	62279
Beryllium	1.1	0.029	0.15		mg/Kg	1	8/31/2021 4:53:36 PM	62279
Cadmium	ND	0.049	0.098		mg/Kg	1	8/31/2021 4:53:36 PM	62279
Chromium	12	0.15	0.29		mg/Kg	1	8/31/2021 4:53:36 PM	62279
Cobalt	4.5	0.059	0.29		mg/Kg	1	8/31/2021 4:53:36 PM	62279
Iron	18000	240	240		mg/Kg	100	9/1/2021 2:29:08 PM	62279
Lead	ND	0.26	0.29		mg/Kg	1	8/31/2021 4:53:36 PM	62279
Manganese	790	0.81	0.98		mg/Kg	5	8/31/2021 5:58:46 PM	62279
Nickel	11	0.19	0.49		mg/Kg	1	8/31/2021 4:53:36 PM	62279
Selenium	ND	2.1	2.4		mg/Kg	1	8/31/2021 4:53:36 PM	62279
Silver	ND	0.14	0.24		mg/Kg	1	8/31/2021 4:53:36 PM	62279
Vanadium	15	0.22	4.9		mg/Kg	2	9/1/2021 3:28:36 PM	62279
Zinc	24	6.6	12		mg/Kg	5	8/31/2021 5:58:46 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Aniline	ND	0.068	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Anthracene	ND	0.089	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Azobenzene	ND	0.098	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Benzo(a)pyrene	ND	0.092	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Benzoic acid	ND	0.12	0.98		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Benzyl alcohol	ND	0.080	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	9/8/2021 2:36:00 PM	62216

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (19.5-20')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:35:00 AM
Lab ID: 2108D42-019 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Carbazole	ND	0.086	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	9/8/2021 2:36:00 PM	62216
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2-Chloronaphthalene	ND	0.093	0.25		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2-Chlorophenol	ND	0.10	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Chrysene	ND	0.087	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2,4-Dimethylphenol	ND	0.070	0.29		mg/Kg	1	9/8/2021 2:36:00 PM	62216
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Fluoranthene	ND	0.079	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Fluorene	ND	0.088	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Isophorone	ND	0.080	0.39		mg/Kg	1	9/8/2021 2:36:00 PM	62216
1-Methylnaphthalene	ND	0.090	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2-Methylphenol	ND	0.083	0.39		mg/Kg	1	9/8/2021 2:36:00 PM	62216
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-4 (19.5-20')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 11:35:00 AM
Lab ID: 2108D42-019 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Naphthalene	ND	0.092	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2-Nitrophenol	ND	0.085	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
4-Nitrophenol	ND	0.081	0.25		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Phenanthrene	ND	0.10	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Phenol	ND	0.076	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Pyrene	ND	0.074	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Pyridine	ND	0.16	0.39		mg/Kg	1	9/8/2021 2:36:00 PM	62216
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2,4,5-Trichlorophenol	ND	0.062	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
2,4,6-Trichlorophenol	ND	0.084	0.20		mg/Kg	1	9/8/2021 2:36:00 PM	62216
Surr: 2-Fluorophenol	53.8		20.3-74.1		%Rec	1	9/8/2021 2:36:00 PM	62216
Surr: Phenol-d5	64.5		23.1-92.7		%Rec	1	9/8/2021 2:36:00 PM	62216
Surr: 2,4,6-Tribromophenol	85.1		17.3-122		%Rec	1	9/8/2021 2:36:00 PM	62216
Surr: Nitrobenzene-d5	56.0		24.7-73.2		%Rec	1	9/8/2021 2:36:00 PM	62216
Surr: 2-Fluorobiphenyl	66.9		21.5-90.1		%Rec	1	9/8/2021 2:36:00 PM	62216
Surr: 4-Terphenyl-d14	95.9		15-140		%Rec	1	9/8/2021 2:36:00 PM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	0.15	0.0060	0.016		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Toluene	ND	0.0040	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Ethylbenzene	0.033	0.0076	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.018	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,2,4-Trimethylbenzene	0.0065	0.0044	0.031	J	mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,3,5-Trimethylbenzene	ND	0.0070	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,2-Dichloroethane (EDC)	0.017	0.0071	0.031	J	mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,2-Dibromoethane (EDB)	ND	0.012	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Naphthalene	0.022	0.012	0.062	J	mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1-Methylnaphthalene	ND	0.036	0.12		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
2-Methylnaphthalene	0.039	0.029	0.12	J	mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Acetone	ND	0.10	0.47		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Bromobenzene	ND	0.0066	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Bromodichloromethane	ND	0.0040	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Bromoform	ND	0.0075	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Bromomethane	ND	0.052	0.094		mg/Kg	1	9/2/2021 12:16:30 AM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-4 (19.5-20')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 11:35:00 AM
Lab ID: 2108D42-019 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.14	0.31		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Carbon disulfide	ND	0.013	0.31		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Carbon tetrachloride	ND	0.0035	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Chlorobenzene	ND	0.0056	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Chloroethane	ND	0.012	0.062		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Chloroform	ND	0.0044	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Chloromethane	ND	0.011	0.094		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
2-Chlorotoluene	ND	0.0042	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
4-Chlorotoluene	ND	0.016	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
cis-1,2-DCE	ND	0.015	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
cis-1,3-Dichloropropene	ND	0.0046	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,2-Dibromo-3-chloropropane	ND	0.013	0.062		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Dibromochloromethane	ND	0.0050	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Dibromomethane	ND	0.0073	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,2-Dichlorobenzene	ND	0.0065	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,3-Dichlorobenzene	ND	0.0059	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,4-Dichlorobenzene	ND	0.0083	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Dichlorodifluoromethane	ND	0.012	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,1-Dichloroethane	ND	0.0091	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,1-Dichloroethene	ND	0.0067	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,2-Dichloropropane	ND	0.0061	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,3-Dichloropropane	ND	0.0069	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
2,2-Dichloropropane	ND	0.0044	0.062		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,1-Dichloropropene	ND	0.0038	0.062		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Hexachlorobutadiene	ND	0.021	0.062		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
2-Hexanone	0.022	0.014	0.31	J	mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Isopropylbenzene	ND	0.0058	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
4-Isopropyltoluene	ND	0.0080	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
4-Methyl-2-pentanone	ND	0.036	0.31		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Methylene chloride	ND	0.023	0.094		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
n-Butylbenzene	ND	0.0083	0.094		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
n-Propylbenzene	0.0066	0.0050	0.031	J	mg/Kg	1	9/2/2021 12:16:30 AM	R80995
sec-Butylbenzene	ND	0.026	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Styrene	ND	0.0043	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
tert-Butylbenzene	ND	0.0072	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,1,1,2-Tetrachloroethane	ND	0.0046	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,1,2,2-Tetrachloroethane	ND	0.010	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Tetrachloroethene (PCE)	ND	0.0086	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
trans-1,2-DCE	ND	0.0060	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995

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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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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-4 (19.5-20')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 11:35:00 AM
Lab ID: 2108D42-019
Matrix: MEOH (SOIL)
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0073	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,2,3-Trichlorobenzene	ND	0.0048	0.062		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,2,4-Trichlorobenzene	ND	0.011	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,1,1-Trichloroethane	ND	0.0069	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,1,2-Trichloroethane	ND	0.0078	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Trichloroethene (TCE)	ND	0.0061	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Trichlorofluoromethane	ND	0.0071	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
1,2,3-Trichloropropane	ND	0.013	0.062		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Vinyl chloride	ND	0.0059	0.031		mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Xylenes, Total	0.017	0.016	0.062	J	mg/Kg	1	9/2/2021 12:16:30 AM	R80995
Surr: Dibromofluoromethane	115		70-130		%Rec	1	9/2/2021 12:16:30 AM	R80995
Surr: 1,2-Dichloroethane-d4	106		70-130		%Rec	1	9/2/2021 12:16:30 AM	R80995
Surr: Toluene-d8	101		70-130		%Rec	1	9/2/2021 12:16:30 AM	R80995
Surr: 4-Bromofluorobenzene	89.5		70-130		%Rec	1	9/2/2021 12:16:30 AM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.87	3.1		mg/Kg	1	9/1/2021 8:46:04 AM	B80948
Surr: BFB	98.1	0	70-130		%Rec	1	9/1/2021 8:46:04 AM	B80948

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 2:50:00 PM
Lab ID: 2108D42-020 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.7	9.4		mg/Kg	1	8/29/2021 9:14:09 AM	62222
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/29/2021 9:14:09 AM	62222
Surr: DNOP	111	0	70-130		%Rec	1	8/29/2021 9:14:09 AM	62222
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.035	0.0026	0.033		mg/Kg	1	9/7/2021 4:09:06 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/31/2021 6:00:27 PM	62279
Arsenic	ND	2.8	5.0		mg/Kg	2	9/1/2021 3:30:19 PM	62279
Barium	430	0.12	0.20		mg/Kg	2	8/31/2021 6:00:27 PM	62279
Beryllium	1.2	0.058	0.30		mg/Kg	2	8/31/2021 6:00:27 PM	62279
Cadmium	ND	0.099	0.20		mg/Kg	2	8/31/2021 6:00:27 PM	62279
Chromium	18	0.30	0.59		mg/Kg	2	8/31/2021 6:00:27 PM	62279
Cobalt	5.7	0.12	0.59		mg/Kg	2	8/31/2021 6:00:27 PM	62279
Iron	18000	250	250		mg/Kg	100	9/1/2021 2:30:44 PM	62279
Lead	5.1	0.53	0.59		mg/Kg	2	8/31/2021 6:00:27 PM	62279
Manganese	440	0.33	0.40		mg/Kg	2	8/31/2021 6:00:27 PM	62279
Nickel	17	0.39	0.99		mg/Kg	2	8/31/2021 6:00:27 PM	62279
Selenium	ND	4.4	5.0		mg/Kg	2	8/31/2021 6:00:27 PM	62279
Silver	ND	0.29	0.50		mg/Kg	2	8/31/2021 6:00:27 PM	62279
Vanadium	34	0.22	5.0		mg/Kg	2	9/1/2021 3:30:19 PM	62279
Zinc	42	2.7	5.0		mg/Kg	2	8/31/2021 6:00:27 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	1.7	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Acenaphthylene	ND	1.7	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Aniline	ND	1.3	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Anthracene	ND	1.7	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Azobenzene	ND	1.9	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Benz(a)anthracene	ND	1.2	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Benzo(a)pyrene	ND	1.8	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Benzo(b)fluoranthene	ND	2.1	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Benzo(g,h,i)perylene	ND	2.0	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Benzo(k)fluoranthene	ND	1.5	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Benzoic acid	ND	2.4	19		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Benzyl alcohol	ND	1.6	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Bis(2-chloroethoxy)methane	ND	1.5	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Bis(2-chloroethyl)ether	ND	2.0	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Bis(2-chloroisopropyl)ether	ND	2.0	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Bis(2-ethylhexyl)phthalate	ND	4.2	9.6		mg/Kg	20	9/8/2021 3:17:30 PM	62216

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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PQL	Practical Quanitative Limit
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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 2:50:00 PM
Lab ID: 2108D42-020 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	2.0	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Butyl benzyl phthalate	ND	1.2	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Carbazole	ND	1.7	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
4-Chloro-3-methylphenol	ND	1.6	9.6		mg/Kg	20	9/8/2021 3:17:30 PM	62216
4-Chloroaniline	ND	1.9	9.6		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2-Chloronaphthalene	ND	1.8	4.8		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2-Chlorophenol	ND	2.1	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
4-Chlorophenyl phenyl ether	ND	1.6	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Chrysene	ND	1.7	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Di-n-butyl phthalate	ND	5.4	7.7		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Di-n-octyl phthalate	ND	2.5	7.7		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Dibenz(a,h)anthracene	ND	2.0	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Dibenzofuran	ND	2.0	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
1,2-Dichlorobenzene	ND	1.6	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
1,3-Dichlorobenzene	ND	1.4	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
1,4-Dichlorobenzene	ND	1.6	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
3,3´-Dichlorobenzidine	ND	2.9	4.8		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Diethyl phthalate	ND	6.3	9.6		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Dimethyl phthalate	ND	1.8	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2,4-Dichlorophenol	ND	1.6	7.7		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2,4-Dimethylphenol	ND	1.4	5.8		mg/Kg	20	9/8/2021 3:17:30 PM	62216
4,6-Dinitro-2-methylphenol	ND	1.6	7.7		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2,4-Dinitrophenol	ND	0.97	9.6		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2,4-Dinitrotoluene	ND	2.3	9.6		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2,6-Dinitrotoluene	ND	2.0	9.6		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Fluoranthene	ND	1.6	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Fluorene	ND	1.7	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Hexachlorobenzene	ND	1.7	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Hexachlorobutadiene	ND	1.8	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Hexachlorocyclopentadiene	ND	2.2	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Hexachloroethane	ND	1.7	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Indeno(1,2,3-cd)pyrene	ND	2.2	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Isophorone	ND	1.6	7.7		mg/Kg	20	9/8/2021 3:17:30 PM	62216
1-Methylnaphthalene	ND	1.8	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2-Methylnaphthalene	ND	1.6	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2-Methylphenol	ND	1.6	7.7		mg/Kg	20	9/8/2021 3:17:30 PM	62216
3+4-Methylphenol	ND	1.6	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
N-Nitrosodi-n-propylamine	ND	1.8	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
N-Nitrosodimethylamine	ND	2.9	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216

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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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 2:50:00 PM
Lab ID: 2108D42-020 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	2.0	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Naphthalene	ND	1.8	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2-Nitroaniline	ND	2.0	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
3-Nitroaniline	ND	2.2	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
4-Nitroaniline	ND	2.5	7.7		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Nitrobenzene	ND	1.6	7.7		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2-Nitrophenol	ND	1.7	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
4-Nitrophenol	ND	1.6	4.8		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Pentachlorophenol	ND	1.7	7.7		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Phenanthrene	ND	2.0	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Phenol	ND	1.5	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Pyrene	ND	1.5	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Pyridine	ND	3.1	7.7		mg/Kg	20	9/8/2021 3:17:30 PM	62216
1,2,4-Trichlorobenzene	ND	1.8	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2,4,5-Trichlorophenol	ND	1.2	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
2,4,6-Trichlorophenol	ND	1.7	3.9		mg/Kg	20	9/8/2021 3:17:30 PM	62216
Surr: 2-Fluorophenol	0		20.3-74.1	S	%Rec	20	9/8/2021 3:17:30 PM	62216
Surr: Phenol-d5	0		23.1-92.7	S	%Rec	20	9/8/2021 3:17:30 PM	62216
Surr: 2,4,6-Tribromophenol	0		17.3-122	S	%Rec	20	9/8/2021 3:17:30 PM	62216
Surr: Nitrobenzene-d5	0		24.7-73.2	S	%Rec	20	9/8/2021 3:17:30 PM	62216
Surr: 2-Fluorobiphenyl	0		21.5-90.1	S	%Rec	20	9/8/2021 3:17:30 PM	62216
Surr: 4-Terphenyl-d14	0		15-140	S	%Rec	20	9/8/2021 3:17:30 PM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0052	0.013		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Toluene	ND	0.0035	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Ethylbenzene	ND	0.0066	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.015	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,2,4-Trimethylbenzene	ND	0.0038	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,3,5-Trimethylbenzene	ND	0.0060	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,2-Dichloroethane (EDC)	ND	0.0061	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,2-Dibromoethane (EDB)	ND	0.011	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Naphthalene	ND	0.010	0.054		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1-Methylnaphthalene	ND	0.031	0.11		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
2-Methylnaphthalene	ND	0.025	0.11		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Acetone	ND	0.088	0.40		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Bromobenzene	ND	0.0057	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Bromodichloromethane	ND	0.0034	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Bromoform	ND	0.0065	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Bromomethane	0.045	0.045	0.081	J	mg/Kg	1	9/2/2021 2:58:39 AM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-6 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 2:50:00 PM
Lab ID: 2108D42-020 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.12	0.27		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Carbon disulfide	ND	0.011	0.27		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Carbon tetrachloride	ND	0.0030	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Chlorobenzene	ND	0.0048	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Chloroethane	ND	0.010	0.054		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Chloroform	ND	0.0038	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Chloromethane	ND	0.0094	0.081		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
2-Chlorotoluene	ND	0.0036	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
4-Chlorotoluene	ND	0.014	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
cis-1,2-DCE	ND	0.013	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
cis-1,3-Dichloropropene	ND	0.0040	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,2-Dibromo-3-chloropropane	ND	0.012	0.054		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Dibromochloromethane	ND	0.0043	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Dibromomethane	ND	0.0063	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,2-Dichlorobenzene	ND	0.0056	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,3-Dichlorobenzene	ND	0.0051	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,4-Dichlorobenzene	ND	0.0072	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Dichlorodifluoromethane	ND	0.010	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,1-Dichloroethane	ND	0.0078	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,1-Dichloroethene	ND	0.0058	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,2-Dichloropropane	ND	0.0052	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,3-Dichloropropane	ND	0.0059	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
2,2-Dichloropropane	ND	0.0038	0.054		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,1-Dichloropropene	ND	0.0032	0.054		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Hexachlorobutadiene	ND	0.018	0.054		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
2-Hexanone	ND	0.012	0.27		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Isopropylbenzene	ND	0.0050	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
4-Isopropyltoluene	ND	0.0069	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
4-Methyl-2-pentanone	ND	0.031	0.27		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Methylene chloride	ND	0.019	0.081		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
n-Butylbenzene	ND	0.0072	0.081		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
n-Propylbenzene	ND	0.0043	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
sec-Butylbenzene	ND	0.022	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Styrene	ND	0.0037	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
tert-Butylbenzene	ND	0.0062	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,1,1,2-Tetrachloroethane	ND	0.0039	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,1,2,2-Tetrachloroethane	ND	0.0087	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Tetrachloroethene (PCE)	ND	0.0074	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
trans-1,2-DCE	ND	0.0052	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-6 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 2:50:00 PM
Lab ID: 2108D42-020
Matrix: MEOH (SOIL)
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0063	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,2,3-Trichlorobenzene	ND	0.0042	0.054		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,2,4-Trichlorobenzene	ND	0.0094	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,1,1-Trichloroethane	ND	0.0059	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,1,2-Trichloroethane	ND	0.0067	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Trichloroethene (TCE)	ND	0.0053	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Trichlorofluoromethane	ND	0.0061	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
1,2,3-Trichloropropane	ND	0.011	0.054		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Vinyl chloride	ND	0.0051	0.027		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Xylenes, Total	ND	0.014	0.054		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Surr: Dibromofluoromethane	110		70-130		%Rec	1	9/2/2021 2:58:39 AM	R80995
Surr: 1,2-Dichloroethane-d4	99.8		70-130		%Rec	1	9/2/2021 2:58:39 AM	R80995
Surr: Toluene-d8	101		70-130		%Rec	1	9/2/2021 2:58:39 AM	R80995
Surr: 4-Bromofluorobenzene	93.0		70-130		%Rec	1	9/2/2021 2:58:39 AM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	0.75	2.7		mg/Kg	1	9/2/2021 2:58:39 AM	R80995
Surr: BFB	92.0	0	70-130		%Rec	1	9/2/2021 2:58:39 AM	R80995

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (3-3.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:00:00 PM
Lab ID: 2108D42-021 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.9	9.9		mg/Kg	1	8/27/2021 9:35:54 AM	62222
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	8/27/2021 9:35:54 AM	62222
Surr: DNOP	180	0	70-130	S	%Rec	1	8/27/2021 9:35:54 AM	62222
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.012	0.0026	0.033	J	mg/Kg	1	9/7/2021 4:11:15 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/31/2021 6:02:13 PM	62279
Arsenic	ND	2.8	4.9		mg/Kg	2	9/1/2021 3:31:57 PM	62279
Barium	330	0.12	0.19		mg/Kg	2	8/31/2021 6:02:13 PM	62279
Beryllium	1.1	0.057	0.29		mg/Kg	2	8/31/2021 6:02:13 PM	62279
Cadmium	ND	0.097	0.19		mg/Kg	2	8/31/2021 6:02:13 PM	62279
Chromium	12	0.29	0.58		mg/Kg	2	8/31/2021 6:02:13 PM	62279
Cobalt	5.4	0.12	0.58		mg/Kg	2	8/31/2021 6:02:13 PM	62279
Iron	16000	240	240		mg/Kg	100	9/1/2021 2:32:29 PM	62279
Lead	1.6	0.52	0.58		mg/Kg	2	8/31/2021 6:02:13 PM	62279
Manganese	370	0.32	0.39		mg/Kg	2	8/31/2021 6:02:13 PM	62279
Nickel	11	0.38	0.97		mg/Kg	2	8/31/2021 6:02:13 PM	62279
Selenium	ND	4.3	4.9		mg/Kg	2	8/31/2021 6:02:13 PM	62279
Silver	ND	0.28	0.49		mg/Kg	2	8/31/2021 6:02:13 PM	62279
Vanadium	23	0.22	4.9		mg/Kg	2	9/1/2021 3:31:57 PM	62279
Zinc	18	2.6	4.9		mg/Kg	2	8/31/2021 6:02:13 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.87	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Acenaphthylene	ND	0.88	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Aniline	ND	0.67	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Anthracene	ND	0.88	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Azobenzene	ND	0.97	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Benz(a)anthracene	ND	0.63	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Benzo(a)pyrene	ND	0.92	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Benzo(b)fluoranthene	ND	1.0	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Benzo(g,h,i)perylene	ND	0.99	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Benzo(k)fluoranthene	ND	0.73	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Benzoic acid	ND	1.2	9.7		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Benzyl alcohol	ND	0.80	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Bis(2-chloroethoxy)methane	ND	0.75	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Bis(2-chloroethyl)ether	ND	1.0	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Bis(2-chloroisopropyl)ether	ND	0.99	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (3-3.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:00:00 PM
Lab ID: 2108D42-021 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Butyl benzyl phthalate	ND	0.59	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Carbazole	ND	0.86	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
4-Chloro-3-methylphenol	ND	0.82	4.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
4-Chloroaniline	ND	0.95	4.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2-Chloronaphthalene	ND	0.92	2.4		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2-Chlorophenol	ND	1.0	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
4-Chlorophenyl phenyl ether	ND	0.83	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Chrysene	ND	0.86	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Di-n-butyl phthalate	ND	2.7	3.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Di-n-octyl phthalate	ND	1.3	3.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Dibenz(a,h)anthracene	ND	1.0	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Dibenzofuran	ND	1.0	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
1,2-Dichlorobenzene	ND	0.79	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
1,3-Dichlorobenzene	ND	0.69	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
1,4-Dichlorobenzene	ND	0.83	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
3,3´-Dichlorobenzidine	ND	1.5	2.4		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Diethyl phthalate	ND	3.2	4.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Dimethyl phthalate	ND	0.90	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2,4-Dichlorophenol	ND	0.79	3.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2,4-Dimethylphenol	ND	0.69	2.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
4,6-Dinitro-2-methylphenol	ND	0.82	3.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2,4-Dinitrophenol	ND	0.49	4.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2,4-Dinitrotoluene	ND	1.2	4.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2,6-Dinitrotoluene	ND	0.99	4.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Fluoranthene	ND	0.79	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Fluorene	ND	0.87	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Hexachlorobenzene	ND	0.87	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Hexachlorobutadiene	ND	0.91	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Hexachlorocyclopentadiene	ND	1.1	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Hexachloroethane	ND	0.86	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Isophorone	ND	0.80	3.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
1-Methylnaphthalene	ND	0.90	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2-Methylnaphthalene	ND	0.80	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2-Methylphenol	ND	0.82	3.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
3+4-Methylphenol	ND	0.80	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
N-Nitrosodi-n-propylamine	ND	0.90	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
N-Nitrosodimethylamine	ND	1.4	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216

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
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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (3-3.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:00:00 PM
Lab ID: 2108D42-021 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Naphthalene	ND	0.92	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2-Nitroaniline	ND	1.0	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
3-Nitroaniline	ND	1.1	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
4-Nitroaniline	ND	1.3	3.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Nitrobenzene	ND	0.80	3.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2-Nitrophenol	ND	0.84	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
4-Nitrophenol	ND	0.80	2.4		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Pentachlorophenol	ND	0.84	3.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Phenanthrene	ND	1.0	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Phenol	ND	0.75	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Pyrene	ND	0.74	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Pyridine	ND	1.6	3.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
1,2,4-Trichlorobenzene	ND	0.89	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2,4,5-Trichlorophenol	ND	0.62	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
2,4,6-Trichlorophenol	ND	0.84	1.9		mg/Kg	10	9/8/2021 3:58:58 PM	62216
Surr: 2-Fluorophenol	0		20.3-74.1	S	%Rec	10	9/8/2021 3:58:58 PM	62216
Surr: Phenol-d5	0		23.1-92.7	S	%Rec	10	9/8/2021 3:58:58 PM	62216
Surr: 2,4,6-Tribromophenol	0		17.3-122	S	%Rec	10	9/8/2021 3:58:58 PM	62216
Surr: Nitrobenzene-d5	0		24.7-73.2	S	%Rec	10	9/8/2021 3:58:58 PM	62216
Surr: 2-Fluorobiphenyl	0		21.5-90.1	S	%Rec	10	9/8/2021 3:58:58 PM	62216
Surr: 4-Terphenyl-d14	0		15-140	S	%Rec	10	9/8/2021 3:58:58 PM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0064	0.017		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Toluene	ND	0.0043	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Ethylbenzene	ND	0.0081	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.019	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,2,4-Trimethylbenzene	ND	0.0047	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,3,5-Trimethylbenzene	ND	0.0075	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,2-Dichloroethane (EDC)	ND	0.0076	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,2-Dibromoethane (EDB)	ND	0.013	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Naphthalene	ND	0.012	0.066		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1-Methylnaphthalene	ND	0.038	0.13		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
2-Methylnaphthalene	ND	0.031	0.13		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Acetone	ND	0.11	0.50		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Bromobenzene	ND	0.0070	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Bromodichloromethane	ND	0.0042	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Bromoform	ND	0.0080	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Bromomethane	ND	0.055	0.10		mg/Kg	1	9/2/2021 4:19:51 AM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-6 (3-3.5')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 3:00:00 PM
Lab ID: 2108D42-021 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.14	0.33		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Carbon disulfide	ND	0.014	0.33		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Carbon tetrachloride	ND	0.0037	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Chlorobenzene	ND	0.0060	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Chloroethane	ND	0.012	0.066		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Chloroform	ND	0.0047	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Chloromethane	ND	0.012	0.10		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
2-Chlorotoluene	ND	0.0044	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
4-Chlorotoluene	ND	0.017	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
cis-1,2-DCE	ND	0.016	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
cis-1,3-Dichloropropene	ND	0.0049	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,2-Dibromo-3-chloropropane	ND	0.014	0.066		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Dibromochloromethane	ND	0.0053	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Dibromomethane	ND	0.0078	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,2-Dichlorobenzene	ND	0.0069	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,3-Dichlorobenzene	ND	0.0063	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,4-Dichlorobenzene	ND	0.0089	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Dichlorodifluoromethane	ND	0.013	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,1-Dichloroethane	ND	0.0097	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,1-Dichloroethene	ND	0.0071	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,2-Dichloropropane	ND	0.0065	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,3-Dichloropropane	ND	0.0073	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
2,2-Dichloropropane	ND	0.0047	0.066		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,1-Dichloropropene	ND	0.0040	0.066		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Hexachlorobutadiene	ND	0.023	0.066		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
2-Hexanone	ND	0.014	0.33		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Isopropylbenzene	ND	0.0062	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
4-Isopropyltoluene	ND	0.0086	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
4-Methyl-2-pentanone	ND	0.039	0.33		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Methylene chloride	ND	0.024	0.10		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
n-Butylbenzene	ND	0.0089	0.10		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
n-Propylbenzene	ND	0.0054	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
sec-Butylbenzene	ND	0.027	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Styrene	ND	0.0045	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
tert-Butylbenzene	ND	0.0077	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,1,1,2-Tetrachloroethane	ND	0.0049	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,1,2,2-Tetrachloroethane	ND	0.011	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Tetrachloroethene (PCE)	ND	0.0091	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
trans-1,2-DCE	ND	0.0064	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-6 (3-3.5')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 3:00:00 PM
Lab ID: 2108D42-021
Matrix: MEOH (SOIL)
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0078	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,2,3-Trichlorobenzene	ND	0.0051	0.066		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,2,4-Trichlorobenzene	ND	0.012	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,1,1-Trichloroethane	ND	0.0073	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,1,2-Trichloroethane	ND	0.0083	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Trichloroethene (TCE)	ND	0.0065	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Trichlorofluoromethane	ND	0.0075	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
1,2,3-Trichloropropane	ND	0.014	0.066		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Vinyl chloride	ND	0.0063	0.033		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Xylenes, Total	ND	0.017	0.066		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Surr: Dibromofluoromethane	110		70-130		%Rec	1	9/2/2021 4:19:51 AM	R80995
Surr: 1,2-Dichloroethane-d4	105		70-130		%Rec	1	9/2/2021 4:19:51 AM	R80995
Surr: Toluene-d8	99.4		70-130		%Rec	1	9/2/2021 4:19:51 AM	R80995
Surr: 4-Bromofluorobenzene	90.2		70-130		%Rec	1	9/2/2021 4:19:51 AM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	0.92	3.3		mg/Kg	1	9/2/2021 4:19:51 AM	R80995
Surr: BFB	90.6	0	70-130		%Rec	1	9/2/2021 4:19:51 AM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (15-15.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:10:00 PM
Lab ID: 2108D42-022 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.6	9.3		mg/Kg	1	8/27/2021 9:45:36 AM	62222
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/27/2021 9:45:36 AM	62222
Surr: DNOP	154	0	70-130	S	%Rec	1	8/27/2021 9:45:36 AM	62222
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0029	0.0025	0.031	J	mg/Kg	1	9/7/2021 4:13:26 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/31/2021 6:03:59 PM	62279
Arsenic	ND	2.8	4.9		mg/Kg	2	9/1/2021 3:33:34 PM	62279
Barium	140	0.12	0.20		mg/Kg	2	8/31/2021 6:03:59 PM	62279
Beryllium	0.95	0.057	0.29		mg/Kg	2	8/31/2021 6:03:59 PM	62279
Cadmium	ND	0.098	0.20		mg/Kg	2	8/31/2021 6:03:59 PM	62279
Chromium	8.1	0.29	0.59		mg/Kg	2	8/31/2021 6:03:59 PM	62279
Cobalt	4.2	0.12	0.59		mg/Kg	2	8/31/2021 6:03:59 PM	62279
Iron	12000	240	240		mg/Kg	100	9/1/2021 2:34:00 PM	62279
Lead	1.6	0.52	0.59		mg/Kg	2	8/31/2021 6:03:59 PM	62279
Manganese	350	0.32	0.39		mg/Kg	2	8/31/2021 6:03:59 PM	62279
Nickel	7.9	0.38	0.98		mg/Kg	2	8/31/2021 6:03:59 PM	62279
Selenium	ND	4.3	4.9		mg/Kg	2	8/31/2021 6:03:59 PM	62279
Silver	ND	0.28	0.49		mg/Kg	2	8/31/2021 6:03:59 PM	62279
Vanadium	17	0.22	4.9		mg/Kg	2	9/1/2021 3:33:34 PM	62279
Zinc	13	2.6	4.9		mg/Kg	2	8/31/2021 6:03:59 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.087	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Aniline	ND	0.068	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Anthracene	ND	0.088	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Azobenzene	ND	0.098	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Benzo(a)pyrene	ND	0.092	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Benzo(k)fluoranthene	ND	0.073	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Benzoic acid	ND	0.12	0.98		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Benzyl alcohol	ND	0.080	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Bis(2-chloroisopropyl)ether	ND	0.099	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	9/8/2021 4:40:34 PM	62216

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (15-15.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:10:00 PM
Lab ID: 2108D42-022 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Butyl benzyl phthalate	ND	0.059	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Carbazole	ND	0.086	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
4-Chloro-3-methylphenol	ND	0.082	0.49		mg/Kg	1	9/8/2021 4:40:34 PM	62216
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2-Chloronaphthalene	ND	0.093	0.24		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2-Chlorophenol	ND	0.10	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Chrysene	ND	0.086	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Di-n-butyl phthalate	0.40	0.27	0.39		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Dimethyl phthalate	ND	0.090	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2,4-Dimethylphenol	ND	0.070	0.29		mg/Kg	1	9/8/2021 4:40:34 PM	62216
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2,6-Dinitrotoluene	ND	0.099	0.49		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Fluoranthene	ND	0.079	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Fluorene	ND	0.087	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Hexachloroethane	ND	0.086	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Isophorone	ND	0.080	0.39		mg/Kg	1	9/8/2021 4:40:34 PM	62216
1-Methylnaphthalene	ND	0.090	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2-Methylphenol	ND	0.082	0.39		mg/Kg	1	9/8/2021 4:40:34 PM	62216
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
N-Nitrosodi-n-propylamine	ND	0.090	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (15-15.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:10:00 PM
Lab ID: 2108D42-022 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Naphthalene	ND	0.092	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2-Nitrophenol	ND	0.084	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Pentachlorophenol	ND	0.084	0.39		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Phenanthrene	ND	0.10	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Phenol	ND	0.075	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Pyrene	ND	0.074	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Pyridine	ND	0.16	0.39		mg/Kg	1	9/8/2021 4:40:34 PM	62216
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2,4,5-Trichlorophenol	ND	0.062	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
2,4,6-Trichlorophenol	ND	0.084	0.20		mg/Kg	1	9/8/2021 4:40:34 PM	62216
Surr: 2-Fluorophenol	64.9		20.3-74.1		%Rec	1	9/8/2021 4:40:34 PM	62216
Surr: Phenol-d5	80.0		23.1-92.7		%Rec	1	9/8/2021 4:40:34 PM	62216
Surr: 2,4,6-Tribromophenol	81.4		17.3-122		%Rec	1	9/8/2021 4:40:34 PM	62216
Surr: Nitrobenzene-d5	60.3		24.7-73.2		%Rec	1	9/8/2021 4:40:34 PM	62216
Surr: 2-Fluorobiphenyl	62.8		21.5-90.1		%Rec	1	9/8/2021 4:40:34 PM	62216
Surr: 4-Terphenyl-d14	86.5		15-140		%Rec	1	9/8/2021 4:40:34 PM	62216
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0064	0.017		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Toluene	ND	0.0043	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Ethylbenzene	ND	0.0081	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.019	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,2,4-Trimethylbenzene	ND	0.0047	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,3,5-Trimethylbenzene	ND	0.0074	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,2-Dichloroethane (EDC)	ND	0.0075	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,2-Dibromoethane (EDB)	ND	0.013	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Naphthalene	ND	0.012	0.066		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1-Methylnaphthalene	ND	0.038	0.13		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
2-Methylnaphthalene	ND	0.031	0.13		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Acetone	ND	0.11	0.50		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Bromobenzene	ND	0.0070	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Bromodichloromethane	ND	0.0042	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Bromoform	ND	0.0080	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Bromomethane	ND	0.055	0.099		mg/Kg	1	9/2/2021 4:46:49 AM	R80995

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (15-15.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:10:00 PM
Lab ID: 2108D42-022 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.14	0.33		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Carbon disulfide	ND	0.014	0.33		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Carbon tetrachloride	ND	0.0037	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Chlorobenzene	ND	0.0060	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Chloroethane	ND	0.012	0.066		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Chloroform	ND	0.0047	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Chloromethane	ND	0.012	0.099		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
2-Chlorotoluene	ND	0.0044	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
4-Chlorotoluene	ND	0.017	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
cis-1,2-DCE	ND	0.016	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
cis-1,3-Dichloropropene	ND	0.0049	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,2-Dibromo-3-chloropropane	ND	0.014	0.066		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Dibromochloromethane	ND	0.0053	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Dibromomethane	ND	0.0077	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,2-Dichlorobenzene	ND	0.0069	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,3-Dichlorobenzene	ND	0.0063	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,4-Dichlorobenzene	ND	0.0089	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Dichlorodifluoromethane	ND	0.013	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,1-Dichloroethane	ND	0.0096	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,1-Dichloroethene	ND	0.0071	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,2-Dichloropropane	ND	0.0065	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,3-Dichloropropane	ND	0.0073	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
2,2-Dichloropropane	ND	0.0047	0.066		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,1-Dichloropropene	ND	0.0040	0.066		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Hexachlorobutadiene	ND	0.023	0.066		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
2-Hexanone	ND	0.014	0.33		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Isopropylbenzene	ND	0.0061	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
4-Isopropyltoluene	ND	0.0085	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
4-Methyl-2-pentanone	ND	0.039	0.33		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Methylene chloride	ND	0.024	0.099		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
n-Butylbenzene	ND	0.0088	0.099		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
n-Propylbenzene	ND	0.0053	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
sec-Butylbenzene	ND	0.027	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Styrene	ND	0.0045	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
tert-Butylbenzene	ND	0.0077	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,1,1,2-Tetrachloroethane	ND	0.0049	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,1,2,2-Tetrachloroethane	ND	0.011	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Tetrachloroethene (PCE)	ND	0.0091	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
trans-1,2-DCE	ND	0.0064	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995

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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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-SB-6 (15-15.5')
Project: North Drainage Ditch Area
Collection Date: 8/23/2021 3:10:00 PM
Lab ID: 2108D42-022
Matrix: MEOH (SOIL)
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0078	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,2,3-Trichlorobenzene	ND	0.0051	0.066		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,2,4-Trichlorobenzene	ND	0.012	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,1,1-Trichloroethane	ND	0.0073	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,1,2-Trichloroethane	ND	0.0083	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Trichloroethene (TCE)	ND	0.0065	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Trichlorofluoromethane	ND	0.0075	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
1,2,3-Trichloropropane	ND	0.014	0.066		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Vinyl chloride	ND	0.0063	0.033		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Xylenes, Total	ND	0.017	0.066		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Surr: Dibromofluoromethane	120		70-130		%Rec	1	9/2/2021 4:46:49 AM	R80995
Surr: 1,2-Dichloroethane-d4	113		70-130		%Rec	1	9/2/2021 4:46:49 AM	R80995
Surr: Toluene-d8	102		70-130		%Rec	1	9/2/2021 4:46:49 AM	R80995
Surr: 4-Bromofluorobenzene	95.2		70-130		%Rec	1	9/2/2021 4:46:49 AM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	0.92	3.3		mg/Kg	1	9/2/2021 4:46:49 AM	R80995
Surr: BFB	100	0	70-130		%Rec	1	9/2/2021 4:46:49 AM	R80995

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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (21-21.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:15:00 PM
Lab ID: 2108D42-023 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	180	4.4	8.8		mg/Kg	1	8/27/2021 7:19:00 PM	62222
Motor Oil Range Organics (MRO)	ND	44	44		mg/Kg	1	8/27/2021 7:19:00 PM	62222
Surr: DNOP	122	0	70-130		%Rec	1	8/27/2021 7:19:00 PM	62222
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0038	0.0026	0.033	J	mg/Kg	1	9/7/2021 4:15:36 PM	62410
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/31/2021 6:05:44 PM	62279
Arsenic	ND	2.8	5.0		mg/Kg	2	9/1/2021 3:35:10 PM	62279
Barium	470	0.12	0.20		mg/Kg	2	8/31/2021 6:05:44 PM	62279
Beryllium	0.46	0.059	0.30		mg/Kg	2	8/31/2021 6:05:44 PM	62279
Cadmium	ND	0.10	0.20		mg/Kg	2	8/31/2021 6:05:44 PM	62279
Chromium	4.0	0.30	0.60		mg/Kg	2	8/31/2021 6:05:44 PM	62279
Cobalt	7.9	0.12	0.60		mg/Kg	2	8/31/2021 6:05:44 PM	62279
Iron	8200	250	250		mg/Kg	100	9/1/2021 2:35:35 PM	62279
Lead	2.2	0.54	0.60		mg/Kg	2	8/31/2021 6:05:44 PM	62279
Manganese	430	0.33	0.40		mg/Kg	2	8/31/2021 6:05:44 PM	62279
Nickel	4.9	0.40	1.0		mg/Kg	2	8/31/2021 6:05:44 PM	62279
Selenium	ND	4.4	5.0		mg/Kg	2	8/31/2021 6:05:44 PM	62279
Silver	ND	0.29	0.50		mg/Kg	2	8/31/2021 6:05:44 PM	62279
Vanadium	15	0.23	5.0		mg/Kg	2	9/1/2021 3:35:10 PM	62279
Zinc	9.8	2.7	5.0		mg/Kg	2	8/31/2021 6:05:44 PM	62279
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.87	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Acenaphthylene	ND	0.88	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Aniline	ND	0.67	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Anthracene	ND	0.88	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Azobenzene	ND	0.97	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Benz(a)anthracene	ND	0.63	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Benzo(a)pyrene	ND	0.92	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Benzo(b)fluoranthene	ND	1.0	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Benzo(g,h,i)perylene	ND	0.99	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Benzo(k)fluoranthene	ND	0.73	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Benzoic acid	ND	1.2	9.7		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Benzyl alcohol	ND	0.80	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Bis(2-chloroethoxy)methane	ND	0.74	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Bis(2-chloroethyl)ether	ND	1.0	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Bis(2-chloroisopropyl)ether	ND	0.99	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272

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Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (21-21.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:15:00 PM
Lab ID: 2108D42-023 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
4-Bromophenyl phenyl ether	ND	1.0	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Butyl benzyl phthalate	ND	0.59	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Carbazole	ND	0.86	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
4-Chloro-3-methylphenol	ND	0.82	4.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
4-Chloroaniline	ND	0.95	4.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2-Chloronaphthalene	ND	0.92	2.4		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2-Chlorophenol	ND	1.0	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
4-Chlorophenyl phenyl ether	ND	0.83	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Chrysene	ND	0.86	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Di-n-butyl phthalate	ND	2.7	3.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Di-n-octyl phthalate	ND	1.3	3.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Dibenz(a,h)anthracene	ND	1.0	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Dibenzofuran	ND	1.0	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
1,2-Dichlorobenzene	ND	0.79	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
1,3-Dichlorobenzene	ND	0.69	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
1,4-Dichlorobenzene	ND	0.83	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
3,3´-Dichlorobenzidine	ND	1.5	2.4		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Diethyl phthalate	ND	3.2	4.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Dimethyl phthalate	ND	0.90	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2,4-Dichlorophenol	ND	0.79	3.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2,4-Dimethylphenol	ND	0.69	2.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
4,6-Dinitro-2-methylphenol	ND	0.82	3.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2,4-Dinitrophenol	ND	0.49	4.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2,4-Dinitrotoluene	ND	1.2	4.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2,6-Dinitrotoluene	ND	0.99	4.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Fluoranthene	ND	0.79	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Fluorene	ND	0.87	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Hexachlorobenzene	ND	0.87	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Hexachlorobutadiene	ND	0.91	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Hexachlorocyclopentadiene	ND	1.1	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Hexachloroethane	ND	0.86	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Indeno(1,2,3-cd)pyrene	ND	1.1	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Isophorone	ND	0.79	3.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
1-Methylnaphthalene	ND	0.90	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2-Methylnaphthalene	ND	0.80	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2-Methylphenol	ND	0.82	3.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
3+4-Methylphenol	ND	0.80	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
N-Nitrosodi-n-propylamine	ND	0.90	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
N-Nitrosodimethylamine	ND	1.4	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272

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		

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (21-21.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:15:00 PM
Lab ID: 2108D42-023 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
N-Nitrosodiphenylamine	ND	1.0	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Naphthalene	ND	0.92	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2-Nitroaniline	ND	1.0	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
3-Nitroaniline	ND	1.1	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
4-Nitroaniline	ND	1.2	3.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Nitrobenzene	ND	0.80	3.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2-Nitrophenol	ND	0.84	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
4-Nitrophenol	ND	0.80	2.4		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Pentachlorophenol	ND	0.84	3.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Phenanthrene	ND	0.99	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Phenol	ND	0.75	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Pyrene	ND	0.74	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Pyridine	ND	1.6	3.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
1,2,4-Trichlorobenzene	ND	0.89	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2,4,5-Trichlorophenol	ND	0.62	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
2,4,6-Trichlorophenol	ND	0.84	1.9		mg/Kg	10	9/8/2021 5:22:05 PM	62272
Surr: 2-Fluorophenol	0		20.3-74.1	S	%Rec	10	9/8/2021 5:22:05 PM	62272
Surr: Phenol-d5	0		23.1-92.7	S	%Rec	10	9/8/2021 5:22:05 PM	62272
Surr: 2,4,6-Tribromophenol	0		17.3-122	S	%Rec	10	9/8/2021 5:22:05 PM	62272
Surr: Nitrobenzene-d5	0		24.7-73.2	S	%Rec	10	9/8/2021 5:22:05 PM	62272
Surr: 2-Fluorobiphenyl	0		21.5-90.1	S	%Rec	10	9/8/2021 5:22:05 PM	62272
Surr: 4-Terphenyl-d14	0		15-140	S	%Rec	10	9/8/2021 5:22:05 PM	62272
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.056	0.15	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Toluene	ND	0.038	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Ethylbenzene	ND	0.071	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.17	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,2,4-Trimethylbenzene	0.54	0.041	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,3,5-Trimethylbenzene	0.24	0.066	0.29	JD	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,2-Dichloroethane (EDC)	ND	0.067	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,2-Dibromoethane (EDB)	ND	0.12	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Naphthalene	ND	0.11	0.59	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1-Methylnaphthalene	ND	0.34	1.2	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
2-Methylnaphthalene	ND	0.27	1.2	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Acetone	ND	0.95	4.4	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Bromobenzene	ND	0.062	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Bromodichloromethane	ND	0.037	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Bromoform	ND	0.071	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Bromomethane	ND	0.48	0.88	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995

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		

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (21-21.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:15:00 PM
Lab ID: 2108D42-023 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	1.3	2.9	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Carbon disulfide	ND	0.12	2.9	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Carbon tetrachloride	ND	0.033	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Chlorobenzene	ND	0.053	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Chloroethane	ND	0.11	0.59	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Chloroform	0.15	0.042	0.29	JD	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Chloromethane	ND	0.10	0.88	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
2-Chlorotoluene	ND	0.039	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
4-Chlorotoluene	ND	0.15	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
cis-1,2-DCE	ND	0.15	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
cis-1,3-Dichloropropene	ND	0.043	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,2-Dibromo-3-chloropropane	ND	0.13	0.59	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Dibromochloromethane	ND	0.047	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Dibromomethane	ND	0.068	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,2-Dichlorobenzene	ND	0.061	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,3-Dichlorobenzene	ND	0.055	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,4-Dichlorobenzene	ND	0.078	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Dichlorodifluoromethane	ND	0.11	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,1-Dichloroethane	ND	0.085	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,1-Dichloroethene	ND	0.063	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,2-Dichloropropane	ND	0.057	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,3-Dichloropropane	ND	0.064	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
2,2-Dichloropropane	ND	0.042	0.59	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,1-Dichloropropene	ND	0.035	0.59	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Hexachlorobutadiene	ND	0.20	0.59	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
2-Hexanone	0.98	0.13	2.9	JD	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Isopropylbenzene	ND	0.054	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
4-Isopropyltoluene	ND	0.075	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
4-Methyl-2-pentanone	0.37	0.34	2.9	JD	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Methylene chloride	ND	0.21	0.88	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
n-Butylbenzene	0.12	0.078	0.88	JD	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
n-Propylbenzene	0.12	0.047	0.29	JD	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
sec-Butylbenzene	ND	0.24	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Styrene	ND	0.040	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
tert-Butylbenzene	ND	0.068	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,1,1,2-Tetrachloroethane	ND	0.043	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,1,2,2-Tetrachloroethane	ND	0.095	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Tetrachloroethene (PCE)	ND	0.080	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
trans-1,2-DCE	ND	0.057	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995

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		

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-SB-6 (21-21.5')
Project: North Drainage Ditch Area **Collection Date:** 8/23/2021 3:15:00 PM
Lab ID: 2108D42-023 **Matrix:** MEOH (SOIL) **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.069	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,2,3-Trichlorobenzene	ND	0.045	0.59	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,2,4-Trichlorobenzene	ND	0.10	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,1,1-Trichloroethane	ND	0.065	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,1,2-Trichloroethane	ND	0.073	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Trichloroethene (TCE)	ND	0.057	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Trichlorofluoromethane	ND	0.066	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
1,2,3-Trichloropropane	ND	0.12	0.59	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Vinyl chloride	ND	0.056	0.29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Xylenes, Total	ND	0.15	0.59	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Surr: Dibromofluoromethane	109		70-130	D	%Rec	10	9/2/2021 5:13:44 AM	R80995
Surr: 1,2-Dichloroethane-d4	119		70-130	D	%Rec	10	9/2/2021 5:13:44 AM	R80995
Surr: Toluene-d8	105		70-130	D	%Rec	10	9/2/2021 5:13:44 AM	R80995
Surr: 4-Bromofluorobenzene	111		70-130	D	%Rec	10	9/2/2021 5:13:44 AM	R80995
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	310	8.1	29	D	mg/Kg	10	9/2/2021 5:13:44 AM	R80995
Surr: BFB	103	0	70-130	D	%Rec	10	9/2/2021 5:13:44 AM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB5
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:45:00 PM
Lab ID: 2108D42-024
Matrix: AQUEOUS
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Benzene	ND	0.23	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Toluene	ND	0.20	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Ethylbenzene	ND	0.21	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Naphthalene	ND	0.50	2.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Acetone	5.0	2.5	10	J	µg/L	1	8/29/2021 12:51:00 AM	R80878
Bromobenzene	ND	0.28	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Bromodichloromethane	ND	0.20	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Bromoform	ND	0.31	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Bromomethane	ND	0.85	3.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
2-Butanone	ND	2.0	10		µg/L	1	8/29/2021 12:51:00 AM	R80878
Carbon disulfide	ND	0.59	10		µg/L	1	8/29/2021 12:51:00 AM	R80878
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Chlorobenzene	ND	0.16	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Chloroethane	ND	0.38	2.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Chloroform	ND	0.13	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Chloromethane	ND	0.41	3.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Dibromochloromethane	ND	0.28	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Dibromomethane	ND	0.31	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	8/29/2021 12:51:00 AM	R80878

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB5
Project: North Drainage Ditch Area
Collection Date: 8/18/2021 2:45:00 PM
Lab ID: 2108D42-024
Matrix: AQUEOUS
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
2-Hexanone	ND	1.8	10		µg/L	1	8/29/2021 12:51:00 AM	R80878
Isopropylbenzene	ND	0.18	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	8/29/2021 12:51:00 AM	R80878
Methylene Chloride	ND	0.50	3.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
n-Butylbenzene	ND	0.25	3.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
n-Propylbenzene	ND	0.18	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Styrene	ND	0.14	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Vinyl chloride	ND	0.32	1.0		µg/L	1	8/29/2021 12:51:00 AM	R80878
Xylenes, Total	ND	0.37	1.5		µg/L	1	8/29/2021 12:51:00 AM	R80878
Surr: 1,2-Dichloroethane-d4	85.0	0	70-130		%Rec	1	8/29/2021 12:51:00 AM	R80878
Surr: 4-Bromofluorobenzene	98.3	0	70-130		%Rec	1	8/29/2021 12:51:00 AM	R80878
Surr: Dibromofluoromethane	84.5	0	70-130		%Rec	1	8/29/2021 12:51:00 AM	R80878
Surr: Toluene-d8	96.8	0	70-130		%Rec	1	8/29/2021 12:51:00 AM	R80878

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB6
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:35:00 PM
Lab ID: 2108D42-025
Matrix: AQUEOUS
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Benzene	ND	0.23	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Toluene	ND	0.20	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Ethylbenzene	ND	0.21	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Naphthalene	ND	0.50	2.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Acetone	ND	2.5	10		µg/L	1	8/29/2021 1:15:00 AM	R80878
Bromobenzene	ND	0.28	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Bromodichloromethane	ND	0.20	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Bromoform	ND	0.31	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Bromomethane	ND	0.85	3.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
2-Butanone	ND	2.0	10		µg/L	1	8/29/2021 1:15:00 AM	R80878
Carbon disulfide	ND	0.59	10		µg/L	1	8/29/2021 1:15:00 AM	R80878
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Chlorobenzene	ND	0.16	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Chloroethane	ND	0.38	2.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Chloroform	ND	0.13	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Chloromethane	ND	0.41	3.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Dibromochloromethane	ND	0.28	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Dibromomethane	ND	0.31	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	8/29/2021 1:15:00 AM	R80878

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB6
Project: North Drainage Ditch Area
Collection Date: 8/19/2021 5:35:00 PM
Lab ID: 2108D42-025
Matrix: AQUEOUS
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
2-Hexanone	ND	1.8	10		µg/L	1	8/29/2021 1:15:00 AM	R80878
Isopropylbenzene	ND	0.18	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	8/29/2021 1:15:00 AM	R80878
Methylene Chloride	ND	0.50	3.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
n-Butylbenzene	ND	0.25	3.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
n-Propylbenzene	ND	0.18	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Styrene	ND	0.14	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Vinyl chloride	ND	0.32	1.0		µg/L	1	8/29/2021 1:15:00 AM	R80878
Xylenes, Total	ND	0.37	1.5		µg/L	1	8/29/2021 1:15:00 AM	R80878
Surr: 1,2-Dichloroethane-d4	81.9	0	70-130		%Rec	1	8/29/2021 1:15:00 AM	R80878
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	8/29/2021 1:15:00 AM	R80878
Surr: Dibromofluoromethane	84.2	0	70-130		%Rec	1	8/29/2021 1:15:00 AM	R80878
Surr: Toluene-d8	96.2	0	70-130		%Rec	1	8/29/2021 1:15:00 AM	R80878

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank 1
Project: North Drainage Ditch Area
Collection Date:
Lab ID: 2108D42-026
Matrix: MEOH BLAN
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0096	0.025		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Toluene	ND	0.0064	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Ethylbenzene	ND	0.012	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.028	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,2,4-Trimethylbenzene	ND	0.0071	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,3,5-Trimethylbenzene	ND	0.011	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,2-Dichloroethane (EDC)	ND	0.011	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,2-Dibromoethane (EDB)	ND	0.020	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Naphthalene	ND	0.019	0.10		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1-Methylnaphthalene	ND	0.057	0.20		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
2-Methylnaphthalene	ND	0.046	0.20		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Acetone	ND	0.16	0.75		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Bromobenzene	ND	0.011	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Bromodichloromethane	ND	0.0064	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Bromoform	ND	0.012	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Bromomethane	ND	0.083	0.15		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
2-Butanone	ND	0.22	0.50		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Carbon disulfide	ND	0.021	0.50		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Carbon tetrachloride	ND	0.0056	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Chlorobenzene	ND	0.0090	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Chloroethane	ND	0.019	0.10		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Chloroform	ND	0.0071	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Chloromethane	ND	0.018	0.15		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
2-Chlorotoluene	ND	0.0067	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
4-Chlorotoluene	ND	0.026	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
cis-1,2-DCE	ND	0.025	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
cis-1,3-Dichloropropene	ND	0.0074	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,2-Dibromo-3-chloropropane	ND	0.022	0.10		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Dibromochloromethane	ND	0.0080	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Dibromomethane	ND	0.012	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,2-Dichlorobenzene	ND	0.010	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,3-Dichlorobenzene	ND	0.0094	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,4-Dichlorobenzene	ND	0.013	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Dichlorodifluoromethane	ND	0.019	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,1-Dichloroethane	ND	0.015	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,1-Dichloroethene	ND	0.011	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,2-Dichloropropane	ND	0.0097	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,3-Dichloropropane	ND	0.011	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
2,2-Dichloropropane	ND	0.0071	0.10		mg/Kg	1	9/2/2021 5:40:46 AM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MeOH Blank 1
Project: North Drainage Ditch Area **Collection Date:**
Lab ID: 2108D42-026 **Matrix:** MEOH BLAN **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,1-Dichloropropene	ND	0.0060	0.10		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Hexachlorobutadiene	ND	0.034	0.10		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
2-Hexanone	ND	0.022	0.50		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Isopropylbenzene	ND	0.0093	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
4-Isopropyltoluene	ND	0.013	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
4-Methyl-2-pentanone	ND	0.058	0.50		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Methylene chloride	ND	0.036	0.15		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
n-Butylbenzene	ND	0.013	0.15		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
n-Propylbenzene	ND	0.0081	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
sec-Butylbenzene	ND	0.041	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Styrene	ND	0.0068	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
tert-Butylbenzene	ND	0.012	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,1,1,2-Tetrachloroethane	ND	0.0073	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,1,2,2-Tetrachloroethane	ND	0.016	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Tetrachloroethene (PCE)	ND	0.014	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
trans-1,2-DCE	ND	0.0097	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
trans-1,3-Dichloropropene	ND	0.012	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,2,3-Trichlorobenzene	ND	0.0077	0.10		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,2,4-Trichlorobenzene	ND	0.017	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,1,1-Trichloroethane	ND	0.011	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,1,2-Trichloroethane	ND	0.013	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Trichloroethene (TCE)	ND	0.0098	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Trichlorofluoromethane	ND	0.011	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
1,2,3-Trichloropropane	ND	0.021	0.10		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Vinyl chloride	ND	0.0095	0.050		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Xylenes, Total	ND	0.026	0.10		mg/Kg	1	9/2/2021 5:40:46 AM	R80995
Surr: Dibromofluoromethane	116		70-130		%Rec	1	9/2/2021 5:40:46 AM	R80995
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	9/2/2021 5:40:46 AM	R80995
Surr: Toluene-d8	93.8		70-130		%Rec	1	9/2/2021 5:40:46 AM	R80995
Surr: 4-Bromofluorobenzene	93.2		70-130		%Rec	1	9/2/2021 5:40:46 AM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH Blank 2
Project: North Drainage Ditch Area
Collection Date:
Lab ID: 2108D42-027
Matrix: MEOH BLAN
Received Date: 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0096	0.025		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Toluene	ND	0.0064	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Ethylbenzene	ND	0.012	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Methyl tert-butyl ether (MTBE)	ND	0.028	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,2,4-Trimethylbenzene	ND	0.0071	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,3,5-Trimethylbenzene	ND	0.011	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,2-Dichloroethane (EDC)	ND	0.011	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,2-Dibromoethane (EDB)	ND	0.020	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Naphthalene	ND	0.019	0.10		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1-Methylnaphthalene	ND	0.057	0.20		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
2-Methylnaphthalene	ND	0.046	0.20		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Acetone	ND	0.16	0.75		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Bromobenzene	ND	0.011	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Bromodichloromethane	ND	0.0064	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Bromoform	ND	0.012	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Bromomethane	ND	0.083	0.15		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
2-Butanone	ND	0.22	0.50		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Carbon disulfide	ND	0.021	0.50		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Carbon tetrachloride	ND	0.0056	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Chlorobenzene	ND	0.0090	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Chloroethane	ND	0.019	0.10		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Chloroform	ND	0.0071	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Chloromethane	ND	0.018	0.15		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
2-Chlorotoluene	ND	0.0067	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
4-Chlorotoluene	ND	0.026	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
cis-1,2-DCE	ND	0.025	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
cis-1,3-Dichloropropene	ND	0.0074	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,2-Dibromo-3-chloropropane	ND	0.022	0.10		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Dibromochloromethane	ND	0.0080	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Dibromomethane	ND	0.012	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,2-Dichlorobenzene	ND	0.010	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,3-Dichlorobenzene	ND	0.0094	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,4-Dichlorobenzene	ND	0.013	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Dichlorodifluoromethane	ND	0.019	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,1-Dichloroethane	ND	0.015	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,1-Dichloroethene	ND	0.011	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,2-Dichloropropane	ND	0.0097	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,3-Dichloropropane	ND	0.011	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
2,2-Dichloropropane	ND	0.0071	0.10		mg/Kg	1	9/2/2021 6:07:50 AM	R80995

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

Analytical Report
Lab Order **2108D42**
Date Reported: **9/14/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MeOH Blank 2
Project: North Drainage Ditch Area **Collection Date:**
Lab ID: 2108D42-027 **Matrix:** MEOH BLAN **Received Date:** 8/25/2021 7:10:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,1-Dichloropropene	ND	0.0060	0.10		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Hexachlorobutadiene	ND	0.034	0.10		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
2-Hexanone	ND	0.022	0.50		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Isopropylbenzene	ND	0.0093	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
4-Isopropyltoluene	ND	0.013	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
4-Methyl-2-pentanone	ND	0.058	0.50		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Methylene chloride	ND	0.036	0.15		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
n-Butylbenzene	ND	0.013	0.15		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
n-Propylbenzene	ND	0.0081	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
sec-Butylbenzene	ND	0.041	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Styrene	ND	0.0068	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
tert-Butylbenzene	ND	0.012	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,1,1,2-Tetrachloroethane	ND	0.0073	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,1,2,2-Tetrachloroethane	ND	0.016	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Tetrachloroethene (PCE)	ND	0.014	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
trans-1,2-DCE	ND	0.0097	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
trans-1,3-Dichloropropene	ND	0.012	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,2,3-Trichlorobenzene	ND	0.0077	0.10		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,2,4-Trichlorobenzene	ND	0.017	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,1,1-Trichloroethane	ND	0.011	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,1,2-Trichloroethane	ND	0.013	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Trichloroethene (TCE)	ND	0.0098	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Trichlorofluoromethane	ND	0.011	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
1,2,3-Trichloropropane	ND	0.021	0.10		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Vinyl chloride	ND	0.0095	0.050		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Xylenes, Total	ND	0.026	0.10		mg/Kg	1	9/2/2021 6:07:50 AM	R80995
Surr: Dibromofluoromethane	116		70-130		%Rec	1	9/2/2021 6:07:50 AM	R80995
Surr: 1,2-Dichloroethane-d4	108		70-130		%Rec	1	9/2/2021 6:07:50 AM	R80995
Surr: Toluene-d8	101		70-130		%Rec	1	9/2/2021 6:07:50 AM	R80995
Surr: 4-Bromofluorobenzene	92.9		70-130		%Rec	1	9/2/2021 6:07:50 AM	R80995

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

Pace Analytical®

ANALYTICAL REPORT

September 03, 2021

Hall Environmental Analysis Laboratory

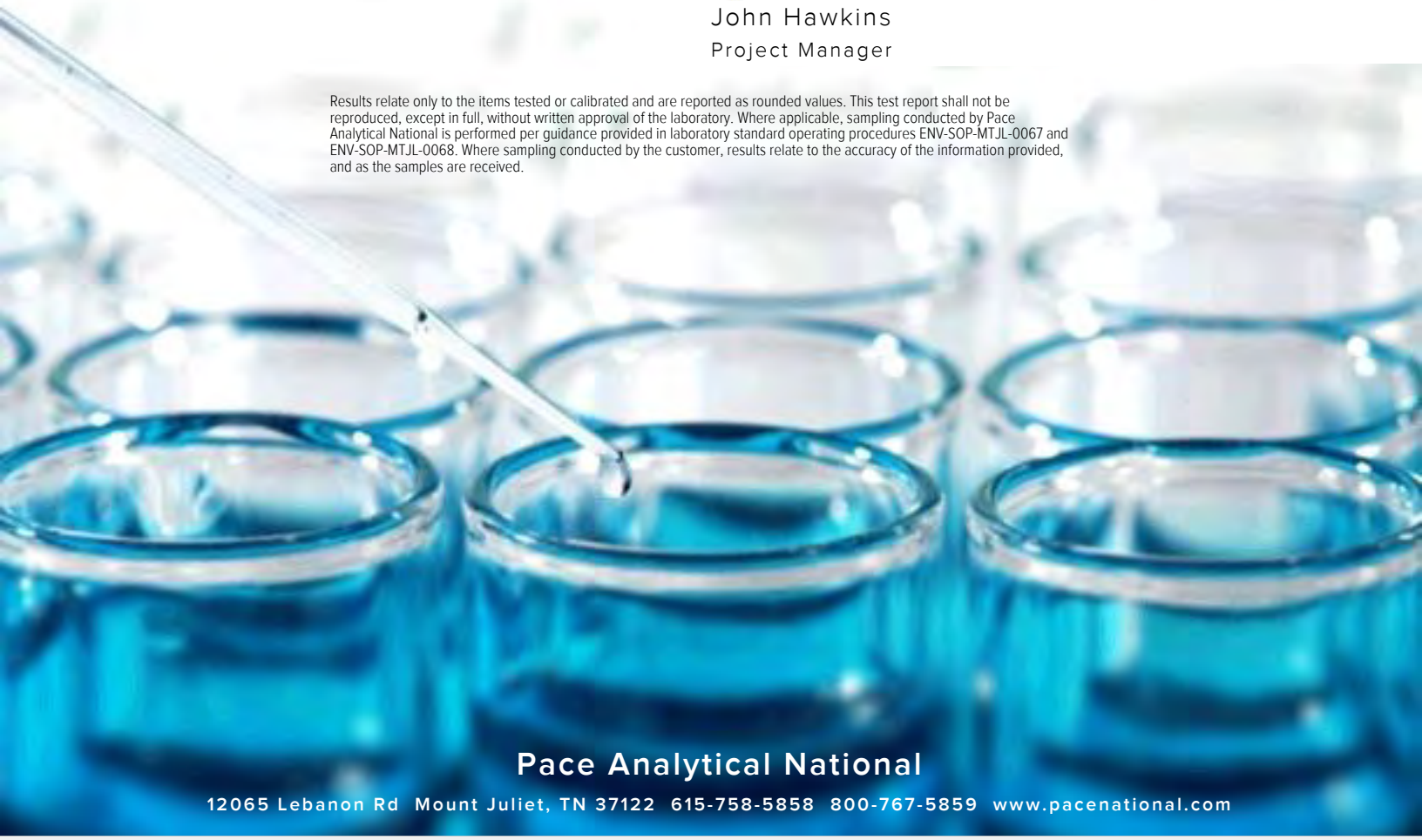
Sample Delivery Group:	L1396104
Samples Received:	08/27/2021
Project Number:	
Description:	

Report To: Jackie Bolte
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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2108D42-001B NDD-SB-6 (23.5-24') L1396104-01 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 14:45	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:24	SDL	Mt. Juliet, TN

2108D42-002B NDD-SB-5 (0-0.5') L1396104-02 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 16:30	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:27	SDL	Mt. Juliet, TN

2108D42-003B NDD-SB-5 (1.5-2') L1396104-03 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 16:45	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:28	SDL	Mt. Juliet, TN

2108D42-004B NDD-BD5 L1396104-04 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 00:00	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:29	SDL	Mt. Juliet, TN

2108D42-005B NDD-SB-NDD-BD6 L1396104-05 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 00:00	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:30	SDL	Mt. Juliet, TN

2108D42-008B NDD-SB-5 (9.5-10') L1396104-06 Solid

Collected by	Collected date/time	Received date/time
	08/24/21 08:15	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:31	SDL	Mt. Juliet, TN

2108D42-009B NDD-SB-5 (12-12.5') L1396104-07 Solid

Collected by	Collected date/time	Received date/time
	08/24/21 08:30	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:32	SDL	Mt. Juliet, TN

2108D42-010B NDD-SB-5 (17.5-18') L1396104-08 Solid

Collected by	Collected date/time	Received date/time
	08/24/21 09:20	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:33	SDL	Mt. Juliet, TN

2108D42-012B NDD-SB-3 (0-0.5') L1396104-09 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 09:05	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:39	SDL	Mt. Juliet, TN

2108D42-013B NDD-SB-3 (1.5-2') L1396104-10 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 09:10	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:40	SDL	Mt. Juliet, TN

2108D42-014B NDD-SB-3 (6-6.5') L1396104-11 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 09:25	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:41	SDL	Mt. Juliet, TN

2108D42-015B NDD-SB-3 (9.5-10') L1396104-12 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 10:10	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:42	SDL	Mt. Juliet, TN

2108D42-016B NDD-SB-4 (1-1.5') L1396104-13 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 11:05	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:43	SDL	Mt. Juliet, TN

2108D42-017B NDD-SB-4 (2-2.5') L1396104-14 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 11:12	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:44	SDL	Mt. Juliet, TN

2108D42-018B NDD-SB-4 (2.5-3') L1396104-15 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 11:20	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:45	SDL	Mt. Juliet, TN

2108D42-019B NDD-SB-4 (19.5-20') L1396104-16 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 11:35	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:46	SDL	Mt. Juliet, TN

SAMPLE SUMMARY

2108D42-020B NDD-SB-6 (1.5-2') L1396104-17 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 14:50	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:47	SDL	Mt. Juliet, TN

2108D42-021B NDD-SB-6 (3-3.5') L1396104-18 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 15:00	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1731866	1	08/31/21 20:31	09/01/21 20:48	SDL	Mt. Juliet, TN

2108D42-022B NDD-SB-6 (15-15.5') L1396104-19 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 15:10	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1732895	1	09/02/21 11:10	09/02/21 22:55	SDL	Mt. Juliet, TN

2108D42-023B NDD-SB-6 (21-21.5') L1396104-20 Solid

Collected by	Collected date/time	Received date/time
	08/23/21 15:15	08/27/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012B	WG1732895	1	09/02/21 11:10	09/02/21 22:58	SDL	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

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.

John V Hawkins

John Hawkins
Project Manager

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:24	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	09/01/2021 20:27	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:28	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:29	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:30	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:31	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	09/01/2021 20:32	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:33	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:39	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	09/01/2021 20:40	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	09/01/2021 20:41	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:42	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:43	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:44	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:45	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	09/01/2021 20:46	WG1731866

Received by OCD: 9/19/2022 12:31:41 PM

Collected date/time: 08/23/21 14:50

L1396104

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:47	WG1731866

Released to Imaging: 11/23/2022 1:30:09 PM

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/01/2021 20:48	WG1731866

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/02/2021 22:55	WG1732895

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	09/02/2021 22:58	WG1732895

Method Blank (MB)

(MB) R3699286-1 09/01/21 20:15

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0733	0.250

L1396022-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1396022-03 09/01/21 20:19 • (DUP) R3699286-3 09/01/21 20:20

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	0.608	0.712	1	15.8		20

L1396104-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1396104-08 09/01/21 20:33 • (DUP) R3699286-6 09/01/21 20:34

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3699286-2 09/01/21 20:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.49	99.7	85.0-115	

L1396022-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396022-03 09/01/21 20:19 • (MS) R3699286-4 09/01/21 20:21 • (MSD) R3699286-5 09/01/21 20:22

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	0.608	1.06	0.886	27.3	16.7	1	75.0-125	J6	J6	18.2	20

L1396104-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396104-08 09/01/21 20:33 • (MS) R3699286-7 09/01/21 20:35 • (MSD) R3699286-8 09/01/21 20:36

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	1.62	1.59	97.0	95.7	1	75.0-125			1.41	20

Method Blank (MB)

(MB) R3699848-1 09/02/21 22:46

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0733	0.250

L1396577-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1396577-02 09/02/21 23:08 • (DUP) R3699848-5 09/02/21 23:11

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	0.261	ND	1	200	P1	20

L1396577-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1396577-03 09/02/21 23:12 • (DUP) R3699848-6 09/02/21 23:13

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3699848-2 09/02/21 22:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	2.50	2.53	101	85.0-115	

L1396577-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396577-01 09/02/21 23:04 • (MS) R3699848-3 09/02/21 23:05 • (MSD) R3699848-4 09/02/21 23:07

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	1.39	1.57	ND	10.8	0.000	1	75.0-125	J6	J3 J6	200	20

L1397327-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397327-01 09/02/21 23:14 • (MS) R3699848-7 09/02/21 23:15 • (MSD) R3699848-8 09/02/21 23:16

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	1.52	1.55	91.5	93.2	1	75.0-125			1.81	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 Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
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	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

1026

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: clients.hallenvironmental.com

Sample Receipt Checklist

COC Seal Present/Intact: __Y__N
COC Signed/Accurate: __Y__N
Bottles arrive intact: __Y__N
Correct bottles used: __Y__N
Sufficient volume sent: __Y__N
RAD Screen <0.5 mR/hr: Y N

If Applicable
VOA Zero Headspace: __Y__N
Pres.Correct/Check: __Y__N

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	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	2108D42-001B	NDD-SB-6 (23.5-24')	4OZGU	MeOH (Soil)	8/23/2021 2:45:00 PM	1	Total Cyanide	L13 96164-01
2	2108D42-002B	NDD-SB-5 (0-0.5')	4OZGU	MeOH (Soil)	8/23/2021 4:30:00 PM	1	Total Cyanide	02
3	2108D42-003B	NDD-SB-5 (1.5-2')	4OZGU	MeOH (Soil)	8/23/2021 4:45:00 PM	1	Total Cyanide	03
4	2108D42-004B	NDD-BD5	4OZGU	MeOH (Soil)	8/23/2021	1	Total Cyanide	04
5	2108D42-005B	NDD-BD6	4OZGU	MeOH (Soil)	8/23/2021	1	Total Cyanide	05
6	2108D42-008B	NDD-SB-5 (9.5-10')	4OZGU	MeOH (Soil)	8/24/2021 8:15:00 AM	1	Total Cyanide	06
7	2108D42-009B	NDD-SB-5 (12-12.5')	4OZGU	MeOH (Soil)	8/24/2021 8:30:00 AM	1	Total Cyanide	07
8	2108D42-010B	NDD-SB-5 (17.5-18')	4OZGU	MeOH (Soil)	8/24/2021 9:20:00 AM	1	Total Cyanide	08
9	2108D42-012B	NDD-SB-3 (0-0.5')	4OZGU	MeOH (Soil)	8/23/2021 9:05:00 AM	1	Total Cyanide	09
10	2108D42-013B	NDD-SB-3 (1.5-2')	4OZGU	MeOH (Soil)	8/23/2021 9:10:00 AM	1	Total Cyanide	10
11	2108D42-014B	NDD-SB-3 (6-6.5')	4OZGU	MeOH (Soil)	8/23/2021 9:25:00 AM	1	Total Cyanide	11
12	2108D42-015B	NDD-SB-3 (9.5-10')	4OZGU	MeOH (Soil)	8/23/2021 10:10:00 AM	1	Total Cyanide	12
13	2108D42-016B	NDD-SB-4 (1-1.5')	4OZGU	MeOH (Soil)	8/23/2021 11:05:00 AM	1	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: Sca	Date: 8/25/2021	Time: 3:55 PM	Received By:	Date: 8/26/21	Time: 0730
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 3.7°C-3.7°C-3.7°C Attempt to Cool? ____
Comments: ____

7746 5023 2134

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: clients.hallenvironmental.com

SUB CONTRATOR:	Pace TN	COMPANY: PACE TN	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	2108D42-017B	NDD-SB-4 (2-2.5')	4OZGU	MeOH (Soil)	8/23/2021 11:12:00 AM	1	Total Cyanide L1396104-14
15	2108D42-018B	NDD-SB-4 (2.5-3')	4OZGU	MeOH (Soil)	8/23/2021 11:20:00 AM	1	Total Cyanide 15
16	2108D42-019B	NDD-SB-4 (19.5-20')	4OZGU	MeOH (Soil)	8/23/2021 11:35:00 AM	1	Total Cyanide 16
17	2108D42-020B	NDD-SB-6 (1.5-2')	4OZGU	MeOH (Soil)	8/23/2021 2:50:00 PM	1	Total Cyanide 17
18	2108D42-021B	NDD-SB-6 (3-3.5')	4OZGU	MeOH (Soil)	8/23/2021 3:00:00 PM	1	Total Cyanide 18
19	2108D42-022B	NDD-SB-6 (15-15.5')	4OZGU	MeOH (Soil)	8/23/2021 3:10:00 PM	1	Total Cyanide 19
20	2108D42-023B	NDD-SB-6 (21-21.5')	4OZGU	MeOH (Soil)	8/23/2021 3:15:00 PM	1	Total Cyanide 20

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: See	Date: 8/25/2021	Time: 3:55 PM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date: 8/26/21	Time: 0830

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 3.7°C=3.7°C Attempt to Cool ? _____
Comments: _____

7796 5023 2139

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62222** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **62222** RunNo: **80847**
Prep Date: **8/26/2021** Analysis Date: **8/27/2021** SeqNo: **2853060** 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	18		10.00		183	70	130			S

Sample ID: **LCS-62222** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **62222** RunNo: **80848**
Prep Date: **8/26/2021** Analysis Date: **8/27/2021** SeqNo: **2853067** 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	92.4	68.9	141			
Surr: DNOP	5.1		5.000		103	70	130			

Sample ID: **MB-62220** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **62220** RunNo: **80847**
Prep Date: **8/26/2021** Analysis Date: **8/27/2021** SeqNo: **2853287** 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	15		10.00		154	70	130			S

Sample ID: **LCS-62220** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **62220** RunNo: **80848**
Prep Date: **8/26/2021** Analysis Date: **8/27/2021** SeqNo: **2853985** 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	94.6	68.9	141			
Surr: DNOP	5.2		5.000		104	70	130			

Sample ID: **2108D42-019AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **NDD-SB-4 (19.5-20')** Batch ID: **62222** RunNo: **80848**
Prep Date: **8/26/2021** Analysis Date: **8/27/2021** SeqNo: **2853989** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	9.1	45.58	6.258	79.8	15	184			
Surr: DNOP	4.6		4.558		100	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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2108D42-019AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **NDD-SB-4 (19.5-20')** Batch ID: **62222** RunNo: **80848**
Prep Date: **8/26/2021** Analysis Date: **8/27/2021** SeqNo: **2853990** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.3	46.43	6.258	83.6	15	184	5.56	23.9	
Surr: DNOP	4.8		4.643		104	70	130	0	0	

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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS** Batch ID: **A80803** RunNo: **80803**
Prep Date: Analysis Date: **8/25/2021** SeqNo: **2851177** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	106	70	130			
Toluene	1.0	0.050	1.000	0	104	70	130			
Chlorobenzene	1.1	0.050	1.000	0	105	70	130			
1,1-Dichloroethene	1.0	0.050	1.000	0	105	70	130			
Trichloroethene (TCE)	1.0	0.050	1.000	0	104	70	130			
Surr: Dibromofluoromethane	0.53		0.5000		106	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		101	70	130			
Surr: Toluene-d8	0.53		0.5000		106	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.3	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **A80803** RunNo: **80803**
Prep Date: Analysis Date: **8/25/2021** SeqNo: **2851178** 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								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A80803**	RunNo: **80803**
Prep Date:	Analysis Date: **8/25/2021**	SeqNo: **2851178** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **A80803** RunNo: **80803**
Prep Date: Analysis Date: **8/25/2021** SeqNo: **2851178** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.58		0.5000		116	70	130			
Surr: 1,2-Dichloroethane-d4	0.52		0.5000		104	70	130			
Surr: Toluene-d8	0.50		0.5000		101	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		95.7	70	130			

Sample ID: **2108d42-001ams** SampType: **MS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **NDD-SB-6 (23.5-24')** Batch ID: **R80915** RunNo: **80915**
Prep Date: Analysis Date: **8/30/2021** SeqNo: **2855869** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.52	0.014	0.5402	0	96.6	70	130			
Toluene	0.55	0.027	0.5402	0	101	70	130			
Chlorobenzene	0.55	0.027	0.5402	0	102	70	130			
1,1-Dichloroethene	0.54	0.027	0.5402	0	99.1	49.9	132			
Trichloroethene (TCE)	0.46	0.027	0.5402	0	84.7	52.9	126			
Surr: Dibromofluoromethane	0.23		0.2701		87.0	70	130			
Surr: 1,2-Dichloroethane-d4	0.25		0.2701		94.3	70	130			
Surr: Toluene-d8	0.27		0.2701		100	70	130			
Surr: 4-Bromofluorobenzene	0.25		0.2701		94.0	70	130			

Sample ID: **2108d42-001amsd** SampType: **MSD** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **NDD-SB-6 (23.5-24')** Batch ID: **R80915** RunNo: **80915**
Prep Date: Analysis Date: **8/30/2021** SeqNo: **2855870** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.50	0.014	0.5402	0	93.0	70	130	3.84	20	
Toluene	0.55	0.027	0.5402	0	101	70	130	0.105	20	
Chlorobenzene	0.54	0.027	0.5402	0	100	70	130	1.86	20	
1,1-Dichloroethene	0.50	0.027	0.5402	0	92.8	49.9	132	6.59	20	
Trichloroethene (TCE)	0.45	0.027	0.5402	0	84.0	52.9	126	0.816	20	
Surr: Dibromofluoromethane	0.24		0.2701		90.0	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.26		0.2701		95.6	70	130	0	0	
Surr: Toluene-d8	0.28		0.2701		102	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.26		0.2701		94.5	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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS** Batch ID: **R80995** RunNo: **80995**
Prep Date: Analysis Date: **9/1/2021** SeqNo: **2858591** 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	70	130			
Toluene	0.90	0.050	1.000	0	90.2	70	130			
Chlorobenzene	0.86	0.050	1.000	0	85.6	70	130			
1,1-Dichloroethene	0.89	0.050	1.000	0	89.2	70	130			
Trichloroethene (TCE)	0.88	0.050	1.000	0	87.7	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: 1,2-Dichloroethane-d4	0.51		0.5000		103	70	130			
Surr: Toluene-d8	0.50		0.5000		100	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.2	70	130			

Sample ID: **2108d42-010a ms** SampType: **MS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **NDD-SB-5 (17.5-18')** Batch ID: **R80995** RunNo: **80995**
Prep Date: Analysis Date: **9/1/2021** SeqNo: **2858599** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.021	0.8203	0	111	70	130			
Toluene	0.81	0.041	0.8203	0	99.0	70	130			
Chlorobenzene	0.72	0.041	0.8203	0	88.1	70	130			
1,1-Dichloroethene	0.85	0.041	0.8203	0	104	49.9	132			
Trichloroethene (TCE)	0.83	0.041	0.8203	0	102	52.9	126			
Surr: Dibromofluoromethane	0.46		0.4102		112	70	130			
Surr: 1,2-Dichloroethane-d4	0.41		0.4102		99.1	70	130			
Surr: Toluene-d8	0.44		0.4102		108	70	130			
Surr: 4-Bromofluorobenzene	0.38		0.4102		93.3	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **R80995** RunNo: **80995**
Prep Date: Analysis Date: **9/1/2021** SeqNo: **2858619** 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								

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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **R80995**	RunNo: **80995**
Prep Date:	Analysis Date: **9/1/2021**	SeqNo: **2858619** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **R80995**	RunNo: **80995**
Prep Date:	Analysis Date: **9/1/2021**	SeqNo: **2858619** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	0.53		0.5000		105	70	130			
Surr: Toluene-d8	0.47		0.5000		94.3	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.4	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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**						
Client ID: **LCSW**	Batch ID: **R80803**	RunNo: **80803**						
Prep Date:	Analysis Date: **8/25/2021**	SeqNo: **2851188**	Units: **%Rec**					

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.3	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	11		10.00		106	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**						
Client ID: **PBW**	Batch ID: **R80803**	RunNo: **80803**						
Prep Date:	Analysis Date: **8/25/2021**	SeqNo: **2851189**	Units: **%Rec**					

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		95.7	70	130			
Surr: Dibromofluoromethane	12		10.00		116	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: **100ng 8260 lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**						
Client ID: **LCSW**	Batch ID: **R80878**	RunNo: **80878**						
Prep Date:	Analysis Date: **8/28/2021**	SeqNo: **2854004**	Units: **µg/L**					

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	98.2	70	130			
Toluene	21	1.0	20.00	0	104	70	130			
Chlorobenzene	20	1.0	20.00	0	99.6	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	91.3	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	90.4	70	130			
Surr: 1,2-Dichloroethane-d4	8.3		10.00		83.1	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	8.2		10.00		81.9	70	130			
Surr: Toluene-d8	10		10.00		99.6	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**						
Client ID: **PBW**	Batch ID: **R80878**	RunNo: **80878**						
Prep Date:	Analysis Date: **8/28/2021**	SeqNo: **2854005**	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								

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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R80878**	RunNo: **80878**
Prep Date:	Analysis Date: **8/28/2021**	SeqNo: **2854005** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								

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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R80878**	RunNo: **80878**
Prep Date:	Analysis Date: **8/28/2021**	SeqNo: **2854005** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	8.4		10.00		83.8	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.0	70	130			
Surr: Dibromofluoromethane	8.4		10.00		83.9	70	130			
Surr: Toluene-d8	9.8		10.00		97.8	70	130			

Sample ID: **mb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R80878**	RunNo: **80878**
Prep Date:	Analysis Date: **8/29/2021**	SeqNo: **2855674** 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								

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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R80878**	RunNo: **80878**
Prep Date:	Analysis Date: **8/29/2021**	SeqNo: **2855674** Units: **µg/L**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R80878**	RunNo: **80878**
Prep Date:	Analysis Date: **8/29/2021**	SeqNo: **2855674** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	8.6		10.00		85.6	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.5	70	130			
Surr: Dibromofluoromethane	8.3		10.00		83.2	70	130			
Surr: Toluene-d8	9.7		10.00		97.4	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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62272**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **62272**	RunNo: **80978**
Prep Date: **8/30/2021**	Analysis Date: **9/1/2021**	SeqNo: **2858020** 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	1.0								
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	0.50								
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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62272** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62272** RunNo: **80978**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2858020** 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-Nitrosodimethylamine	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	3.5		6.660		52.2	20.3	74.1			
Surr: Phenol-d5	4.5		6.660		67.0	23.1	92.7			
Surr: 2,4,6-Tribromophenol	3.0		6.660		45.4	17.3	122			
Surr: Nitrobenzene-d5	1.5		3.330		45.9	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.7		3.330		51.5	21.5	90.1			
Surr: 4-Terphenyl-d14	1.9		3.330		55.6	15	140			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **lcs-62272** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62272** RunNo: **80978**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2858021** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.5	0.20	1.670	0	90.0	22.9	109			
4-Chloro-3-methylphenol	2.9	0.50	3.330	0	87.3	24.2	109			
2-Chlorophenol	2.7	0.20	3.330	0	80.8	18.8	103			
1,4-Dichlorobenzene	1.1	0.20	1.670	0	67.8	18.8	89.5			
2,4-Dinitrotoluene	1.3	0.50	1.670	0	80.8	20.2	94.5			
N-Nitrosodi-n-propylamine	1.4	0.20	1.670	0	83.9	19.2	96.9			
4-Nitrophenol	3.6	0.25	3.330	0	109	25	118			
Pentachlorophenol	2.4	0.40	3.330	0	70.6	24.1	107			
Phenol	3.0	0.20	3.330	0	91.3	17.8	112			
Pyrene	1.5	0.20	1.670	0	91.0	25.9	125			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	72.3	18.5	92.8			
Surr: 2-Fluorophenol	2.5		3.330		73.9	20.3	74.1			
Surr: Phenol-d5	3.0		3.330		89.6	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.6		3.330		78.5	17.3	122			
Surr: Nitrobenzene-d5	1.3		1.670		78.6	24.7	73.2			S
Surr: 2-Fluorobiphenyl	1.4		1.670		85.8	21.5	90.1			
Surr: 4-Terphenyl-d14	1.6		1.670		93.8	15	140			

Sample ID: **MB-62216** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62216** RunNo: **81016**
Prep Date: **8/26/2021** Analysis Date: **9/2/2021** SeqNo: **2859379** 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	1.0								
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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62216** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62216** RunNo: **81016**
Prep Date: **8/26/2021** Analysis Date: **9/2/2021** SeqNo: **2859379** 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	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	0.50								
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-Nitrosodimethylamine	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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62216** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62216** RunNo: **81016**
Prep Date: **8/26/2021** Analysis Date: **9/2/2021** SeqNo: **2859379** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	2.5		3.330		75.4	20.3	74.1			S
Surr: Phenol-d5	3.2		3.330		94.7	23.1	92.7			S
Surr: 2,4,6-Tribromophenol	2.7		3.330		79.6	17.3	122			
Surr: Nitrobenzene-d5	1.3		1.670		77.1	24.7	73.2			S
Surr: 2-Fluorobiphenyl	1.4		1.670		84.0	21.5	90.1			
Surr: 4-Terphenyl-d14	1.8		1.670		108	15	140			

Sample ID: **LCS-62216** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62216** RunNo: **81016**
Prep Date: **8/26/2021** Analysis Date: **9/2/2021** SeqNo: **2859380** 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	85.7	22.9	109			
4-Chloro-3-methylphenol	2.9	0.50	3.330	0	85.8	24.2	109			
2-Chlorophenol	2.7	0.20	3.330	0	80.0	18.8	103			
1,4-Dichlorobenzene	1.2	0.20	1.670	0	69.1	18.8	89.5			
2,4-Dinitrotoluene	1.3	0.50	1.670	0	77.8	20.2	94.5			
N-Nitrosodi-n-propylamine	1.4	0.20	1.670	0	81.1	19.2	96.9			
4-Nitrophenol	3.4	0.25	3.330	0	103	25	118			
Pentachlorophenol	2.5	0.40	3.330	0	75.1	24.1	107			
Phenol	2.8	0.20	3.330	0	83.7	17.8	112			
Pyrene	1.6	0.20	1.670	0	95.0	25.9	125			
1,2,4-Trichlorobenzene	1.3	0.20	1.670	0	76.2	18.5	92.8			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **LCS-62216** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62216** RunNo: **81016**
Prep Date: **8/26/2021** Analysis Date: **9/2/2021** SeqNo: **2859380** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	2.4		3.330		71.9	20.3	74.1			
Surr: Phenol-d5	2.8		3.330		83.7	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.7		3.330		80.4	17.3	122			
Surr: Nitrobenzene-d5	1.3		1.670		76.9	24.7	73.2			S
Surr: 2-Fluorobiphenyl	1.4		1.670		84.7	21.5	90.1			
Surr: 4-Terphenyl-d14	1.7		1.670		101	15	140			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62410** SampType: **MBLK** TestCode: **EPA Method 7471B: Mercury**
Client ID: **PBS** Batch ID: **62410** RunNo: **81108**
Prep Date: **9/7/2021** Analysis Date: **9/7/2021** SeqNo: **2862943** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LLLCS-62410** SampType: **LCSLL** TestCode: **EPA Method 7471B: Mercury**
Client ID: **BatchQC** Batch ID: **62410** RunNo: **81108**
Prep Date: **9/7/2021** Analysis Date: **9/7/2021** SeqNo: **2862944** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0059	0.033	0.006660	0	88.0	70	130			J

Sample ID: **LCS-62410** SampType: **LCS** TestCode: **EPA Method 7471B: Mercury**
Client ID: **LCSS** Batch ID: **62410** RunNo: **81108**
Prep Date: **9/7/2021** Analysis Date: **9/7/2021** SeqNo: **2862945** 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	100	80	120			

Sample ID: **2108D42-001AMS** SampType: **MS** TestCode: **EPA Method 7471B: Mercury**
Client ID: **NDD-SB-6 (23.5-24')** Batch ID: **62410** RunNo: **81108**
Prep Date: **9/7/2021** Analysis Date: **9/7/2021** SeqNo: **2862950** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.17	0.035	0.1744	0	98.3	80	120			

Sample ID: **2108D42-001AMSD** SampType: **MSD** TestCode: **EPA Method 7471B: Mercury**
Client ID: **NDD-SB-6 (23.5-24')** Batch ID: **62410** RunNo: **81108**
Prep Date: **9/7/2021** Analysis Date: **9/7/2021** SeqNo: **2862951** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.17	0.033	0.1648	0	101	80	120	2.98	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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62279** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62279** RunNo: **80954**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857276** 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	ND	0.10								
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	ND	2.5								
Lead	ND	0.30								
Manganese	ND	0.20								
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Zinc	ND	2.5								

Sample ID: **LCS-62279** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62279** RunNo: **80954**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857278** 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			
Barium	24	0.10	25.00	0	97.2	80	120			
Beryllium	25	0.15	25.00	0	99.5	80	120			
Cadmium	24	0.10	25.00	0	96.2	80	120			
Chromium	24	0.30	25.00	0	96.9	80	120			
Cobalt	24	0.30	25.00	0	96.8	80	120			
Iron	26	2.5	25.00	0	102	80	120			
Lead	25	0.30	25.00	0	99.3	80	120			
Manganese	24	0.20	25.00	0	97.8	80	120			
Nickel	24	0.50	25.00	0	96.4	80	120			
Selenium	22	2.5	25.00	0	86.8	80	120			
Silver	4.7	0.25	5.000	0	94.1	80	120			
Zinc	24	2.5	25.00	0	94.2	80	120			

Sample ID: **2108D42-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-SB-6 (23.5-24')** Batch ID: **62279** RunNo: **80954**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857328** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	12	24.21	0	0	75	125			S
Barium	450	0.48	24.21	780.3	-1360	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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2108D42-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-SB-6 (23.5-24')** Batch ID: **62279** RunNo: **80954**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857328** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	26	0.73	24.21	0.7615	104	75	125			
Cadmium	24	0.48	24.21	0	97.3	75	125			
Chromium	37	1.5	24.21	9.139	116	75	125			
Cobalt	31	1.5	24.21	5.419	106	75	125			
Lead	26	1.5	24.21	0	109	75	125			
Manganese	760	0.97	24.21	1040	-1160	75	125			S
Nickel	34	2.4	24.21	8.077	109	75	125			
Selenium	22	12	24.21	0	92.2	75	125			
Silver	3.0	1.2	4.842	0	61.5	75	125			S
Zinc	49	12	24.21	19.47	123	75	125			

Sample ID: **2108D42-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-SB-6 (23.5-24')** Batch ID: **62279** RunNo: **80954**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857329** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	12	24.22	0	0	75	125	0	20	S
Barium	320	0.48	24.22	780.3	-1900	75	125	33.9	20	RS
Beryllium	26	0.73	24.22	0.7615	106	75	125	1.92	20	
Cadmium	24	0.48	24.22	0	97.2	75	125	0.0677	20	
Chromium	37	1.5	24.22	9.139	117	75	125	0.502	20	
Cobalt	33	1.5	24.22	5.419	113	75	125	5.36	20	
Lead	24	1.5	24.22	0	101	75	125	7.88	20	
Manganese	680	0.97	24.22	1040	-1490	75	125	11.2	20	S
Nickel	37	2.4	24.22	8.077	118	75	125	6.37	20	
Selenium	23	12	24.22	0	96.2	75	125	4.27	20	
Silver	2.6	1.2	4.844	0	53.0	75	125	14.8	20	S
Zinc	53	12	24.22	19.47	139	75	125	7.87	20	S

Sample ID: **MB-62279** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62279** RunNo: **80954**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857361** 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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **LCS-62279** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62279** RunNo: **80954**
Prep Date: **8/30/2021** Analysis Date: **8/31/2021** SeqNo: **2857363** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	25	2.5	25.00	0	102	80	120			

Sample ID: **MB-62279** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62279** RunNo: **80971**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2857694** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	ND	2.5								

Sample ID: **LCS-62279** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62279** RunNo: **80971**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2857696** 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			

Sample ID: **2108D42-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-SB-6 (23.5-24')** Batch ID: **62279** RunNo: **80971**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2857729** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	23	12	24.21	0	93.3	75	125			
Vanadium	45	12	24.21	16.67	118	75	125			

Sample ID: **2108D42-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **NDD-SB-6 (23.5-24')** Batch ID: **62279** RunNo: **80971**
Prep Date: **8/30/2021** Analysis Date: **9/1/2021** SeqNo: **2857730** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	22	12	24.22	0	91.0	75	125	2.43	20	
Vanadium	47	12	24.22	16.67	125	75	125	3.98	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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2.5ug gro lcs** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **R80803** RunNo: **80803**
Prep Date: Analysis Date: **8/25/2021** SeqNo: **2851197** 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	86.9	70	130			
Surr: BFB	490		500.0		98.8	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **R80803** RunNo: **80803**
Prep Date: Analysis Date: **8/25/2021** SeqNo: **2851198** 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	500		500.0		99.1	70	130			

Sample ID: **2108d42-002ams** SampType: **MS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **NDD-SB-5 (0-0.5')** Batch ID: **R80803** RunNo: **80803**
Prep Date: Analysis Date: **8/25/2021** SeqNo: **2851201** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	16	3.6	17.76	0	91.0	64.4	124			
Surr: BFB	360		355.1		102	70	130			

Sample ID: **2108d42-002amsd** SampType: **MSD** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **NDD-SB-5 (0-0.5')** Batch ID: **R80803** RunNo: **80803**
Prep Date: Analysis Date: **8/25/2021** SeqNo: **2851202** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	15	3.6	17.76	0	83.7	64.4	124	8.34	20	
Surr: BFB	350		355.1		99.5	70	130	0	0	

Sample ID: **2.5ug gro lcs** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **B80948** RunNo: **80948**
Prep Date: Analysis Date: **8/31/2021** SeqNo: **2857134** 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	82.8	70	130			
Surr: BFB	510		500.0		101	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **B80948** RunNo: **80948**
Prep Date: Analysis Date: **8/31/2021** SeqNo: **2857135** 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#: **2108D42**
14-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**							
Client ID: **PBS**	Batch ID: **B80948**	RunNo: **80948**							
Prep Date:	Analysis Date: **8/31/2021**	SeqNo: **2857135**	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	470		500.0		93.0	70	130			

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **R80995**	RunNo: **80995**							
Prep Date:	Analysis Date: **9/1/2021**	SeqNo: **2858623**	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	88.8	70	130			
Surr: BFB	490		500.0		97.5	70	130			

Sample ID: **2108d42-020a ms**	SampType: **MS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**							
Client ID: **NDD-SB-6 (1.5-2')**	Batch ID: **R80995**	RunNo: **80995**							
Prep Date:	Analysis Date: **9/2/2021**	SeqNo: **2858630**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	10	2.7	13.45	0	75.2	64.4	124			
Surr: BFB	240		269.0		88.8	70	130			

Sample ID: **2108d42-020a msd**	SampType: **MSD**	TestCode: **EPA Method 8015D Mod: Gasoline Range**							
Client ID: **NDD-SB-6 (1.5-2')**	Batch ID: **R80995**	RunNo: **80995**							
Prep Date:	Analysis Date: **9/2/2021**	SeqNo: **2858631**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	11	2.7	13.45	0	80.8	64.4	124	7.18	20	
Surr: BFB	260		269.0		97.6	70	130	0	0	

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**							
Client ID: **PBS**	Batch ID: **R80995**	RunNo: **80995**							
Prep Date:	Analysis Date: **9/1/2021**	SeqNo: **2858637**	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	460		500.0		92.3	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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: **Marathon** Work Order Number: **2108D42** RcptNo: 1

Received By: **Cheyenne Cason** **8/25/2021 7:10:00 AM**

Completed By: **Sean Livingston** **8/25/2021 9:42:44 AM**

Reviewed By: JN 8/25/21

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. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
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: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
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: KPA 8/25/21

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	2.9	Good				
2	0.7	Good				

Released to Imaging: 1/23/2022 1:30:09 PM

Chain-of-Custody Record

Client: Marathon Gallup Refinery

Mailing Address: 92 Giant Crossing Road
Jamesto NM,87301

Phone #: 808-640-1823

Email or Fax#:

QA/QC Package:
X Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

X EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name:
North Drainage Ditch Area

Project #:
697-082-002

Project Manager:
Caitlin Fields

Sampler: Kara Hoppes & Brian Mcloughlin

On Ice: ☒ Yes ☐ No

# of Coolers: 2 3.0-0.1=2.9

Cooler Temp(including CF): 0.8-0.1=0.7

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 Name	Container Type and #	Preservative Type	HEAL No. 2108042	TPH-DRO, Method 8015M/D	TPH-GRO, Method 8015D	VOCs, Method 8260B	Total metals, Method 6020	Mercury, Method 7470	SVOCs, Method 827/8270SIM	CN To 9-24-21
8/23/2021	1445	Soil	NDD-SB-6 (23.5-24')	4		001	x	x	x	x	x	x	X
8/23/2021	1630	Soil	NDD-SB-5 (0-0.5')	4		002	x	x	x	x	x	x	X
8/23/2021	1645	Soil	NDD-SB-5 (1.5-2')	4		003	x	x	x	x	x	x	X
8/23/2021		Soil	NDD-BD5	4		004	x	x	x	x	x	x	X
8/24/2021		Soil	NDD-BD6	4		005	x	x	x	x	x	x	X
8/20/2021	1300	Water	NDD-EB7	2	HCl	006			x				
8/23/2021	1645	Water	NDD-EB8	2	HCl	007			x				
8/24/2021	0815	Soil	NDD-SB-5 (9.5-10')	4		008	X	X	X	X	X	X	X
8/24/2021	0830	↓	NDD-SB-5 (12-12.5')	4		009	X	X	X	X	X	X	X
8/24/2021	0920	↓	NDD-SB-5 (17.5-18')	4		010	X	X	X	X	X	X	X
[redacted]													
8/24/2021	0920	Water	NDD-EB9	2	HCl	011			X				

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
8/24/21	2:00 PM	Kara Hoppes				
			Cel	Courier	8/25/21	0710
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:
PO# 4500273327

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Received by OCD: 9/19/2022 12:31:41 PM

Released to Imaging: 11/23/2022 1:30:49 PM
Received by OCD: 9/19/2022 12:31:41 PM

Chain-of-Custody Record

Client: Marathon Gallup Refinery

Mailing Address: 92 Giant Crossing Road
Jamesto NM,87301

Phone #: 808-640-1823

Email or Fax#:

QA/QC Package:
X Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

X EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name:
North Drainage Ditch Area

Project #:
697-082-002

Project Manager:
Caitlin Fields

Sampler: Kara Hoppes & Brian McLoughlin
On Ice: ☒ Yes ☐ No
# of Coolers: 2 3.0-0.1 = 2.9
Cooler Temp(including CF): 0.8-0.1 = 0.7

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 Name	Container Type and #	Preservative Type	HEAL No.	Analysis Request: TPH-DRO, Method 8015M/D	TPH-GRO, Method 8015D	VOCs, Method 8260B	Total metals, Method 6020	Mercury, Method 7470	SVOCs, Method 827/8270SIM	CN-	Ju 9-26-21							
8/23/2021	0905	Soil	NDD-SB-3 (0-0.5')	4		012	x	x	x	x	x	x	X								
8/23/2021	0910	Soil	NDD-SB-3 (1.5-2')	4		013	x	x	x	x	x	x	X								
8/23/2021	0925	Soil	NDD-SB-3 (6-6.5')	4		014	x	x	x	x	x	x	X								
8/23/2021	1010	Soil	NDD-SB-3 (9.5-10')	4		015	x	x	x	x	x	x	X								
8/23/2021	1105	Soil	NDD-SB-4 (1-1.5')	4		016	x	x	x	x	x	x	X								
8/23/2021	1112	Soil	NDD-SB-4 (2-2.5')	4		017	x	x	x	x	x	x	X								
8/23/2021	1120	Soil	NDD-SB-4 (2.5-3')	4		018	x	x	x	x	x	x	X								
8/23/2021	1135	Soil	NDD-SB-4 (19.5-20')	4		019	x	x	x	x	x	x	X								
8/23/2021	1450	Soil	NDD-SB-6 (1.5-2')	4		020	x	x	x	x	x	x	X								
8/23/2021	1500	Soil	NDD-SB-6 (3-3.5')	4		021	x	x	x	x	x	x	X								
8/23/2021	1510	Soil	NDD-SB-6 (15-15.5')	4		022	x	x	x	x	x	x	X								
8/23/2021	1515	Soil	NDD-SB-6 (21-21.5')	4		023	x	x	x	x	x	x	X								

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
8/24/21	2:00 PM	Kara Hoppes	cee	Courier	8/25/21	0710
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks: PO #4500273327

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Released to Imaging: 11/23/2022 1:30:09 PM
Received by OCD: 9/19/2022 12:31:41 PM

Chain-of-Custody Record

Client: Marathon Gallup Refinery

Mailing Address: 92 Giant Crossing Road
Jamestown, NM 87301

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: North Drainage Ditch Area

Project #: 697-082-002

Project Manager: Caitlin Fields

Sampler: Kara Hoppes & Brian McLoughlin

On Ice: ☒ Yes ☐ No

# of Coolers: 2 3.0 - 0.1 = 2.9

Cooler Temp(including CF): 0.8 - 0.1 = 0.7 (°C)

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 Name	Container Type and #	Preservative Type	HEAL No.
8/18/21	1445	Water	NDD-EB5	2	HCl	024
8/19/21	1735	Water	NDD-EB6	2	HCl	025
			MeOH Blank			026
			Method Blank 2			027
			5.2 0.2 mL			

Analysis Request

BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
							X		
							X		

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
8/24/21	2-pm	Kara Hoppes				
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks: PO#4500273327

Page 3 of 3

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

September 17, 2021

Caitlin Fields

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: North Drainage Ditch Area OrderNo.: 2108785

Dear Caitlin Fields:

Hall Environmental Analysis Laboratory received 13 sample(s) on 8/13/2021 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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 9:17:00 AM
Lab ID: 2108785-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.8	9.8		mg/Kg	1	8/18/2021 11:04:04 AM	62022
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	8/18/2021 11:04:04 AM	62022
Surr: DNOP	117	0	70-130		%Rec	1	8/18/2021 11:04:04 AM	62022
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0049	0.0027	0.034	J	mg/Kg	1	9/1/2021 10:29:58 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.8		mg/Kg	2	8/26/2021 5:13:20 PM	62196
Arsenic	ND	2.7	4.8		mg/Kg	2	8/26/2021 5:13:20 PM	62196
Barium	220	0.12	0.19		mg/Kg	2	8/26/2021 5:13:20 PM	62196
Beryllium	1.5	0.056	0.29		mg/Kg	2	8/26/2021 5:13:20 PM	62196
Cadmium	ND	0.096	0.19		mg/Kg	2	8/26/2021 5:13:20 PM	62196
Chromium	15	0.29	0.57		mg/Kg	2	8/26/2021 5:13:20 PM	62196
Cobalt	6.6	0.12	0.57		mg/Kg	2	8/26/2021 5:13:20 PM	62196
Iron	21000	240	240		mg/Kg	100	8/26/2021 5:15:35 PM	62196
Lead	4.0	0.51	0.57		mg/Kg	2	8/30/2021 1:35:16 PM	62196
Manganese	360	0.32	0.38		mg/Kg	2	8/26/2021 5:13:20 PM	62196
Nickel	14	0.38	0.96		mg/Kg	2	8/26/2021 5:13:20 PM	62196
Selenium	ND	4.2	4.8		mg/Kg	2	8/30/2021 1:35:16 PM	62196
Silver	ND	0.28	0.48		mg/Kg	2	8/26/2021 5:13:20 PM	62196
Vanadium	25	0.22	4.8		mg/Kg	2	8/26/2021 5:13:20 PM	62196
Zinc	21	2.6	4.8		mg/Kg	2	8/26/2021 5:13:20 PM	62196
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	1.7	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Acenaphthylene	ND	1.7	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Aniline	ND	1.3	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Anthracene	ND	1.7	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Azobenzene	ND	1.9	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Benz(a)anthracene	ND	1.2	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Benzo(a)pyrene	ND	1.8	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Benzo(b)fluoranthene	ND	2.0	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Benzo(g,h,i)perylene	ND	1.9	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Benzo(k)fluoranthene	ND	1.4	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Benzoic acid	ND	2.3	19	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Benzyl alcohol	ND	1.5	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Bis(2-chloroethoxy)methane	ND	1.4	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Bis(2-chloroethyl)ether	ND	1.9	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Bis(2-chloroisopropyl)ether	ND	1.9	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Bis(2-ethylhexyl)phthalate	ND	4.0	9.3	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 9:17:00 AM
Lab ID: 2108785-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	1.9	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Butyl benzyl phthalate	ND	1.1	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Carbazole	ND	1.6	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
4-Chloro-3-methylphenol	ND	1.6	9.3	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
4-Chloroaniline	ND	1.8	9.3	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2-Chloronaphthalene	ND	1.8	4.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2-Chlorophenol	ND	2.0	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
4-Chlorophenyl phenyl ether	ND	1.6	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Chrysene	ND	1.6	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Di-n-butyl phthalate	ND	5.2	7.5	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Di-n-octyl phthalate	ND	2.4	7.5	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Dibenz(a,h)anthracene	ND	2.0	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Dibenzofuran	ND	1.9	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
1,2-Dichlorobenzene	ND	1.5	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
1,3-Dichlorobenzene	ND	1.3	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
1,4-Dichlorobenzene	ND	1.6	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
3,3´-Dichlorobenzidine	ND	2.8	4.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Diethyl phthalate	ND	6.1	9.3	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Dimethyl phthalate	ND	1.7	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2,4-Dichlorophenol	ND	1.5	7.5	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2,4-Dimethylphenol	ND	1.3	5.6	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
4,6-Dinitro-2-methylphenol	ND	1.6	7.5	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2,4-Dinitrophenol	ND	0.94	9.3	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2,4-Dinitrotoluene	ND	2.3	9.3	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2,6-Dinitrotoluene	ND	1.9	9.3	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Fluoranthene	ND	1.5	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Fluorene	ND	1.7	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Hexachlorobenzene	ND	1.7	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Hexachlorobutadiene	ND	1.7	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Hexachlorocyclopentadiene	ND	2.1	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Hexachloroethane	ND	1.6	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Indeno(1,2,3-cd)pyrene	ND	2.1	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Isophorone	ND	1.5	7.5	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
1-Methylnaphthalene	ND	1.7	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2-Methylnaphthalene	ND	1.5	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2-Methylphenol	ND	1.6	7.5	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
3+4-Methylphenol	ND	1.5	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
N-Nitrosodi-n-propylamine	ND	1.7	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
N-Nitrosodimethylamine	ND	2.8	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082

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		

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 9:17:00 AM
Lab ID: 2108785-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.9	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Naphthalene	ND	1.8	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2-Nitroaniline	ND	1.9	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
3-Nitroaniline	ND	2.2	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
4-Nitroaniline	ND	2.4	7.5	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Nitrobenzene	ND	1.5	7.5	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2-Nitrophenol	ND	1.6	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
4-Nitrophenol	ND	1.5	4.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Pentachlorophenol	ND	1.6	7.5	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Phenanthrene	ND	1.9	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Phenol	ND	1.4	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Pyrene	ND	1.4	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Pyridine	ND	3.0	7.5	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
1,2,4-Trichlorobenzene	ND	1.7	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2,4,5-Trichlorophenol	ND	1.2	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
2,4,6-Trichlorophenol	ND	1.6	3.7	D	mg/Kg	20	8/26/2021 1:00:11 PM	62082
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	20	8/26/2021 1:00:11 PM	62082
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	20	8/26/2021 1:00:11 PM	62082
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	20	8/26/2021 1:00:11 PM	62082
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	20	8/26/2021 1:00:11 PM	62082
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	20	8/26/2021 1:00:11 PM	62082
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	20	8/26/2021 1:00:11 PM	62082
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0060	0.016		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Toluene	ND	0.0040	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Ethylbenzene	ND	0.0076	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Methyl tert-butyl ether (MTBE)	ND	0.018	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,2,4-Trimethylbenzene	ND	0.0044	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,3,5-Trimethylbenzene	ND	0.0070	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,2-Dichloroethane (EDC)	ND	0.0071	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,2-Dibromoethane (EDB)	ND	0.012	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Naphthalene	ND	0.012	0.063		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1-Methylnaphthalene	ND	0.036	0.13		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
2-Methylnaphthalene	ND	0.029	0.13		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Acetone	ND	0.10	0.47		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Bromobenzene	ND	0.0066	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Bromodichloromethane	ND	0.0040	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Bromoform	ND	0.0075	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Bromomethane	ND	0.052	0.094		mg/Kg	1	8/20/2021 7:22:27 AM	A80682

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/12/2021 9:17:00 AM
Lab ID: 2108785-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.14	0.31		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Carbon disulfide	ND	0.013	0.31		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Carbon tetrachloride	ND	0.0035	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Chlorobenzene	ND	0.0056	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Chloroethane	ND	0.012	0.063		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Chloroform	ND	0.0044	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Chloromethane	ND	0.011	0.094		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
2-Chlorotoluene	ND	0.0042	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
4-Chlorotoluene	ND	0.016	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
cis-1,2-DCE	ND	0.016	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
cis-1,3-Dichloropropene	ND	0.0047	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,2-Dibromo-3-chloropropane	ND	0.014	0.063		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Dibromochloromethane	ND	0.0050	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Dibromomethane	ND	0.0073	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,2-Dichlorobenzene	ND	0.0065	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,3-Dichlorobenzene	ND	0.0059	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,4-Dichlorobenzene	ND	0.0084	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Dichlorodifluoromethane	ND	0.012	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,1-Dichloroethane	ND	0.0091	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,1-Dichloroethene	ND	0.0067	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,2-Dichloropropane	ND	0.0061	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,3-Dichloropropane	ND	0.0069	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
2,2-Dichloropropane	ND	0.0045	0.063		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,1-Dichloropropene	ND	0.0038	0.063		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Hexachlorobutadiene	ND	0.021	0.063		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
2-Hexanone	ND	0.014	0.31		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Isopropylbenzene	ND	0.0058	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
4-Isopropyltoluene	ND	0.0081	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
4-Methyl-2-pentanone	ND	0.036	0.31		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Methylene chloride	ND	0.023	0.094		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
n-Butylbenzene	ND	0.0084	0.094		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
n-Propylbenzene	ND	0.0051	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
sec-Butylbenzene	ND	0.026	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Styrene	ND	0.0043	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
tert-Butylbenzene	ND	0.0072	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,1,1,2-Tetrachloroethane	ND	0.0046	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,1,2,2-Tetrachloroethane	ND	0.010	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Tetrachloroethene (PCE)	ND	0.0086	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
trans-1,2-DCE	ND	0.0060	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682

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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-1 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/12/2021 9:17:00 AM
Lab ID: 2108785-001
Matrix: MEOH (SOIL)
Received Date: 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0073	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,2,3-Trichlorobenzene	ND	0.0048	0.063		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,2,4-Trichlorobenzene	ND	0.011	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,1,1-Trichloroethane	ND	0.0069	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,1,2-Trichloroethane	ND	0.0078	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Trichloroethene (TCE)	ND	0.0061	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Trichlorofluoromethane	ND	0.0071	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
1,2,3-Trichloropropane	ND	0.013	0.063		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Vinyl chloride	ND	0.0060	0.031		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Xylenes, Total	ND	0.016	0.063		mg/Kg	1	8/20/2021 7:22:27 AM	A80682
Surr: Dibromofluoromethane	104		70-130		%Rec	1	8/20/2021 7:22:27 AM	A80682
Surr: 1,2-Dichloroethane-d4	97.1		70-130		%Rec	1	8/20/2021 7:22:27 AM	A80682
Surr: Toluene-d8	103		70-130		%Rec	1	8/20/2021 7:22:27 AM	A80682
Surr: 4-Bromofluorobenzene	96.0		70-130		%Rec	1	8/20/2021 7:22:27 AM	A80682
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.87	3.1		mg/Kg	1	8/20/2021 7:22:27 AM	B80682
Surr: BFB	95.3	0	70-130		%Rec	1	8/20/2021 7:22:27 AM	B80682

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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 9:33:00 AM
Lab ID: 2108785-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.6	9.2		mg/Kg	1	8/18/2021 11:39:00 AM	62022
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/18/2021 11:39:00 AM	62022
Surr: DNOP	119	0	70-130		%Rec	1	8/18/2021 11:39:00 AM	62022
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0028	0.036		mg/Kg	1	9/1/2021 10:32:07 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.3	5.0		mg/Kg	2	8/26/2021 5:17:36 PM	62196
Arsenic	ND	2.8	5.0		mg/Kg	2	8/26/2021 5:17:36 PM	62196
Barium	230	0.12	0.20		mg/Kg	2	8/26/2021 5:17:36 PM	62196
Beryllium	1.4	0.058	0.30		mg/Kg	2	8/26/2021 5:17:36 PM	62196
Cadmium	ND	0.099	0.20		mg/Kg	2	8/26/2021 5:17:36 PM	62196
Chromium	14	0.30	0.60		mg/Kg	2	8/26/2021 5:17:36 PM	62196
Cobalt	6.4	0.12	0.60		mg/Kg	2	8/26/2021 5:17:36 PM	62196
Iron	20000	250	250		mg/Kg	100	8/26/2021 5:19:53 PM	62196
Lead	5.0	0.53	0.60		mg/Kg	2	8/30/2021 1:42:59 PM	62196
Manganese	360	0.33	0.40		mg/Kg	2	8/26/2021 5:17:36 PM	62196
Nickel	13	0.39	0.99		mg/Kg	2	8/26/2021 5:17:36 PM	62196
Selenium	ND	4.4	5.0		mg/Kg	2	8/30/2021 1:42:59 PM	62196
Silver	ND	0.29	0.50		mg/Kg	2	8/26/2021 5:17:36 PM	62196
Vanadium	24	0.22	5.0		mg/Kg	2	8/26/2021 5:17:36 PM	62196
Zinc	19	2.7	5.0		mg/Kg	2	8/26/2021 5:17:36 PM	62196
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Aniline	ND	0.068	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Anthracene	ND	0.089	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Azobenzene	ND	0.098	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Benzo(a)pyrene	ND	0.093	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Benzoic acid	ND	0.12	0.98		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Benzyl alcohol	ND	0.081	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	8/26/2021 1:41:51 PM	62082

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 9:33:00 AM
Lab ID: 2108785-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Carbazole	ND	0.087	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	8/26/2021 1:41:51 PM	62082
4-Chloroaniline	ND	0.096	0.49		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2-Chloronaphthalene	ND	0.093	0.25		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
4-Chlorophenyl phenyl ether	ND	0.084	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Chrysene	ND	0.087	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
1,2-Dichlorobenzene	ND	0.080	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2,4-Dimethylphenol	ND	0.070	0.30		mg/Kg	1	8/26/2021 1:41:51 PM	62082
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Fluoranthene	ND	0.080	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Fluorene	ND	0.088	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Hexachlorobenzene	ND	0.088	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Isophorone	ND	0.080	0.39		mg/Kg	1	8/26/2021 1:41:51 PM	62082
1-Methylnaphthalene	ND	0.091	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2-Methylphenol	ND	0.083	0.39		mg/Kg	1	8/26/2021 1:41:51 PM	62082
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 9:33:00 AM
Lab ID: 2108785-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Naphthalene	ND	0.093	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Nitrobenzene	ND	0.081	0.39		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2-Nitrophenol	ND	0.085	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
4-Nitrophenol	ND	0.081	0.25		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Phenanthrene	ND	0.10	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Phenol	ND	0.076	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Pyrene	ND	0.075	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Pyridine	ND	0.16	0.39		mg/Kg	1	8/26/2021 1:41:51 PM	62082
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
2,4,6-Trichlorophenol	ND	0.085	0.20		mg/Kg	1	8/26/2021 1:41:51 PM	62082
Surr: 2-Fluorophenol	40.3		20.3-74.1		%Rec	1	8/26/2021 1:41:51 PM	62082
Surr: Phenol-d5	52.7		23.1-92.7		%Rec	1	8/26/2021 1:41:51 PM	62082
Surr: 2,4,6-Tribromophenol	61.0		17.3-122		%Rec	1	8/26/2021 1:41:51 PM	62082
Surr: Nitrobenzene-d5	41.9		24.7-73.2		%Rec	1	8/26/2021 1:41:51 PM	62082
Surr: 2-Fluorobiphenyl	50.7		21.5-90.1		%Rec	1	8/26/2021 1:41:51 PM	62082
Surr: 4-Terphenyl-d14	94.7		15-140		%Rec	1	8/26/2021 1:41:51 PM	62082
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0060	0.015		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Toluene	ND	0.0040	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Ethylbenzene	ND	0.0075	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Methyl tert-butyl ether (MTBE)	ND	0.017	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,2,4-Trimethylbenzene	ND	0.0044	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,3,5-Trimethylbenzene	ND	0.0069	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,2-Dichloroethane (EDC)	ND	0.0070	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,2-Dibromoethane (EDB)	ND	0.012	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Naphthalene	ND	0.012	0.062		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1-Methylnaphthalene	ND	0.035	0.12		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
2-Methylnaphthalene	ND	0.029	0.12		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Acetone	ND	0.10	0.46		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Bromobenzene	ND	0.0066	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Bromodichloromethane	ND	0.0039	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Bromoform	ND	0.0075	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Bromomethane	ND	0.051	0.093		mg/Kg	1	8/20/2021 7:51:01 AM	A80682

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 9:33:00 AM
Lab ID: 2108785-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.13	0.31		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Carbon disulfide	ND	0.013	0.31		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Carbon tetrachloride	ND	0.0034	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Chlorobenzene	ND	0.0056	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Chloroethane	ND	0.012	0.062		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Chloroform	ND	0.0044	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Chloromethane	ND	0.011	0.093		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
2-Chlorotoluene	ND	0.0041	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
4-Chlorotoluene	ND	0.016	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
cis-1,2-DCE	ND	0.015	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
cis-1,3-Dichloropropene	ND	0.0046	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,2-Dibromo-3-chloropropane	ND	0.013	0.062		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Dibromochloromethane	ND	0.0050	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Dibromomethane	ND	0.0072	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,2-Dichlorobenzene	ND	0.0064	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,3-Dichlorobenzene	ND	0.0058	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,4-Dichlorobenzene	ND	0.0083	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Dichlorodifluoromethane	ND	0.012	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,1-Dichloroethane	ND	0.0090	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,1-Dichloroethene	ND	0.0066	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,2-Dichloropropane	ND	0.0060	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,3-Dichloropropane	ND	0.0068	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
2,2-Dichloropropane	ND	0.0044	0.062		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,1-Dichloropropene	ND	0.0037	0.062		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Hexachlorobutadiene	ND	0.021	0.062		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
2-Hexanone	ND	0.014	0.31		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Isopropylbenzene	ND	0.0057	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
4-Isopropyltoluene	ND	0.0080	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
4-Methyl-2-pentanone	ND	0.036	0.31		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Methylene chloride	ND	0.022	0.093		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
n-Butylbenzene	ND	0.0083	0.093		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
n-Propylbenzene	ND	0.0050	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
sec-Butylbenzene	ND	0.025	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Styrene	ND	0.0042	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
tert-Butylbenzene	ND	0.0072	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,1,1,2-Tetrachloroethane	ND	0.0045	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,1,2,2-Tetrachloroethane	ND	0.010	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Tetrachloroethene (PCE)	ND	0.0085	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
trans-1,2-DCE	ND	0.0060	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-1 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/12/2021 9:33:00 AM
Lab ID: 2108785-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0072	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,2,3-Trichlorobenzene	ND	0.0048	0.062		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,2,4-Trichlorobenzene	ND	0.011	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,1,1-Trichloroethane	ND	0.0068	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,1,2-Trichloroethane	ND	0.0077	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Trichloroethene (TCE)	ND	0.0061	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Trichlorofluoromethane	ND	0.0070	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
1,2,3-Trichloropropane	ND	0.013	0.062		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Vinyl chloride	ND	0.0059	0.031		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Xylenes, Total	ND	0.016	0.062		mg/Kg	1	8/20/2021 7:51:01 AM	A80682
Surr: Dibromofluoromethane	106		70-130		%Rec	1	8/20/2021 7:51:01 AM	A80682
Surr: 1,2-Dichloroethane-d4	93.9		70-130		%Rec	1	8/20/2021 7:51:01 AM	A80682
Surr: Toluene-d8	106		70-130		%Rec	1	8/20/2021 7:51:01 AM	A80682
Surr: 4-Bromofluorobenzene	91.7		70-130		%Rec	1	8/20/2021 7:51:01 AM	A80682
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.86	3.1		mg/Kg	1	8/20/2021 7:51:01 AM	B80682
Surr: BFB	94.1	0	70-130		%Rec	1	8/20/2021 7:51:01 AM	B80682

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (26.5-27')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 11:43:00 AM
Lab ID: 2108785-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.9	9.9		mg/Kg	1	8/18/2021 11:50:43 AM	62022
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	8/18/2021 11:50:43 AM	62022
Surr: DNOP	116	0	70-130		%Rec	1	8/18/2021 11:50:43 AM	62022
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0025	0.031		mg/Kg	1	9/1/2021 10:38:32 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	1.7	2.5		mg/Kg	1	8/26/2021 4:46:25 PM	62196
Arsenic	ND	1.4	2.5		mg/Kg	1	8/26/2021 4:46:25 PM	62196
Barium	500	0.12	0.20		mg/Kg	2	8/26/2021 5:21:54 PM	62196
Beryllium	0.74	0.029	0.15		mg/Kg	1	8/26/2021 4:46:25 PM	62196
Cadmium	ND	0.050	0.10		mg/Kg	1	8/26/2021 4:46:25 PM	62196
Chromium	6.8	0.15	0.30		mg/Kg	1	8/26/2021 4:46:25 PM	62196
Cobalt	3.5	0.061	0.30		mg/Kg	1	8/26/2021 4:46:25 PM	62196
Iron	12000	250	250		mg/Kg	100	8/26/2021 5:36:04 PM	62196
Lead	2.5	0.27	0.30		mg/Kg	1	8/30/2021 1:44:48 PM	62196
Manganese	340	0.33	0.40		mg/Kg	2	8/26/2021 5:21:54 PM	62196
Nickel	6.4	0.20	0.50		mg/Kg	1	8/26/2021 4:46:25 PM	62196
Selenium	ND	2.2	2.5		mg/Kg	1	8/26/2021 4:46:25 PM	62196
Silver	ND	0.15	0.25		mg/Kg	1	8/26/2021 4:46:25 PM	62196
Vanadium	16	0.11	2.5		mg/Kg	1	8/26/2021 4:46:25 PM	62196
Zinc	10	1.3	2.5		mg/Kg	1	8/26/2021 4:46:25 PM	62196
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.087	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Acenaphthylene	ND	0.088	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Aniline	ND	0.067	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Anthracene	ND	0.088	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Azobenzene	ND	0.097	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Benz(a)anthracene	ND	0.062	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Benzo(a)pyrene	ND	0.091	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Benzo(g,h,i)perylene	ND	0.099	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Benzo(k)fluoranthene	ND	0.073	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Benzoic acid	ND	0.12	0.97		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Benzyl alcohol	ND	0.079	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Bis(2-chloroethoxy)methane	ND	0.074	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Bis(2-chloroisopropyl)ether	ND	0.098	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Bis(2-ethylhexyl)phthalate	ND	0.21	0.48		mg/Kg	1	8/26/2021 2:23:22 PM	62082

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (26.5-27')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 11:43:00 AM
Lab ID: 2108785-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Butyl benzyl phthalate	ND	0.059	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Carbazole	ND	0.085	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
4-Chloro-3-methylphenol	ND	0.082	0.48		mg/Kg	1	8/26/2021 2:23:22 PM	62082
4-Chloroaniline	ND	0.094	0.48		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2-Chloronaphthalene	ND	0.092	0.24		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
4-Chlorophenyl phenyl ether	ND	0.082	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Chrysene	ND	0.086	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Di-n-octyl phthalate	ND	0.12	0.39		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
1,2-Dichlorobenzene	ND	0.078	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
1,3-Dichlorobenzene	ND	0.069	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
1,4-Dichlorobenzene	ND	0.082	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Diethyl phthalate	ND	0.32	0.48		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Dimethyl phthalate	ND	0.090	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	8/26/2021 2:23:22 PM	62082
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2,4-Dinitrophenol	ND	0.049	0.48		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2,6-Dinitrotoluene	ND	0.099	0.48		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Fluoranthene	ND	0.078	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Fluorene	ND	0.086	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Hexachlorobenzene	ND	0.086	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Hexachlorobutadiene	ND	0.091	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Hexachloroethane	ND	0.086	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Isophorone	ND	0.079	0.39		mg/Kg	1	8/26/2021 2:23:22 PM	62082
1-Methylnaphthalene	ND	0.089	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2-Methylnaphthalene	ND	0.080	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2-Methylphenol	ND	0.082	0.39		mg/Kg	1	8/26/2021 2:23:22 PM	62082
3+4-Methylphenol	ND	0.080	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
N-Nitrosodi-n-propylamine	ND	0.090	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082

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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (26.5-27')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 11:43:00 AM
Lab ID: 2108785-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Naphthalene	ND	0.091	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2-Nitroaniline	ND	0.099	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2-Nitrophenol	ND	0.084	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Pentachlorophenol	ND	0.084	0.39		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Phenanthrene	ND	0.099	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Phenol	ND	0.075	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Pyrene	ND	0.073	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Pyridine	ND	0.16	0.39		mg/Kg	1	8/26/2021 2:23:22 PM	62082
1,2,4-Trichlorobenzene	ND	0.089	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2,4,5-Trichlorophenol	ND	0.062	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
2,4,6-Trichlorophenol	ND	0.084	0.19		mg/Kg	1	8/26/2021 2:23:22 PM	62082
Surr: 2-Fluorophenol	36.4		20.3-74.1		%Rec	1	8/26/2021 2:23:22 PM	62082
Surr: Phenol-d5	46.3		23.1-92.7		%Rec	1	8/26/2021 2:23:22 PM	62082
Surr: 2,4,6-Tribromophenol	52.6		17.3-122		%Rec	1	8/26/2021 2:23:22 PM	62082
Surr: Nitrobenzene-d5	38.8		24.7-73.2		%Rec	1	8/26/2021 2:23:22 PM	62082
Surr: 2-Fluorobiphenyl	38.4		21.5-90.1		%Rec	1	8/26/2021 2:23:22 PM	62082
Surr: 4-Terphenyl-d14	97.0		15-140		%Rec	1	8/26/2021 2:23:22 PM	62082
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0049	0.013		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Toluene	ND	0.0033	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Ethylbenzene	ND	0.0062	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Methyl tert-butyl ether (MTBE)	ND	0.014	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,2,4-Trimethylbenzene	ND	0.0036	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,3,5-Trimethylbenzene	ND	0.0057	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,2-Dichloroethane (EDC)	ND	0.0058	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,2-Dibromoethane (EDB)	ND	0.010	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Naphthalene	ND	0.0094	0.051		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1-Methylnaphthalene	ND	0.029	0.10		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
2-Methylnaphthalene	ND	0.023	0.10		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Acetone	ND	0.083	0.38		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Bromobenzene	ND	0.0054	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Bromodichloromethane	ND	0.0032	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Bromoform	ND	0.0061	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Bromomethane	ND	0.042	0.076		mg/Kg	1	8/20/2021 8:19:37 AM	A80682

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-1 (26.5-27')
Project: North Drainage Ditch Area
Collection Date: 8/12/2021 11:43:00 AM
Lab ID: 2108785-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.11	0.25		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Carbon disulfide	ND	0.010	0.25		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Carbon tetrachloride	ND	0.0028	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Chlorobenzene	ND	0.0046	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Chloroethane	ND	0.0095	0.051		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Chloroform	ND	0.0036	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Chloromethane	ND	0.0089	0.076		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
2-Chlorotoluene	ND	0.0034	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
4-Chlorotoluene	ND	0.013	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
cis-1,2-DCE	ND	0.013	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
cis-1,3-Dichloropropene	ND	0.0038	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,2-Dibromo-3-chloropropane	ND	0.011	0.051		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Dibromochloromethane	ND	0.0041	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Dibromomethane	ND	0.0059	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,2-Dichlorobenzene	ND	0.0053	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,3-Dichlorobenzene	ND	0.0048	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,4-Dichlorobenzene	ND	0.0068	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Dichlorodifluoromethane	ND	0.0098	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,1-Dichloroethane	ND	0.0074	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,1-Dichloroethene	ND	0.0054	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,2-Dichloropropane	ND	0.0049	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,3-Dichloropropane	ND	0.0056	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
2,2-Dichloropropane	ND	0.0036	0.051		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,1-Dichloropropene	ND	0.0031	0.051		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Hexachlorobutadiene	ND	0.017	0.051		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
2-Hexanone	ND	0.011	0.25		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Isopropylbenzene	ND	0.0047	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
4-Isopropyltoluene	ND	0.0065	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
4-Methyl-2-pentanone	ND	0.030	0.25		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Methylene chloride	ND	0.018	0.076		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
n-Butylbenzene	ND	0.0068	0.076		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
n-Propylbenzene	ND	0.0041	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
sec-Butylbenzene	ND	0.021	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Styrene	ND	0.0035	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
tert-Butylbenzene	ND	0.0059	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,1,1,2-Tetrachloroethane	ND	0.0037	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,1,2,2-Tetrachloroethane	ND	0.0082	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Tetrachloroethene (PCE)	ND	0.0069	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
trans-1,2-DCE	ND	0.0049	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682

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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-1 (26.5-27')
Project: North Drainage Ditch Area
Collection Date: 8/12/2021 11:43:00 AM
Lab ID: 2108785-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0059	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,2,3-Trichlorobenzene	ND	0.0039	0.051		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,2,4-Trichlorobenzene	ND	0.0088	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,1,1-Trichloroethane	ND	0.0056	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,1,2-Trichloroethane	ND	0.0063	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Trichloroethene (TCE)	ND	0.0050	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Trichlorofluoromethane	ND	0.0057	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
1,2,3-Trichloropropane	ND	0.011	0.051		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Vinyl chloride	ND	0.0048	0.025		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Xylenes, Total	ND	0.013	0.051		mg/Kg	1	8/20/2021 8:19:37 AM	A80682
Surr: Dibromofluoromethane	108		70-130		%Rec	1	8/20/2021 8:19:37 AM	A80682
Surr: 1,2-Dichloroethane-d4	99.3		70-130		%Rec	1	8/20/2021 8:19:37 AM	A80682
Surr: Toluene-d8	105		70-130		%Rec	1	8/20/2021 8:19:37 AM	A80682
Surr: 4-Bromofluorobenzene	92.7		70-130		%Rec	1	8/20/2021 8:19:37 AM	A80682
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.70	2.5		mg/Kg	1	8/20/2021 8:19:37 AM	B80682
Surr: BFB	93.7	0	70-130		%Rec	1	8/20/2021 8:19:37 AM	B80682

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (34-34.5')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 12:15:00 PM
Lab ID: 2108785-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	4.8	4.7	9.6	J	mg/Kg	1	8/18/2021 12:02:20 PM	62022
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/18/2021 12:02:20 PM	62022
Surr: DNOP	123	0	70-130		%Rec	1	8/18/2021 12:02:20 PM	62022
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0027	0.034		mg/Kg	1	9/1/2021 10:40:41 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	1.6	2.5		mg/Kg	1	8/26/2021 4:48:42 PM	62196
Arsenic	1.8	1.4	2.5	J	mg/Kg	1	8/26/2021 4:48:42 PM	62196
Barium	130	0.060	0.099		mg/Kg	1	8/26/2021 4:48:42 PM	62196
Beryllium	1.2	0.029	0.15		mg/Kg	1	8/26/2021 4:48:42 PM	62196
Cadmium	ND	0.050	0.099		mg/Kg	1	8/26/2021 4:48:42 PM	62196
Chromium	13	0.15	0.30		mg/Kg	1	8/26/2021 4:48:42 PM	62196
Cobalt	6.1	0.060	0.30		mg/Kg	1	8/26/2021 4:48:42 PM	62196
Iron	21000	250	250		mg/Kg	100	8/26/2021 5:40:12 PM	62196
Lead	4.7	0.26	0.30		mg/Kg	1	8/30/2021 1:46:33 PM	62196
Manganese	350	0.33	0.40		mg/Kg	2	8/26/2021 5:38:02 PM	62196
Nickel	15	0.20	0.50		mg/Kg	1	8/26/2021 4:48:42 PM	62196
Selenium	ND	2.2	2.5		mg/Kg	1	8/26/2021 4:48:42 PM	62196
Silver	ND	0.14	0.25		mg/Kg	1	8/26/2021 4:48:42 PM	62196
Vanadium	16	0.11	2.5		mg/Kg	1	8/26/2021 4:48:42 PM	62196
Zinc	21	1.3	2.5		mg/Kg	1	8/26/2021 4:48:42 PM	62196
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.087	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Acenaphthylene	ND	0.088	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Aniline	ND	0.067	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Anthracene	ND	0.088	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Azobenzene	ND	0.097	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Benz(a)anthracene	ND	0.063	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Benzo(a)pyrene	ND	0.092	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Benzo(g,h,i)perylene	ND	0.099	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Benzo(k)fluoranthene	ND	0.073	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Benzoic acid	ND	0.12	0.97		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Benzyl alcohol	ND	0.080	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Bis(2-chloroethoxy)methane	ND	0.074	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Bis(2-chloroisopropyl)ether	ND	0.099	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	8/26/2021 3:05:05 PM	62128

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (34-34.5')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 12:15:00 PM
Lab ID: 2108785-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Butyl benzyl phthalate	ND	0.059	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Carbazole	ND	0.085	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
4-Chloro-3-methylphenol	ND	0.082	0.49		mg/Kg	1	8/26/2021 3:05:05 PM	62128
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2-Chloronaphthalene	ND	0.092	0.24		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
4-Chlorophenyl phenyl ether	ND	0.082	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Chrysene	ND	0.086	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Di-n-octyl phthalate	ND	0.12	0.39		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
1,2-Dichlorobenzene	ND	0.079	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
1,3-Dichlorobenzene	ND	0.069	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
1,4-Dichlorobenzene	ND	0.082	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Dimethyl phthalate	ND	0.090	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	8/26/2021 3:05:05 PM	62128
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2,6-Dinitrotoluene	ND	0.099	0.49		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Fluoranthene	ND	0.079	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Fluorene	ND	0.087	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Hexachlorobenzene	ND	0.086	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Hexachlorobutadiene	ND	0.091	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Hexachloroethane	ND	0.086	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Isophorone	ND	0.079	0.39		mg/Kg	1	8/26/2021 3:05:05 PM	62128
1-Methylnaphthalene	ND	0.089	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2-Methylnaphthalene	ND	0.080	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2-Methylphenol	ND	0.082	0.39		mg/Kg	1	8/26/2021 3:05:05 PM	62128
3+4-Methylphenol	ND	0.080	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
N-Nitrosodi-n-propylamine	ND	0.090	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128

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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (34-34.5')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 12:15:00 PM
Lab ID: 2108785-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Naphthalene	ND	0.092	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2-Nitroaniline	ND	0.099	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2-Nitrophenol	ND	0.084	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Pentachlorophenol	ND	0.084	0.39		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Phenanthrene	ND	0.099	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Phenol	ND	0.075	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Pyrene	ND	0.074	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Pyridine	ND	0.16	0.39		mg/Kg	1	8/26/2021 3:05:05 PM	62128
1,2,4-Trichlorobenzene	ND	0.089	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2,4,5-Trichlorophenol	ND	0.062	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
2,4,6-Trichlorophenol	ND	0.084	0.19		mg/Kg	1	8/26/2021 3:05:05 PM	62128
Surr: 2-Fluorophenol	52.9		20.3-74.1		%Rec	1	8/26/2021 3:05:05 PM	62128
Surr: Phenol-d5	68.4		23.1-92.7		%Rec	1	8/26/2021 3:05:05 PM	62128
Surr: 2,4,6-Tribromophenol	74.7		17.3-122		%Rec	1	8/26/2021 3:05:05 PM	62128
Surr: Nitrobenzene-d5	47.3		24.7-73.2		%Rec	1	8/26/2021 3:05:05 PM	62128
Surr: 2-Fluorobiphenyl	55.9		21.5-90.1		%Rec	1	8/26/2021 3:05:05 PM	62128
Surr: 4-Terphenyl-d14	67.1		15-140		%Rec	1	8/26/2021 3:05:05 PM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0068	0.018		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Toluene	ND	0.0046	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Ethylbenzene	ND	0.0087	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Methyl tert-butyl ether (MTBE)	ND	0.020	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,2,4-Trimethylbenzene	ND	0.0050	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,3,5-Trimethylbenzene	ND	0.0080	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,2-Dichloroethane (EDC)	ND	0.0081	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,2-Dibromoethane (EDB)	ND	0.014	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Naphthalene	ND	0.013	0.071		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1-Methylnaphthalene	ND	0.041	0.14		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
2-Methylnaphthalene	ND	0.033	0.14		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Acetone	ND	0.12	0.53		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Bromobenzene	ND	0.0075	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Bromodichloromethane	ND	0.0045	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Bromoform	ND	0.0086	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Bromomethane	ND	0.059	0.11		mg/Kg	1	8/20/2021 8:48:17 AM	A80682

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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-1 (34-34.5')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 12:15:00 PM
Lab ID: 2108785-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.15	0.36		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Carbon disulfide	ND	0.015	0.36		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Carbon tetrachloride	ND	0.0040	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Chlorobenzene	ND	0.0064	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Chloroethane	ND	0.013	0.071		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Chloroform	ND	0.0050	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Chloromethane	ND	0.012	0.11		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
2-Chlorotoluene	ND	0.0048	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
4-Chlorotoluene	ND	0.019	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
cis-1,2-DCE	ND	0.018	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
cis-1,3-Dichloropropene	ND	0.0053	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,2-Dibromo-3-chloropropane	ND	0.015	0.071		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Dibromochloromethane	ND	0.0057	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Dibromomethane	ND	0.0083	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,2-Dichlorobenzene	ND	0.0074	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,3-Dichlorobenzene	ND	0.0067	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,4-Dichlorobenzene	ND	0.0095	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Dichlorodifluoromethane	ND	0.014	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,1-Dichloroethane	ND	0.010	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,1-Dichloroethene	ND	0.0076	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,2-Dichloropropane	ND	0.0069	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,3-Dichloropropane	ND	0.0078	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
2,2-Dichloropropane	ND	0.0051	0.071		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,1-Dichloropropene	ND	0.0043	0.071		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Hexachlorobutadiene	ND	0.024	0.071		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
2-Hexanone	ND	0.016	0.36		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Isopropylbenzene	ND	0.0066	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
4-Isopropyltoluene	ND	0.0092	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
4-Methyl-2-pentanone	ND	0.041	0.36		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Methylene chloride	ND	0.026	0.11		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
n-Butylbenzene	ND	0.0095	0.11		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
n-Propylbenzene	ND	0.0057	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
sec-Butylbenzene	ND	0.029	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Styrene	ND	0.0048	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
tert-Butylbenzene	ND	0.0082	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,1,1,2-Tetrachloroethane	ND	0.0052	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,1,2,2-Tetrachloroethane	ND	0.012	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Tetrachloroethene (PCE)	ND	0.0097	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
trans-1,2-DCE	ND	0.0069	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682

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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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Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-1 (34-34.5')
Project: North Drainage Ditch Area
Collection Date: 8/12/2021 12:15:00 PM
Lab ID: 2108785-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0083	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,2,3-Trichlorobenzene	ND	0.0055	0.071		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,2,4-Trichlorobenzene	ND	0.012	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,1,1-Trichloroethane	ND	0.0078	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,1,2-Trichloroethane	ND	0.0089	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Trichloroethene (TCE)	ND	0.0070	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Trichlorofluoromethane	ND	0.0081	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
1,2,3-Trichloropropane	ND	0.015	0.071		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Vinyl chloride	ND	0.0068	0.036		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Xylenes, Total	ND	0.019	0.071		mg/Kg	1	8/20/2021 8:48:17 AM	A80682
Surr: Dibromofluoromethane	105		70-130		%Rec	1	8/20/2021 8:48:17 AM	A80682
Surr: 1,2-Dichloroethane-d4	96.6		70-130		%Rec	1	8/20/2021 8:48:17 AM	A80682
Surr: Toluene-d8	108		70-130		%Rec	1	8/20/2021 8:48:17 AM	A80682
Surr: 4-Bromofluorobenzene	92.2		70-130		%Rec	1	8/20/2021 8:48:17 AM	A80682
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.99	3.6		mg/Kg	1	8/20/2021 8:48:17 AM	B80682
Surr: BFB	96.2	0	70-130		%Rec	1	8/20/2021 8:48:17 AM	B80682

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 3:30:00 PM
Lab ID: 2108785-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.9	9.9		mg/Kg	1	8/18/2021 12:14:08 PM	62022
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	8/18/2021 12:14:08 PM	62022
Surr: DNOP	133	0	70-130	S	%Rec	1	8/18/2021 12:14:08 PM	62022
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0051	0.0027	0.034	J	mg/Kg	1	9/1/2021 10:42:51 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/26/2021 5:42:14 PM	62196
Arsenic	ND	2.8	4.9		mg/Kg	2	8/26/2021 5:42:14 PM	62196
Barium	330	0.12	0.20		mg/Kg	2	8/26/2021 5:42:14 PM	62196
Beryllium	1.3	0.057	0.29		mg/Kg	2	8/26/2021 5:42:14 PM	62196
Cadmium	ND	0.098	0.20		mg/Kg	2	8/26/2021 5:42:14 PM	62196
Chromium	12	0.29	0.59		mg/Kg	2	8/26/2021 5:42:14 PM	62196
Cobalt	5.8	0.12	0.59		mg/Kg	2	8/26/2021 5:42:14 PM	62196
Iron	18000	250	250		mg/Kg	100	8/26/2021 5:44:29 PM	62196
Lead	6.3	0.52	0.59		mg/Kg	2	8/30/2021 1:48:20 PM	62196
Manganese	760	1.6	2.0		mg/Kg	10	8/26/2021 6:16:27 PM	62196
Nickel	12	0.39	0.98		mg/Kg	2	8/26/2021 5:42:14 PM	62196
Selenium	ND	4.3	4.9		mg/Kg	2	8/30/2021 1:48:20 PM	62196
Silver	ND	0.29	0.49		mg/Kg	2	8/26/2021 5:42:14 PM	62196
Vanadium	22	0.22	4.9		mg/Kg	2	8/26/2021 5:42:14 PM	62196
Zinc	17	2.6	4.9		mg/Kg	2	8/26/2021 5:42:14 PM	62196
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Aniline	ND	0.068	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Anthracene	ND	0.089	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Azobenzene	ND	0.098	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Benzo(a)pyrene	ND	0.092	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Benzoic acid	ND	0.12	0.98		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Benzyl alcohol	ND	0.080	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	8/26/2021 5:11:08 PM	62128

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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 3:30:00 PM
Lab ID: 2108785-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Carbazole	ND	0.086	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	8/26/2021 5:11:08 PM	62128
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2-Chloronaphthalene	ND	0.093	0.24		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2-Chlorophenol	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Chrysene	ND	0.087	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2,4-Dimethylphenol	ND	0.070	0.29		mg/Kg	1	8/26/2021 5:11:08 PM	62128
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Fluoranthene	ND	0.079	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Fluorene	ND	0.087	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Isophorone	ND	0.080	0.39		mg/Kg	1	8/26/2021 5:11:08 PM	62128
1-Methylnaphthalene	ND	0.090	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2-Methylphenol	ND	0.082	0.39		mg/Kg	1	8/26/2021 5:11:08 PM	62128
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128

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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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Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 3:30:00 PM
Lab ID: 2108785-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Naphthalene	ND	0.092	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2-Nitrophenol	ND	0.085	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
4-Nitrophenol	ND	0.081	0.24		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Phenanthrene	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Phenol	ND	0.076	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Pyrene	ND	0.074	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Pyridine	ND	0.16	0.39		mg/Kg	1	8/26/2021 5:11:08 PM	62128
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2,4,5-Trichlorophenol	ND	0.062	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
2,4,6-Trichlorophenol	ND	0.084	0.20		mg/Kg	1	8/26/2021 5:11:08 PM	62128
Surr: 2-Fluorophenol	46.9		20.3-74.1		%Rec	1	8/26/2021 5:11:08 PM	62128
Surr: Phenol-d5	55.7		23.1-92.7		%Rec	1	8/26/2021 5:11:08 PM	62128
Surr: 2,4,6-Tribromophenol	79.4		17.3-122		%Rec	1	8/26/2021 5:11:08 PM	62128
Surr: Nitrobenzene-d5	44.1		24.7-73.2		%Rec	1	8/26/2021 5:11:08 PM	62128
Surr: 2-Fluorobiphenyl	46.7		21.5-90.1		%Rec	1	8/26/2021 5:11:08 PM	62128
Surr: 4-Terphenyl-d14	69.7		15-140		%Rec	1	8/26/2021 5:11:08 PM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0078	0.020		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Toluene	ND	0.0052	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Ethylbenzene	ND	0.0098	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Methyl tert-butyl ether (MTBE)	ND	0.023	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,2,4-Trimethylbenzene	ND	0.0057	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,3,5-Trimethylbenzene	ND	0.0091	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,2-Dichloroethane (EDC)	ND	0.0092	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,2-Dibromoethane (EDB)	ND	0.016	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Naphthalene	ND	0.015	0.081		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1-Methylnaphthalene	ND	0.046	0.16		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
2-Methylnaphthalene	ND	0.037	0.16		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Acetone	ND	0.13	0.61		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Bromobenzene	ND	0.0086	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Bromodichloromethane	ND	0.0051	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Bromoform	ND	0.0097	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Bromomethane	ND	0.067	0.12		mg/Kg	1	8/20/2021 9:16:51 AM	A80682

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PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
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Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (0-0.5')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 3:30:00 PM
Lab ID: 2108785-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
2-Butanone	ND	0.18	0.40		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Carbon disulfide	ND	0.017	0.40		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Carbon tetrachloride	ND	0.0045	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Chlorobenzene	ND	0.0073	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Chloroethane	ND	0.015	0.081		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Chloroform	ND	0.0057	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Chloromethane	ND	0.014	0.12		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
2-Chlorotoluene	ND	0.0054	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
4-Chlorotoluene	ND	0.021	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
cis-1,2-DCE	ND	0.020	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
cis-1,3-Dichloropropene	ND	0.0060	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,2-Dibromo-3-chloropropane	ND	0.017	0.081		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Dibromochloromethane	ND	0.0065	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Dibromomethane	ND	0.0094	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,2-Dichlorobenzene	ND	0.0084	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,3-Dichlorobenzene	ND	0.0076	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,4-Dichlorobenzene	ND	0.011	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Dichlorodifluoromethane	ND	0.016	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,1-Dichloroethane	ND	0.012	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,1-Dichloroethene	ND	0.0087	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,2-Dichloropropane	ND	0.0079	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,3-Dichloropropane	ND	0.0089	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
2,2-Dichloropropane	ND	0.0057	0.081		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,1-Dichloropropene	ND	0.0049	0.081		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Hexachlorobutadiene	ND	0.027	0.081		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
2-Hexanone	ND	0.018	0.40		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Isopropylbenzene	ND	0.0075	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
4-Isopropyltoluene	ND	0.010	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
4-Methyl-2-pentanone	ND	0.047	0.40		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Methylene chloride	ND	0.029	0.12		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
n-Butylbenzene	ND	0.011	0.12		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
n-Propylbenzene	ND	0.0065	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
sec-Butylbenzene	ND	0.033	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Styrene	ND	0.0055	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
tert-Butylbenzene	ND	0.0093	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,1,1,2-Tetrachloroethane	ND	0.0059	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,1,2,2-Tetrachloroethane	ND	0.013	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Tetrachloroethene (PCE)	ND	0.011	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
trans-1,2-DCE	ND	0.0078	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-2 (0-0.5')
Project: North Drainage Ditch Area
Collection Date: 8/12/2021 3:30:00 PM
Lab ID: 2108785-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
trans-1,3-Dichloropropene	ND	0.0095	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,2,3-Trichlorobenzene	ND	0.0062	0.081		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,2,4-Trichlorobenzene	ND	0.014	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,1,1-Trichloroethane	ND	0.0089	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,1,2-Trichloroethane	ND	0.010	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Trichloroethene (TCE)	ND	0.0079	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Trichlorofluoromethane	ND	0.0092	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
1,2,3-Trichloropropane	ND	0.017	0.081		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Vinyl chloride	ND	0.0077	0.040		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Xylenes, Total	ND	0.021	0.081		mg/Kg	1	8/20/2021 9:16:51 AM	A80682
Surr: Dibromofluoromethane	106		70-130		%Rec	1	8/20/2021 9:16:51 AM	A80682
Surr: 1,2-Dichloroethane-d4	93.6		70-130		%Rec	1	8/20/2021 9:16:51 AM	A80682
Surr: Toluene-d8	108		70-130		%Rec	1	8/20/2021 9:16:51 AM	A80682
Surr: 4-Bromofluorobenzene	91.6		70-130		%Rec	1	8/20/2021 9:16:51 AM	A80682
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	1.1	4.0		mg/Kg	1	8/20/2021 9:16:51 AM	B80682
Surr: BFB	94.8	0	70-130		%Rec	1	8/20/2021 9:16:51 AM	B80682

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 3:35:00 PM
Lab ID: 2108785-006 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.9	9.9		mg/Kg	1	8/18/2021 12:25:48 PM	62022
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	8/18/2021 12:25:48 PM	62022
Surr: DNOP	121	0	70-130		%Rec	1	8/18/2021 12:25:48 PM	62022
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0027	0.033		mg/Kg	1	9/1/2021 10:45:00 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.4	5.2		mg/Kg	2	8/26/2021 5:46:30 PM	62196
Arsenic	ND	2.9	5.2		mg/Kg	2	8/26/2021 5:46:30 PM	62196
Barium	310	0.12	0.21		mg/Kg	2	8/26/2021 5:46:30 PM	62196
Beryllium	1.5	0.061	0.31		mg/Kg	2	8/26/2021 5:46:30 PM	62196
Cadmium	ND	0.10	0.21		mg/Kg	2	8/26/2021 5:46:30 PM	62196
Chromium	15	0.31	0.62		mg/Kg	2	8/26/2021 5:46:30 PM	62196
Cobalt	6.9	0.13	0.62		mg/Kg	2	8/26/2021 5:46:30 PM	62196
Iron	21000	260	260		mg/Kg	100	8/26/2021 5:48:45 PM	62196
Lead	5.3	0.55	0.62		mg/Kg	2	8/30/2021 1:50:00 PM	62196
Manganese	380	0.34	0.42		mg/Kg	2	8/26/2021 5:46:30 PM	62196
Nickel	14	0.41	1.0		mg/Kg	2	8/26/2021 5:46:30 PM	62196
Selenium	ND	4.6	5.2		mg/Kg	2	8/30/2021 1:50:00 PM	62196
Silver	ND	0.30	0.52		mg/Kg	2	8/26/2021 5:46:30 PM	62196
Vanadium	26	0.23	5.2		mg/Kg	2	8/26/2021 5:46:30 PM	62196
Zinc	21	2.8	5.2		mg/Kg	2	8/26/2021 5:46:30 PM	62196
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.089	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Acenaphthylene	ND	0.090	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Aniline	ND	0.069	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Anthracene	ND	0.090	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Azobenzene	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Benz(a)anthracene	ND	0.064	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Benzo(a)pyrene	ND	0.094	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Benzo(b)fluoranthene	ND	0.11	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Benzo(k)fluoranthene	ND	0.075	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Benzoic acid	ND	0.12	1.0		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Benzyl alcohol	ND	0.082	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Bis(2-chloroethoxy)methane	ND	0.076	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.50		mg/Kg	1	8/26/2021 5:53:05 PM	62128

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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 3:35:00 PM
Lab ID: 2108785-006 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Butyl benzyl phthalate	ND	0.061	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Carbazole	ND	0.088	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
4-Chloro-3-methylphenol	ND	0.084	0.50		mg/Kg	1	8/26/2021 5:53:05 PM	62128
4-Chloroaniline	ND	0.097	0.50		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2-Chloronaphthalene	ND	0.094	0.25		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
4-Chlorophenyl phenyl ether	ND	0.085	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Chrysene	ND	0.088	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Di-n-butyl phthalate	ND	0.28	0.40		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Di-n-octyl phthalate	ND	0.13	0.40		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
1,2-Dichlorobenzene	ND	0.081	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
1,3-Dichlorobenzene	ND	0.071	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
1,4-Dichlorobenzene	ND	0.085	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Diethyl phthalate	ND	0.33	0.50		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Dimethyl phthalate	ND	0.092	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2,4-Dichlorophenol	ND	0.081	0.40		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2,4-Dimethylphenol	ND	0.071	0.30		mg/Kg	1	8/26/2021 5:53:05 PM	62128
4,6-Dinitro-2-methylphenol	ND	0.084	0.40		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2,4-Dinitrophenol	ND	0.050	0.50		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2,6-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Fluoranthene	ND	0.081	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Fluorene	ND	0.089	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Hexachlorobenzene	ND	0.089	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Hexachlorobutadiene	ND	0.094	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Hexachloroethane	ND	0.088	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Isophorone	ND	0.081	0.40		mg/Kg	1	8/26/2021 5:53:05 PM	62128
1-Methylnaphthalene	ND	0.092	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2-Methylnaphthalene	ND	0.082	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2-Methylphenol	ND	0.084	0.40		mg/Kg	1	8/26/2021 5:53:05 PM	62128
3+4-Methylphenol	ND	0.082	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
N-Nitrosodi-n-propylamine	ND	0.092	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 3:35:00 PM
Lab ID: 2108785-006 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Naphthalene	ND	0.094	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
3-Nitroaniline	ND	0.12	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Nitrobenzene	ND	0.082	0.40		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2-Nitrophenol	ND	0.086	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
4-Nitrophenol	ND	0.082	0.25		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Pentachlorophenol	ND	0.086	0.40		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Phenanthrene	ND	0.10	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Phenol	ND	0.077	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Pyrene	ND	0.076	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Pyridine	ND	0.16	0.40		mg/Kg	1	8/26/2021 5:53:05 PM	62128
1,2,4-Trichlorobenzene	ND	0.091	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2,4,5-Trichlorophenol	ND	0.064	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
2,4,6-Trichlorophenol	ND	0.086	0.20		mg/Kg	1	8/26/2021 5:53:05 PM	62128
Surr: 2-Fluorophenol	43.1		20.3-74.1		%Rec	1	8/26/2021 5:53:05 PM	62128
Surr: Phenol-d5	50.0		23.1-92.7		%Rec	1	8/26/2021 5:53:05 PM	62128
Surr: 2,4,6-Tribromophenol	71.5		17.3-122		%Rec	1	8/26/2021 5:53:05 PM	62128
Surr: Nitrobenzene-d5	40.1		24.7-73.2		%Rec	1	8/26/2021 5:53:05 PM	62128
Surr: 2-Fluorobiphenyl	43.6		21.5-90.1		%Rec	1	8/26/2021 5:53:05 PM	62128
Surr: 4-Terphenyl-d14	66.8		15-140		%Rec	1	8/26/2021 5:53:05 PM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0055	0.014		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Toluene	ND	0.0037	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Ethylbenzene	ND	0.0070	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Methyl tert-butyl ether (MTBE)	ND	0.016	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,2,4-Trimethylbenzene	ND	0.0040	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,3,5-Trimethylbenzene	ND	0.0064	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,2-Dichloroethane (EDC)	ND	0.0065	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,2-Dibromoethane (EDB)	ND	0.011	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Naphthalene	ND	0.011	0.057		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1-Methylnaphthalene	ND	0.033	0.11		mg/Kg	1	8/24/2021 3:05:45 PM	62009
2-Methylnaphthalene	ND	0.026	0.11		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Acetone	ND	0.093	0.43		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Bromobenzene	ND	0.0061	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Bromodichloromethane	ND	0.0036	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Bromoform	ND	0.0069	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Bromomethane	ND	0.047	0.086		mg/Kg	1	8/24/2021 3:05:45 PM	62009

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (1.5-2')
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 3:35:00 PM
Lab ID: 2108785-006 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.12	0.29		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Carbon disulfide	ND	0.012	0.29		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Carbon tetrachloride	ND	0.0032	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Chlorobenzene	ND	0.0051	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Chloroethane	ND	0.011	0.057		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Chloroform	ND	0.0041	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Chloromethane	ND	0.010	0.086		mg/Kg	1	8/24/2021 3:05:45 PM	62009
2-Chlorotoluene	ND	0.0038	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
4-Chlorotoluene	ND	0.015	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
cis-1,2-DCE	ND	0.014	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
cis-1,3-Dichloropropene	ND	0.0042	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,2-Dibromo-3-chloropropane	ND	0.012	0.057		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Dibromochloromethane	ND	0.0046	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Dibromomethane	ND	0.0067	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,2-Dichlorobenzene	ND	0.0059	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,3-Dichlorobenzene	ND	0.0054	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,4-Dichlorobenzene	ND	0.0076	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Dichlorodifluoromethane	ND	0.011	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,1-Dichloroethane	ND	0.0083	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,1-Dichloroethene	ND	0.0061	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,2-Dichloropropane	ND	0.0056	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,3-Dichloropropane	ND	0.0063	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
2,2-Dichloropropane	ND	0.0041	0.057		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,1-Dichloropropene	ND	0.0035	0.057		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Hexachlorobutadiene	ND	0.019	0.057		mg/Kg	1	8/24/2021 3:05:45 PM	62009
2-Hexanone	ND	0.012	0.29		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Isopropylbenzene	ND	0.0053	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
4-Isopropyltoluene	0.012	0.0074	0.029	J	mg/Kg	1	8/24/2021 3:05:45 PM	62009
4-Methyl-2-pentanone	ND	0.033	0.29		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Methylene chloride	ND	0.021	0.086		mg/Kg	1	8/24/2021 3:05:45 PM	62009
n-Butylbenzene	ND	0.0076	0.086		mg/Kg	1	8/24/2021 3:05:45 PM	62009
n-Propylbenzene	ND	0.0046	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
sec-Butylbenzene	ND	0.024	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Styrene	ND	0.0039	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
tert-Butylbenzene	ND	0.0066	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,1,1,2-Tetrachloroethane	ND	0.0042	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,1,2,2-Tetrachloroethane	ND	0.0092	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Tetrachloroethene (PCE)	ND	0.0078	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
trans-1,2-DCE	ND	0.0055	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-2 (1.5-2')
Project: North Drainage Ditch Area
Collection Date: 8/12/2021 3:35:00 PM
Lab ID: 2108785-006 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0067	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,2,3-Trichlorobenzene	ND	0.0044	0.057		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,2,4-Trichlorobenzene	ND	0.0099	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,1,1-Trichloroethane	ND	0.0063	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,1,2-Trichloroethane	ND	0.0072	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Trichloroethene (TCE)	ND	0.0056	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Trichlorofluoromethane	ND	0.0065	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
1,2,3-Trichloropropane	ND	0.012	0.057		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Vinyl chloride	ND	0.0055	0.029		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Xylenes, Total	ND	0.015	0.057		mg/Kg	1	8/24/2021 3:05:45 PM	62009
Surr: Dibromofluoromethane	108		70-130		%Rec	1	8/24/2021 3:05:45 PM	62009
Surr: 1,2-Dichloroethane-d4	120		70-130		%Rec	1	8/24/2021 3:05:45 PM	62009
Surr: Toluene-d8	107		70-130		%Rec	1	8/24/2021 3:05:45 PM	62009
Surr: 4-Bromofluorobenzene	112		70-130		%Rec	1	8/24/2021 3:05:45 PM	62009
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1.0	0.79	2.9	J	mg/Kg	1	8/24/2021 3:05:45 PM	62009
Surr: BFB	106	0	70-130		%Rec	1	8/24/2021 3:05:45 PM	62009

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD-1
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021
Lab ID: 2108785-007 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.7	9.4		mg/Kg	1	8/18/2021 12:37:40 PM	62022
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/18/2021 12:37:40 PM	62022
Surr: DNOP	124	0	70-130		%Rec	1	8/18/2021 12:37:40 PM	62022
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0026	0.033		mg/Kg	1	9/1/2021 10:47:10 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	3.2	4.9		mg/Kg	2	8/26/2021 5:50:46 PM	62196
Arsenic	ND	2.7	4.9		mg/Kg	2	8/26/2021 5:50:46 PM	62196
Barium	120	0.12	0.19		mg/Kg	2	8/26/2021 5:50:46 PM	62196
Beryllium	1.5	0.057	0.29		mg/Kg	2	8/26/2021 5:50:46 PM	62196
Cadmium	ND	0.097	0.19		mg/Kg	2	8/26/2021 5:50:46 PM	62196
Chromium	17	0.29	0.58		mg/Kg	2	8/26/2021 5:50:46 PM	62196
Cobalt	7.5	0.12	0.58		mg/Kg	2	8/26/2021 5:50:46 PM	62196
Iron	26000	490	490		mg/Kg	200	8/31/2021 3:32:05 PM	62196
Lead	3.4	0.52	0.58		mg/Kg	2	8/30/2021 1:51:47 PM	62196
Manganese	400	0.32	0.39		mg/Kg	2	8/26/2021 5:50:46 PM	62196
Nickel	18	0.38	0.97		mg/Kg	2	8/26/2021 5:50:46 PM	62196
Selenium	ND	4.3	4.9		mg/Kg	2	8/30/2021 1:51:47 PM	62196
Silver	ND	0.28	0.49		mg/Kg	2	8/26/2021 5:50:46 PM	62196
Vanadium	24	0.22	4.9		mg/Kg	2	8/26/2021 5:50:46 PM	62196
Zinc	28	2.6	4.9		mg/Kg	2	8/26/2021 5:50:46 PM	62196
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.086	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Acenaphthylene	ND	0.087	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Aniline	ND	0.067	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Anthracene	ND	0.087	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Azobenzene	ND	0.096	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Benz(a)anthracene	ND	0.062	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Benzo(a)pyrene	ND	0.091	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Benzo(g,h,i)perylene	ND	0.098	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Benzo(k)fluoranthene	ND	0.073	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Benzoic acid	ND	0.12	0.97		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Benzyl alcohol	ND	0.079	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Bis(2-chloroethoxy)methane	ND	0.074	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Bis(2-chloroisopropyl)ether	ND	0.098	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.48		mg/Kg	1	8/26/2021 6:34:38 PM	62128

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
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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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Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD-1
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021
Lab ID: 2108785-007 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Butyl benzyl phthalate	ND	0.059	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Carbazole	ND	0.085	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
4-Chloro-3-methylphenol	ND	0.081	0.48		mg/Kg	1	8/26/2021 6:34:38 PM	62128
4-Chloroaniline	ND	0.094	0.48		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2-Chloronaphthalene	ND	0.092	0.24		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
4-Chlorophenyl phenyl ether	ND	0.082	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Chrysene	ND	0.085	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Di-n-octyl phthalate	ND	0.12	0.39		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
1,2-Dichlorobenzene	ND	0.078	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
1,3-Dichlorobenzene	ND	0.069	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
1,4-Dichlorobenzene	ND	0.082	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Diethyl phthalate	ND	0.32	0.48		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Dimethyl phthalate	ND	0.089	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2,4-Dichlorophenol	ND	0.078	0.39		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	8/26/2021 6:34:38 PM	62128
4,6-Dinitro-2-methylphenol	ND	0.081	0.39		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2,4-Dinitrophenol	ND	0.049	0.48		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2,6-Dinitrotoluene	ND	0.098	0.48		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Fluoranthene	ND	0.078	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Fluorene	ND	0.086	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Hexachlorobenzene	ND	0.086	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Hexachlorobutadiene	ND	0.091	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Hexachloroethane	ND	0.085	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Isophorone	ND	0.079	0.39		mg/Kg	1	8/26/2021 6:34:38 PM	62128
1-Methylnaphthalene	ND	0.089	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2-Methylnaphthalene	ND	0.080	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2-Methylphenol	ND	0.081	0.39		mg/Kg	1	8/26/2021 6:34:38 PM	62128
3+4-Methylphenol	ND	0.080	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
N-Nitrosodi-n-propylamine	ND	0.089	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD-1
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021
Lab ID: 2108785-007 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Naphthalene	ND	0.091	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2-Nitroaniline	ND	0.099	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Nitrobenzene	ND	0.079	0.39		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2-Nitrophenol	ND	0.083	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
4-Nitrophenol	ND	0.079	0.24		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Pentachlorophenol	ND	0.083	0.39		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Phenanthrene	ND	0.099	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Phenol	ND	0.074	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Pyrene	ND	0.073	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Pyridine	ND	0.16	0.39		mg/Kg	1	8/26/2021 6:34:38 PM	62128
1,2,4-Trichlorobenzene	ND	0.089	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2,4,5-Trichlorophenol	ND	0.062	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
2,4,6-Trichlorophenol	ND	0.083	0.19		mg/Kg	1	8/26/2021 6:34:38 PM	62128
Surr: 2-Fluorophenol	55.6		20.3-74.1		%Rec	1	8/26/2021 6:34:38 PM	62128
Surr: Phenol-d5	65.1		23.1-92.7		%Rec	1	8/26/2021 6:34:38 PM	62128
Surr: 2,4,6-Tribromophenol	70.7		17.3-122		%Rec	1	8/26/2021 6:34:38 PM	62128
Surr: Nitrobenzene-d5	54.0		24.7-73.2		%Rec	1	8/26/2021 6:34:38 PM	62128
Surr: 2-Fluorobiphenyl	52.0		21.5-90.1		%Rec	1	8/26/2021 6:34:38 PM	62128
Surr: 4-Terphenyl-d14	67.2		15-140		%Rec	1	8/26/2021 6:34:38 PM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0074	0.019		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Toluene	ND	0.0049	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Ethylbenzene	ND	0.0093	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Methyl tert-butyl ether (MTBE)	ND	0.022	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,2,4-Trimethylbenzene	ND	0.0054	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,3,5-Trimethylbenzene	ND	0.0086	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,2-Dichloroethane (EDC)	ND	0.0087	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,2-Dibromoethane (EDB)	ND	0.015	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Naphthalene	ND	0.014	0.076		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1-Methylnaphthalene	ND	0.044	0.15		mg/Kg	1	8/24/2021 3:33:05 PM	62009
2-Methylnaphthalene	ND	0.035	0.15		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Acetone	ND	0.12	0.57		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Bromobenzene	ND	0.0081	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Bromodichloromethane	ND	0.0049	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Bromoform	ND	0.0092	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Bromomethane	ND	0.063	0.11		mg/Kg	1	8/24/2021 3:33:05 PM	62009

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD-1
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021
Lab ID: 2108785-007 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.17	0.38		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Carbon disulfide	ND	0.016	0.38		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Carbon tetrachloride	ND	0.0043	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Chlorobenzene	ND	0.0069	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Chloroethane	ND	0.014	0.076		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Chloroform	ND	0.0054	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Chloromethane	ND	0.013	0.11		mg/Kg	1	8/24/2021 3:33:05 PM	62009
2-Chlorotoluene	ND	0.0051	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
4-Chlorotoluene	ND	0.020	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
cis-1,2-DCE	ND	0.019	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
cis-1,3-Dichloropropene	ND	0.0057	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,2-Dibromo-3-chloropropane	ND	0.016	0.076		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Dibromochloromethane	ND	0.0061	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Dibromomethane	ND	0.0089	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,2-Dichlorobenzene	ND	0.0079	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,3-Dichlorobenzene	ND	0.0072	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,4-Dichlorobenzene	ND	0.010	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Dichlorodifluoromethane	ND	0.015	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,1-Dichloroethane	ND	0.011	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,1-Dichloroethene	ND	0.0082	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,2-Dichloropropane	ND	0.0074	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,3-Dichloropropane	ND	0.0084	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
2,2-Dichloropropane	ND	0.0054	0.076		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,1-Dichloropropene	ND	0.0046	0.076		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Hexachlorobutadiene	ND	0.026	0.076		mg/Kg	1	8/24/2021 3:33:05 PM	62009
2-Hexanone	ND	0.017	0.38		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Isopropylbenzene	ND	0.0071	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
4-Isopropyltoluene	ND	0.0098	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
4-Methyl-2-pentanone	ND	0.045	0.38		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Methylene chloride	ND	0.028	0.11		mg/Kg	1	8/24/2021 3:33:05 PM	62009
n-Butylbenzene	ND	0.010	0.11		mg/Kg	1	8/24/2021 3:33:05 PM	62009
n-Propylbenzene	ND	0.0062	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
sec-Butylbenzene	ND	0.031	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Styrene	ND	0.0052	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
tert-Butylbenzene	ND	0.0088	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,1,1,2-Tetrachloroethane	ND	0.0056	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,1,2,2-Tetrachloroethane	ND	0.012	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Tetrachloroethene (PCE)	ND	0.010	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
trans-1,2-DCE	ND	0.0074	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-BD-1
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021
Lab ID: 2108785-007 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0090	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,2,3-Trichlorobenzene	ND	0.0059	0.076		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,2,4-Trichlorobenzene	ND	0.013	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,1,1-Trichloroethane	ND	0.0084	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,1,2-Trichloroethane	ND	0.0096	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Trichloroethene (TCE)	ND	0.0075	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Trichlorofluoromethane	ND	0.0087	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
1,2,3-Trichloropropane	ND	0.016	0.076		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Vinyl chloride	ND	0.0073	0.038		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Xylenes, Total	ND	0.020	0.076		mg/Kg	1	8/24/2021 3:33:05 PM	62009
Surr: Dibromofluoromethane	104		70-130		%Rec	1	8/24/2021 3:33:05 PM	62009
Surr: 1,2-Dichloroethane-d4	114		70-130		%Rec	1	8/24/2021 3:33:05 PM	62009
Surr: Toluene-d8	106		70-130		%Rec	1	8/24/2021 3:33:05 PM	62009
Surr: 4-Bromofluorobenzene	112		70-130		%Rec	1	8/24/2021 3:33:05 PM	62009
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1.1	1.1	3.8	J	mg/Kg	1	8/24/2021 3:33:05 PM	62009
Surr: BFB	103	0	70-130		%Rec	1	8/24/2021 3:33:05 PM	62009

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-EB1
Project: North Drainage Ditch Area **Collection Date:** 8/12/2021 3:35:00 PM
Lab ID: 2108785-008 **Matrix:** AQUEOUS **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Benzene	ND	0.23	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Toluene	ND	0.20	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Ethylbenzene	ND	0.21	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Naphthalene	ND	0.50	2.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Acetone	20	2.5	10		µg/L	1	8/18/2021 4:07:00 AM	B80573
Bromobenzene	ND	0.28	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Bromodichloromethane	ND	0.20	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Bromoform	ND	0.31	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Bromomethane	ND	0.85	3.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
2-Butanone	6.7	2.0	10	J	µg/L	1	8/18/2021 4:07:00 AM	B80573
Carbon disulfide	ND	0.59	10		µg/L	1	8/18/2021 4:07:00 AM	B80573
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Chlorobenzene	ND	0.16	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Chloroethane	ND	0.38	2.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Chloroform	ND	0.13	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Chloromethane	ND	0.41	3.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Dibromochloromethane	ND	0.28	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Dibromomethane	ND	0.31	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	8/18/2021 4:07:00 AM	B80573

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB1
Project: North Drainage Ditch Area
Collection Date: 8/12/2021 3:35:00 PM
Lab ID: 2108785-008 **Matrix:** AQUEOUS **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
2-Hexanone	ND	1.8	10		µg/L	1	8/18/2021 4:07:00 AM	B80573
Isopropylbenzene	ND	0.18	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	8/18/2021 4:07:00 AM	B80573
Methylene Chloride	ND	0.50	3.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
n-Butylbenzene	ND	0.25	3.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
n-Propylbenzene	ND	0.18	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Styrene	ND	0.14	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Vinyl chloride	ND	0.32	1.0		µg/L	1	8/18/2021 4:07:00 AM	B80573
Xylenes, Total	ND	0.37	1.5		µg/L	1	8/18/2021 4:07:00 AM	B80573
Surr: 1,2-Dichloroethane-d4	84.7	0	70-130		%Rec	1	8/18/2021 4:07:00 AM	B80573
Surr: 4-Bromofluorobenzene	96.6	0	70-130		%Rec	1	8/18/2021 4:07:00 AM	B80573
Surr: Dibromofluoromethane	87.4	0	70-130		%Rec	1	8/18/2021 4:07:00 AM	B80573
Surr: Toluene-d8	92.3	0	70-130		%Rec	1	8/18/2021 4:07:00 AM	B80573

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB2
Project: North Drainage Ditch Area
Collection Date: 8/13/2021 9:51:00 AM
Lab ID: 2108785-009 **Matrix:** AQUEOUS **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
Benzene	ND	0.23	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Toluene	ND	0.20	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Ethylbenzene	ND	0.21	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Naphthalene	ND	0.50	2.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Acetone	3.9	2.5	10	J	µg/L	1	8/18/2021 4:30:00 AM	B80573
Bromobenzene	ND	0.28	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Bromodichloromethane	ND	0.20	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Bromoform	ND	0.31	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Bromomethane	ND	0.85	3.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
2-Butanone	ND	2.0	10		µg/L	1	8/18/2021 4:30:00 AM	B80573
Carbon disulfide	ND	0.59	10		µg/L	1	8/18/2021 4:30:00 AM	B80573
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Chlorobenzene	ND	0.16	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Chloroethane	ND	0.38	2.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Chloroform	ND	0.13	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Chloromethane	ND	0.41	3.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Dibromochloromethane	ND	0.28	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Dibromomethane	ND	0.31	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	8/18/2021 4:30:00 AM	B80573

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-EB2
Project: North Drainage Ditch Area
Collection Date: 8/13/2021 9:51:00 AM
Lab ID: 2108785-009 **Matrix:** AQUEOUS **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **CCM**	
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
2-Hexanone	ND	1.8	10		µg/L	1	8/18/2021 4:30:00 AM	B80573
Isopropylbenzene	ND	0.18	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	8/18/2021 4:30:00 AM	B80573
Methylene Chloride	ND	0.50	3.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
n-Butylbenzene	ND	0.25	3.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
n-Propylbenzene	ND	0.18	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Styrene	ND	0.14	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Vinyl chloride	ND	0.32	1.0		µg/L	1	8/18/2021 4:30:00 AM	B80573
Xylenes, Total	ND	0.37	1.5		µg/L	1	8/18/2021 4:30:00 AM	B80573
Surr: 1,2-Dichloroethane-d4	85.0	0	70-130		%Rec	1	8/18/2021 4:30:00 AM	B80573
Surr: 4-Bromofluorobenzene	97.7	0	70-130		%Rec	1	8/18/2021 4:30:00 AM	B80573
Surr: Dibromofluoromethane	87.8	0	70-130		%Rec	1	8/18/2021 4:30:00 AM	B80573
Surr: Toluene-d8	93.7	0	70-130		%Rec	1	8/18/2021 4:30:00 AM	B80573

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (5.5-6')
Project: North Drainage Ditch Area **Collection Date:** 8/13/2021 9:35:00 AM
Lab ID: 2108785-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.8	9.6		mg/Kg	1	8/18/2021 12:49:22 PM	62022
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/18/2021 12:49:22 PM	62022
Surr: DNOP	125	0	70-130		%Rec	1	8/18/2021 12:49:22 PM	62022
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.022	0.0028	0.035	J	mg/Kg	1	9/1/2021 10:53:38 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	1.6	2.5		mg/Kg	1	8/26/2021 5:06:23 PM	62196
Arsenic	ND	1.4	2.5		mg/Kg	1	8/26/2021 5:06:23 PM	62196
Barium	490	0.12	0.20		mg/Kg	2	8/26/2021 5:55:05 PM	62196
Beryllium	0.65	0.029	0.15		mg/Kg	1	8/26/2021 5:06:23 PM	62196
Cadmium	ND	0.049	0.098		mg/Kg	1	8/26/2021 5:06:23 PM	62196
Chromium	6.8	0.15	0.30		mg/Kg	1	8/26/2021 5:06:23 PM	62196
Cobalt	3.2	0.060	0.30		mg/Kg	1	8/26/2021 5:06:23 PM	62196
Iron	11000	250	250		mg/Kg	100	8/26/2021 6:08:13 PM	62196
Lead	1.6	0.26	0.30		mg/Kg	1	8/30/2021 1:53:34 PM	62196
Manganese	650	1.6	2.0		mg/Kg	10	8/26/2021 6:05:53 PM	62196
Nickel	5.6	0.19	0.49		mg/Kg	1	8/26/2021 5:06:23 PM	62196
Selenium	ND	2.2	2.5		mg/Kg	1	8/30/2021 1:53:34 PM	62196
Silver	ND	0.14	0.25		mg/Kg	1	8/26/2021 5:06:23 PM	62196
Vanadium	17	0.11	2.5		mg/Kg	1	8/26/2021 5:06:23 PM	62196
Zinc	11	1.3	2.5		mg/Kg	1	8/26/2021 5:06:23 PM	62196
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.085	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Acenaphthylene	ND	0.086	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Aniline	ND	0.066	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Anthracene	ND	0.086	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Azobenzene	ND	0.095	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Benz(a)anthracene	ND	0.061	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Benzo(a)pyrene	ND	0.090	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Benzo(g,h,i)perylene	ND	0.097	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Benzo(k)fluoranthene	ND	0.072	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Benzoic acid	ND	0.12	0.95		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Benzyl alcohol	ND	0.078	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Bis(2-chloroethoxy)methane	ND	0.073	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Bis(2-chloroisopropyl)ether	ND	0.097	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.48		mg/Kg	1	8/26/2021 7:16:07 PM	62128

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (5.5-6')
Project: North Drainage Ditch Area **Collection Date:** 8/13/2021 9:35:00 AM
Lab ID: 2108785-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Butyl benzyl phthalate	ND	0.058	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Carbazole	ND	0.084	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
4-Chloro-3-methylphenol	ND	0.080	0.48		mg/Kg	1	8/26/2021 7:16:07 PM	62128
4-Chloroaniline	ND	0.093	0.48		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2-Chloronaphthalene	ND	0.090	0.24		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
4-Chlorophenyl phenyl ether	ND	0.081	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Chrysene	ND	0.084	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Di-n-butyl phthalate	ND	0.27	0.38		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Di-n-octyl phthalate	ND	0.12	0.38		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Dibenzofuran	ND	0.099	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
1,2-Dichlorobenzene	ND	0.077	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
1,3-Dichlorobenzene	ND	0.068	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
1,4-Dichlorobenzene	ND	0.081	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Diethyl phthalate	ND	0.31	0.48		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Dimethyl phthalate	ND	0.088	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2,4-Dichlorophenol	ND	0.077	0.38		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2,4-Dimethylphenol	ND	0.068	0.29		mg/Kg	1	8/26/2021 7:16:07 PM	62128
4,6-Dinitro-2-methylphenol	ND	0.080	0.38		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2,4-Dinitrophenol	ND	0.048	0.48		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2,6-Dinitrotoluene	ND	0.097	0.48		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Fluoranthene	ND	0.077	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Fluorene	ND	0.085	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Hexachlorobenzene	ND	0.085	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Hexachlorobutadiene	ND	0.089	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Hexachloroethane	ND	0.084	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Isophorone	ND	0.078	0.38		mg/Kg	1	8/26/2021 7:16:07 PM	62128
1-Methylnaphthalene	ND	0.088	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2-Methylnaphthalene	ND	0.079	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2-Methylphenol	ND	0.080	0.38		mg/Kg	1	8/26/2021 7:16:07 PM	62128
3+4-Methylphenol	ND	0.079	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
N-Nitrosodi-n-propylamine	ND	0.088	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (5.5-6')
Project: North Drainage Ditch Area **Collection Date:** 8/13/2021 9:35:00 AM
Lab ID: 2108785-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.099	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Naphthalene	0.10	0.090	0.19	J	mg/Kg	1	8/26/2021 7:16:07 PM	62128
2-Nitroaniline	ND	0.098	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Nitrobenzene	ND	0.078	0.38		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2-Nitrophenol	ND	0.082	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
4-Nitrophenol	ND	0.078	0.24		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Pentachlorophenol	ND	0.082	0.38		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Phenanthrene	ND	0.097	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Phenol	ND	0.073	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Pyrene	ND	0.072	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Pyridine	ND	0.15	0.38		mg/Kg	1	8/26/2021 7:16:07 PM	62128
1,2,4-Trichlorobenzene	ND	0.087	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2,4,5-Trichlorophenol	ND	0.061	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
2,4,6-Trichlorophenol	ND	0.082	0.19		mg/Kg	1	8/26/2021 7:16:07 PM	62128
Surr: 2-Fluorophenol	35.2		20.3-74.1		%Rec	1	8/26/2021 7:16:07 PM	62128
Surr: Phenol-d5	41.8		23.1-92.7		%Rec	1	8/26/2021 7:16:07 PM	62128
Surr: 2,4,6-Tribromophenol	62.0		17.3-122		%Rec	1	8/26/2021 7:16:07 PM	62128
Surr: Nitrobenzene-d5	30.4		24.7-73.2		%Rec	1	8/26/2021 7:16:07 PM	62128
Surr: 2-Fluorobiphenyl	33.3		21.5-90.1		%Rec	1	8/26/2021 7:16:07 PM	62128
Surr: 4-Terphenyl-d14	65.8		15-140		%Rec	1	8/26/2021 7:16:07 PM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	0.099	0.0049	0.013		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Toluene	ND	0.0033	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Ethylbenzene	0.083	0.0062	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Methyl tert-butyl ether (MTBE)	ND	0.014	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,2,4-Trimethylbenzene	0.62	0.0036	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,3,5-Trimethylbenzene	0.048	0.0057	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,2-Dichloroethane (EDC)	ND	0.0058	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,2-Dibromoethane (EDB)	ND	0.010	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Naphthalene	0.33	0.0095	0.051		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1-Methylnaphthalene	0.16	0.029	0.10		mg/Kg	1	8/24/2021 4:00:24 PM	62009
2-Methylnaphthalene	0.025	0.024	0.10	J	mg/Kg	1	8/24/2021 4:00:24 PM	62009
Acetone	ND	0.083	0.38		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Bromobenzene	ND	0.0054	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Bromodichloromethane	ND	0.0032	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Bromoform	ND	0.0062	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Bromomethane	ND	0.042	0.077		mg/Kg	1	8/24/2021 4:00:24 PM	62009

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-2 (5.5-6')
Project: North Drainage Ditch Area
Collection Date: 8/13/2021 9:35:00 AM
Lab ID: 2108785-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.11	0.26		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Carbon disulfide	ND	0.011	0.26		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Carbon tetrachloride	ND	0.0028	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Chlorobenzene	ND	0.0046	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Chloroethane	0.019	0.0095	0.051	J	mg/Kg	1	8/24/2021 4:00:24 PM	62009
Chloroform	0.0066	0.0036	0.026	J	mg/Kg	1	8/24/2021 4:00:24 PM	62009
Chloromethane	ND	0.0089	0.077		mg/Kg	1	8/24/2021 4:00:24 PM	62009
2-Chlorotoluene	ND	0.0034	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
4-Chlorotoluene	ND	0.013	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
cis-1,2-DCE	ND	0.013	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
cis-1,3-Dichloropropene	ND	0.0038	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,2-Dibromo-3-chloropropane	ND	0.011	0.051		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Dibromochloromethane	ND	0.0041	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Dibromomethane	ND	0.0060	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,2-Dichlorobenzene	ND	0.0053	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,3-Dichlorobenzene	ND	0.0048	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,4-Dichlorobenzene	ND	0.0068	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Dichlorodifluoromethane	ND	0.0099	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,1-Dichloroethane	ND	0.0074	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,1-Dichloroethene	ND	0.0055	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,2-Dichloropropane	ND	0.0050	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,3-Dichloropropane	ND	0.0056	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
2,2-Dichloropropane	ND	0.0036	0.051		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,1-Dichloropropene	ND	0.0031	0.051		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Hexachlorobutadiene	ND	0.017	0.051		mg/Kg	1	8/24/2021 4:00:24 PM	62009
2-Hexanone	ND	0.011	0.26		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Isopropylbenzene	0.034	0.0047	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
4-Isopropyltoluene	0.015	0.0066	0.026	J	mg/Kg	1	8/24/2021 4:00:24 PM	62009
4-Methyl-2-pentanone	ND	0.030	0.26		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Methylene chloride	ND	0.018	0.077		mg/Kg	1	8/24/2021 4:00:24 PM	62009
n-Butylbenzene	0.060	0.0068	0.077	J	mg/Kg	1	8/24/2021 4:00:24 PM	62009
n-Propylbenzene	0.11	0.0041	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
sec-Butylbenzene	0.026	0.021	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Styrene	ND	0.0035	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
tert-Butylbenzene	ND	0.0059	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,1,1,2-Tetrachloroethane	ND	0.0037	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,1,2,2-Tetrachloroethane	ND	0.0083	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Tetrachloroethene (PCE)	ND	0.0070	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
trans-1,2-DCE	ND	0.0049	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-2 (5.5-6')
Project: North Drainage Ditch Area
Collection Date: 8/13/2021 9:35:00 AM
Lab ID: 2108785-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0060	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,2,3-Trichlorobenzene	ND	0.0039	0.051		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,2,4-Trichlorobenzene	ND	0.0089	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,1,1-Trichloroethane	ND	0.0056	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,1,2-Trichloroethane	ND	0.0064	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Trichloroethene (TCE)	ND	0.0050	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Trichlorofluoromethane	ND	0.0058	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
1,2,3-Trichloropropane	ND	0.011	0.051		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Vinyl chloride	ND	0.0049	0.026		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Xylenes, Total	0.070	0.013	0.051		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Surr: Dibromofluoromethane	96.2		70-130		%Rec	1	8/24/2021 4:00:24 PM	62009
Surr: 1,2-Dichloroethane-d4	108		70-130		%Rec	1	8/24/2021 4:00:24 PM	62009
Surr: Toluene-d8	105		70-130		%Rec	1	8/24/2021 4:00:24 PM	62009
Surr: 4-Bromofluorobenzene	113		70-130		%Rec	1	8/24/2021 4:00:24 PM	62009
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	5.5	0.71	2.6		mg/Kg	1	8/24/2021 4:00:24 PM	62009
Surr: BFB	103	0	70-130		%Rec	1	8/24/2021 4:00:24 PM	62009

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		

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (30.5-31')
Project: North Drainage Ditch Area **Collection Date:** 8/13/2021 9:43:00 AM
Lab ID: 2108785-011 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	4.9	4.7	9.6	J	mg/Kg	1	8/18/2021 1:01:02 PM	62022
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/18/2021 1:01:02 PM	62022
Surr: DNOP	126	0	70-130		%Rec	1	8/18/2021 1:01:02 PM	62022
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0027	0.034		mg/Kg	1	9/1/2021 10:55:48 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	1.6	2.5		mg/Kg	1	8/26/2021 5:08:38 PM	62196
Arsenic	ND	1.4	2.5		mg/Kg	1	8/26/2021 5:08:38 PM	62196
Barium	220	0.059	0.098		mg/Kg	1	8/26/2021 5:08:38 PM	62196
Beryllium	1.2	0.029	0.15		mg/Kg	1	8/26/2021 5:08:38 PM	62196
Cadmium	ND	0.049	0.098		mg/Kg	1	8/26/2021 5:08:38 PM	62196
Chromium	14	0.15	0.29		mg/Kg	1	8/26/2021 5:08:38 PM	62196
Cobalt	6.1	0.059	0.29		mg/Kg	1	8/26/2021 5:08:38 PM	62196
Iron	21000	250	250		mg/Kg	100	8/26/2021 6:12:25 PM	62196
Lead	2.9	0.26	0.29		mg/Kg	1	8/30/2021 1:55:27 PM	62196
Manganese	440	0.32	0.39		mg/Kg	2	8/26/2021 6:10:15 PM	62196
Nickel	15	0.19	0.49		mg/Kg	1	8/26/2021 5:08:38 PM	62196
Selenium	ND	2.2	2.5		mg/Kg	1	8/30/2021 1:55:27 PM	62196
Silver	ND	0.14	0.25		mg/Kg	1	8/26/2021 5:08:38 PM	62196
Vanadium	16	0.11	2.5		mg/Kg	1	8/26/2021 5:08:38 PM	62196
Zinc	23	1.3	2.5		mg/Kg	1	8/26/2021 5:08:38 PM	62196
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.085	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Acenaphthylene	ND	0.086	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Aniline	ND	0.066	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Anthracene	ND	0.086	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Azobenzene	ND	0.095	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Benz(a)anthracene	ND	0.061	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Benzo(a)pyrene	ND	0.090	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Benzo(g,h,i)perylene	ND	0.097	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Benzo(k)fluoranthene	ND	0.071	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Benzoic acid	ND	0.12	0.95		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Benzyl alcohol	ND	0.078	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Bis(2-chloroethoxy)methane	ND	0.073	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Bis(2-chloroethyl)ether	ND	0.099	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Bis(2-chloroisopropyl)ether	ND	0.097	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Bis(2-ethylhexyl)phthalate	ND	0.20	0.47		mg/Kg	1	8/26/2021 7:57:20 PM	62128

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
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (30.5-31')
Project: North Drainage Ditch Area **Collection Date:** 8/13/2021 9:43:00 AM
Lab ID: 2108785-011 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.099	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Butyl benzyl phthalate	ND	0.058	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Carbazole	ND	0.084	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
4-Chloro-3-methylphenol	ND	0.080	0.47		mg/Kg	1	8/26/2021 7:57:20 PM	62128
4-Chloroaniline	ND	0.092	0.47		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2-Chloronaphthalene	ND	0.090	0.24		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
4-Chlorophenyl phenyl ether	ND	0.081	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Chrysene	ND	0.084	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Di-n-butyl phthalate	ND	0.27	0.38		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Di-n-octyl phthalate	ND	0.12	0.38		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Dibenzofuran	ND	0.099	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
1,2-Dichlorobenzene	ND	0.077	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
1,3-Dichlorobenzene	ND	0.068	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
1,4-Dichlorobenzene	ND	0.081	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Diethyl phthalate	ND	0.31	0.47		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Dimethyl phthalate	ND	0.088	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2,4-Dichlorophenol	ND	0.077	0.38		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2,4-Dimethylphenol	ND	0.068	0.28		mg/Kg	1	8/26/2021 7:57:20 PM	62128
4,6-Dinitro-2-methylphenol	ND	0.080	0.38		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2,4-Dinitrophenol	ND	0.048	0.47		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2,4-Dinitrotoluene	ND	0.12	0.47		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2,6-Dinitrotoluene	ND	0.097	0.47		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Fluoranthene	ND	0.077	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Fluorene	ND	0.085	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Hexachlorobenzene	ND	0.085	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Hexachlorobutadiene	ND	0.089	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Hexachloroethane	ND	0.084	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Isophorone	ND	0.078	0.38		mg/Kg	1	8/26/2021 7:57:20 PM	62128
1-Methylnaphthalene	ND	0.087	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2-Methylnaphthalene	ND	0.078	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2-Methylphenol	ND	0.080	0.38		mg/Kg	1	8/26/2021 7:57:20 PM	62128
3+4-Methylphenol	ND	0.078	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
N-Nitrosodi-n-propylamine	ND	0.088	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (30.5-31')
Project: North Drainage Ditch Area **Collection Date:** 8/13/2021 9:43:00 AM
Lab ID: 2108785-011 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.099	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Naphthalene	ND	0.089	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2-Nitroaniline	ND	0.097	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Nitrobenzene	ND	0.078	0.38		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2-Nitrophenol	ND	0.082	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
4-Nitrophenol	ND	0.078	0.24		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Pentachlorophenol	ND	0.082	0.38		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Phenanthrene	ND	0.097	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Phenol	ND	0.073	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Pyrene	ND	0.072	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Pyridine	ND	0.15	0.38		mg/Kg	1	8/26/2021 7:57:20 PM	62128
1,2,4-Trichlorobenzene	ND	0.087	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2,4,5-Trichlorophenol	ND	0.061	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
2,4,6-Trichlorophenol	ND	0.082	0.19		mg/Kg	1	8/26/2021 7:57:20 PM	62128
Surr: 2-Fluorophenol	47.1		20.3-74.1		%Rec	1	8/26/2021 7:57:20 PM	62128
Surr: Phenol-d5	59.1		23.1-92.7		%Rec	1	8/26/2021 7:57:20 PM	62128
Surr: 2,4,6-Tribromophenol	66.0		17.3-122		%Rec	1	8/26/2021 7:57:20 PM	62128
Surr: Nitrobenzene-d5	45.5		24.7-73.2		%Rec	1	8/26/2021 7:57:20 PM	62128
Surr: 2-Fluorobiphenyl	50.7		21.5-90.1		%Rec	1	8/26/2021 7:57:20 PM	62128
Surr: 4-Terphenyl-d14	61.7		15-140		%Rec	1	8/26/2021 7:57:20 PM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0062	0.016		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Toluene	ND	0.0041	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Ethylbenzene	ND	0.0078	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Methyl tert-butyl ether (MTBE)	ND	0.018	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,2,4-Trimethylbenzene	ND	0.0045	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,3,5-Trimethylbenzene	ND	0.0072	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,2-Dichloroethane (EDC)	ND	0.0073	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,2-Dibromoethane (EDB)	ND	0.013	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Naphthalene	0.015	0.012	0.064	J	mg/Kg	1	8/24/2021 4:27:46 PM	62009
1-Methylnaphthalene	ND	0.037	0.13		mg/Kg	1	8/24/2021 4:27:46 PM	62009
2-Methylnaphthalene	ND	0.030	0.13		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Acetone	ND	0.10	0.48		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Bromobenzene	ND	0.0068	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Bromodichloromethane	ND	0.0041	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Bromoform	ND	0.0077	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Bromomethane	ND	0.053	0.096		mg/Kg	1	8/24/2021 4:27:46 PM	62009

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-2 (30.5-31')
Project: North Drainage Ditch Area
Collection Date: 8/13/2021 9:43:00 AM
Lab ID: 2108785-011 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.14	0.32		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Carbon disulfide	ND	0.013	0.32		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Carbon tetrachloride	ND	0.0036	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Chlorobenzene	ND	0.0058	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Chloroethane	ND	0.012	0.064		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Chloroform	ND	0.0045	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Chloromethane	ND	0.011	0.096		mg/Kg	1	8/24/2021 4:27:46 PM	62009
2-Chlorotoluene	ND	0.0043	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
4-Chlorotoluene	ND	0.017	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
cis-1,2-DCE	ND	0.016	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
cis-1,3-Dichloropropene	ND	0.0048	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,2-Dibromo-3-chloropropane	ND	0.014	0.064		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Dibromochloromethane	ND	0.0051	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Dibromomethane	ND	0.0075	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,2-Dichlorobenzene	ND	0.0067	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,3-Dichlorobenzene	ND	0.0061	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,4-Dichlorobenzene	ND	0.0086	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Dichlorodifluoromethane	ND	0.012	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,1-Dichloroethane	ND	0.0093	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,1-Dichloroethene	ND	0.0069	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,2-Dichloropropane	ND	0.0062	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,3-Dichloropropane	ND	0.0070	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
2,2-Dichloropropane	ND	0.0046	0.064		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,1-Dichloropropene	ND	0.0039	0.064		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Hexachlorobutadiene	ND	0.022	0.064		mg/Kg	1	8/24/2021 4:27:46 PM	62009
2-Hexanone	ND	0.014	0.32		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Isopropylbenzene	ND	0.0059	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
4-Isopropyltoluene	ND	0.0083	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
4-Methyl-2-pentanone	ND	0.037	0.32		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Methylene chloride	ND	0.023	0.096		mg/Kg	1	8/24/2021 4:27:46 PM	62009
n-Butylbenzene	ND	0.0086	0.096		mg/Kg	1	8/24/2021 4:27:46 PM	62009
n-Propylbenzene	ND	0.0052	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
sec-Butylbenzene	ND	0.026	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Styrene	ND	0.0044	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
tert-Butylbenzene	ND	0.0074	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,1,1,2-Tetrachloroethane	ND	0.0047	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,1,2,2-Tetrachloroethane	ND	0.010	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Tetrachloroethene (PCE)	ND	0.0088	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
trans-1,2-DCE	ND	0.0062	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009

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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-2 (30.5-31')
Project: North Drainage Ditch Area
Collection Date: 8/13/2021 9:43:00 AM
Lab ID: 2108785-011
Matrix: MEOH (SOIL)
Received Date: 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0075	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,2,3-Trichlorobenzene	ND	0.0050	0.064		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,2,4-Trichlorobenzene	ND	0.011	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,1,1-Trichloroethane	ND	0.0071	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,1,2-Trichloroethane	ND	0.0080	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Trichloroethene (TCE)	ND	0.0063	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Trichlorofluoromethane	ND	0.0073	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
1,2,3-Trichloropropane	ND	0.013	0.064		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Vinyl chloride	ND	0.0061	0.032		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Xylenes, Total	ND	0.017	0.064		mg/Kg	1	8/24/2021 4:27:46 PM	62009
Surr: Dibromofluoromethane	104		70-130		%Rec	1	8/24/2021 4:27:46 PM	62009
Surr: 1,2-Dichloroethane-d4	116		70-130		%Rec	1	8/24/2021 4:27:46 PM	62009
Surr: Toluene-d8	107		70-130		%Rec	1	8/24/2021 4:27:46 PM	62009
Surr: 4-Bromofluorobenzene	115		70-130		%Rec	1	8/24/2021 4:27:46 PM	62009
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	0.99	0.89	3.2	J	mg/Kg	1	8/24/2021 4:27:46 PM	62009
Surr: BFB	106	0	70-130		%Rec	1	8/24/2021 4:27:46 PM	62009

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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-2 (33.5-34')
Project: North Drainage Ditch Area
Collection Date: 8/13/2021 9:51:00 AM
Lab ID: 2108785-012 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	4.8	9.8		mg/Kg	1	8/18/2021 1:12:51 PM	62022
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	8/18/2021 1:12:51 PM	62022
Surr: DNOP	102	0	70-130		%Rec	1	8/18/2021 1:12:51 PM	62022
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0028	0.036		mg/Kg	1	9/1/2021 10:57:57 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Antimony	ND	1.7	2.6		mg/Kg	1	8/26/2021 5:10:59 PM	62196
Arsenic	ND	1.5	2.6		mg/Kg	1	8/26/2021 5:10:59 PM	62196
Barium	110	0.062	0.10		mg/Kg	1	8/26/2021 5:10:59 PM	62196
Beryllium	1.2	0.030	0.15		mg/Kg	1	8/26/2021 5:10:59 PM	62196
Cadmium	ND	0.051	0.10		mg/Kg	1	8/26/2021 5:10:59 PM	62196
Chromium	11	0.15	0.31		mg/Kg	1	8/26/2021 5:10:59 PM	62196
Cobalt	5.7	0.062	0.31		mg/Kg	1	8/26/2021 5:10:59 PM	62196
Iron	20000	260	260		mg/Kg	100	8/26/2021 6:14:26 PM	62196
Lead	3.9	0.27	0.31		mg/Kg	1	8/30/2021 1:57:20 PM	62196
Manganese	170	0.17	0.21		mg/Kg	1	8/26/2021 5:10:59 PM	62196
Nickel	14	0.20	0.51		mg/Kg	1	8/26/2021 5:10:59 PM	62196
Selenium	ND	2.3	2.6		mg/Kg	1	8/30/2021 1:57:20 PM	62196
Silver	ND	0.15	0.26		mg/Kg	1	8/26/2021 5:10:59 PM	62196
Vanadium	14	0.12	2.6		mg/Kg	1	8/26/2021 5:10:59 PM	62196
Zinc	22	1.4	2.6		mg/Kg	1	8/26/2021 5:10:59 PM	62196
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.084	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Acenaphthylene	ND	0.085	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Aniline	ND	0.065	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Anthracene	ND	0.085	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Azobenzene	ND	0.094	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Benz(a)anthracene	ND	0.061	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Benzo(a)pyrene	ND	0.089	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Benzo(g,h,i)perylene	ND	0.096	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Benzo(k)fluoranthene	ND	0.071	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Benzoic acid	ND	0.12	0.94		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Benzyl alcohol	ND	0.077	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Bis(2-chloroethoxy)methane	ND	0.072	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Bis(2-chloroethyl)ether	ND	0.098	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Bis(2-chloroisopropyl)ether	ND	0.096	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Bis(2-ethylhexyl)phthalate	ND	0.20	0.47		mg/Kg	1	8/26/2021 9:29:35 PM	62128

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (33.5-34')
Project: North Drainage Ditch Area **Collection Date:** 8/13/2021 9:51:00 AM
Lab ID: 2108785-012 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
4-Bromophenyl phenyl ether	ND	0.098	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Butyl benzyl phthalate	ND	0.057	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Carbazole	ND	0.083	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
4-Chloro-3-methylphenol	ND	0.079	0.47		mg/Kg	1	8/26/2021 9:29:35 PM	62128
4-Chloroaniline	ND	0.092	0.47		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2-Chloronaphthalene	ND	0.089	0.24		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
4-Chlorophenyl phenyl ether	ND	0.080	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Chrysene	ND	0.083	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Di-n-butyl phthalate	ND	0.26	0.38		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Di-n-octyl phthalate	ND	0.12	0.38		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Dibenz(a,h)anthracene	ND	0.099	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Dibenzofuran	ND	0.098	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
1,2-Dichlorobenzene	ND	0.076	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
1,3-Dichlorobenzene	ND	0.067	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
1,4-Dichlorobenzene	ND	0.080	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Diethyl phthalate	ND	0.31	0.47		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Dimethyl phthalate	ND	0.087	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2,4-Dichlorophenol	ND	0.076	0.38		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2,4-Dimethylphenol	ND	0.067	0.28		mg/Kg	1	8/26/2021 9:29:35 PM	62128
4,6-Dinitro-2-methylphenol	ND	0.079	0.38		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2,4-Dinitrophenol	ND	0.047	0.47		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2,4-Dinitrotoluene	ND	0.11	0.47		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2,6-Dinitrotoluene	ND	0.096	0.47		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Fluoranthene	ND	0.076	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Fluorene	ND	0.084	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Hexachlorobenzene	ND	0.084	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Hexachlorobutadiene	ND	0.088	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Hexachloroethane	ND	0.083	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Isophorone	ND	0.077	0.38		mg/Kg	1	8/26/2021 9:29:35 PM	62128
1-Methylnaphthalene	ND	0.087	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2-Methylnaphthalene	ND	0.078	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2-Methylphenol	ND	0.079	0.38		mg/Kg	1	8/26/2021 9:29:35 PM	62128
3+4-Methylphenol	ND	0.078	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
N-Nitrosodi-n-propylamine	ND	0.087	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (33.5-34')
Project: North Drainage Ditch Area **Collection Date:** 8/13/2021 9:51:00 AM
Lab ID: 2108785-012 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	0.098	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Naphthalene	ND	0.089	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2-Nitroaniline	ND	0.096	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Nitrobenzene	ND	0.077	0.38		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2-Nitrophenol	ND	0.081	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
4-Nitrophenol	ND	0.077	0.24		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Pentachlorophenol	ND	0.081	0.38		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Phenanthrene	ND	0.096	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Phenol	ND	0.073	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Pyrene	ND	0.071	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Pyridine	ND	0.15	0.38		mg/Kg	1	8/26/2021 9:29:35 PM	62128
1,2,4-Trichlorobenzene	ND	0.086	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2,4,5-Trichlorophenol	ND	0.060	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
2,4,6-Trichlorophenol	ND	0.081	0.19		mg/Kg	1	8/26/2021 9:29:35 PM	62128
Surr: 2-Fluorophenol	36.8		20.3-74.1		%Rec	1	8/26/2021 9:29:35 PM	62128
Surr: Phenol-d5	43.3		23.1-92.7		%Rec	1	8/26/2021 9:29:35 PM	62128
Surr: 2,4,6-Tribromophenol	57.5		17.3-122		%Rec	1	8/26/2021 9:29:35 PM	62128
Surr: Nitrobenzene-d5	34.9		24.7-73.2		%Rec	1	8/26/2021 9:29:35 PM	62128
Surr: 2-Fluorobiphenyl	35.8		21.5-90.1		%Rec	1	8/26/2021 9:29:35 PM	62128
Surr: 4-Terphenyl-d14	70.2		15-140		%Rec	1	8/26/2021 9:29:35 PM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0070	0.018		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Toluene	ND	0.0047	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Ethylbenzene	ND	0.0089	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Methyl tert-butyl ether (MTBE)	ND	0.021	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,2,4-Trimethylbenzene	ND	0.0052	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,3,5-Trimethylbenzene	ND	0.0082	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,2-Dichloroethane (EDC)	ND	0.0083	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,2-Dibromoethane (EDB)	ND	0.014	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Naphthalene	ND	0.014	0.073		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1-Methylnaphthalene	ND	0.042	0.15		mg/Kg	1	8/24/2021 4:55:05 PM	62009
2-Methylnaphthalene	ND	0.034	0.15		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Acetone	ND	0.12	0.55		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Bromobenzene	ND	0.0078	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Bromodichloromethane	ND	0.0047	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Bromoform	ND	0.0088	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Bromomethane	ND	0.061	0.11		mg/Kg	1	8/24/2021 4:55:05 PM	62009

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-2 (33.5-34')
Project: North Drainage Ditch Area **Collection Date:** 8/13/2021 9:51:00 AM
Lab ID: 2108785-012 **Matrix:** MEOH (SOIL) **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
2-Butanone	ND	0.16	0.37		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Carbon disulfide	ND	0.015	0.37		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Carbon tetrachloride	ND	0.0041	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Chlorobenzene	ND	0.0066	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Chloroethane	ND	0.014	0.073		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Chloroform	ND	0.0052	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Chloromethane	ND	0.013	0.11		mg/Kg	1	8/24/2021 4:55:05 PM	62009
2-Chlorotoluene	ND	0.0049	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
4-Chlorotoluene	ND	0.019	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
cis-1,2-DCE	ND	0.018	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
cis-1,3-Dichloropropene	ND	0.0054	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,2-Dibromo-3-chloropropane	ND	0.016	0.073		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Dibromochloromethane	ND	0.0059	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Dibromomethane	ND	0.0086	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,2-Dichlorobenzene	ND	0.0076	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,3-Dichlorobenzene	ND	0.0069	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,4-Dichlorobenzene	ND	0.0098	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Dichlorodifluoromethane	ND	0.014	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,1-Dichloroethane	ND	0.011	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,1-Dichloroethene	ND	0.0078	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,2-Dichloropropane	ND	0.0071	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,3-Dichloropropane	ND	0.0080	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
2,2-Dichloropropane	ND	0.0052	0.073		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,1-Dichloropropene	ND	0.0044	0.073		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Hexachlorobutadiene	ND	0.025	0.073		mg/Kg	1	8/24/2021 4:55:05 PM	62009
2-Hexanone	ND	0.016	0.37		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Isopropylbenzene	ND	0.0068	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
4-Isopropyltoluene	ND	0.0094	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
4-Methyl-2-pentanone	ND	0.043	0.37		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Methylene chloride	ND	0.027	0.11		mg/Kg	1	8/24/2021 4:55:05 PM	62009
n-Butylbenzene	ND	0.0098	0.11		mg/Kg	1	8/24/2021 4:55:05 PM	62009
n-Propylbenzene	ND	0.0059	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
sec-Butylbenzene	ND	0.030	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Styrene	ND	0.0050	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
tert-Butylbenzene	ND	0.0085	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,1,1,2-Tetrachloroethane	ND	0.0054	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,1,2,2-Tetrachloroethane	ND	0.012	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Tetrachloroethene (PCE)	ND	0.010	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
trans-1,2-DCE	ND	0.0071	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009

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		

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-2 (33.5-34')
Project: North Drainage Ditch Area
Collection Date: 8/13/2021 9:51:00 AM
Lab ID: 2108785-012
Matrix: MEOH (SOIL)
Received Date: 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
trans-1,3-Dichloropropene	ND	0.0086	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,2,3-Trichlorobenzene	ND	0.0057	0.073		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,2,4-Trichlorobenzene	ND	0.013	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,1,1-Trichloroethane	ND	0.0081	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,1,2-Trichloroethane	ND	0.0092	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Trichloroethene (TCE)	ND	0.0072	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Trichlorofluoromethane	ND	0.0083	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
1,2,3-Trichloropropane	ND	0.015	0.073		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Vinyl chloride	ND	0.0070	0.037		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Xylenes, Total	ND	0.019	0.073		mg/Kg	1	8/24/2021 4:55:05 PM	62009
Surr: Dibromofluoromethane	106		70-130		%Rec	1	8/24/2021 4:55:05 PM	62009
Surr: 1,2-Dichloroethane-d4	116		70-130		%Rec	1	8/24/2021 4:55:05 PM	62009
Surr: Toluene-d8	105		70-130		%Rec	1	8/24/2021 4:55:05 PM	62009
Surr: 4-Bromofluorobenzene	113		70-130		%Rec	1	8/24/2021 4:55:05 PM	62009
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1.1	1.0	3.7	J	mg/Kg	1	8/24/2021 4:55:05 PM	62009
Surr: BFB	102	0	70-130		%Rec	1	8/24/2021 4:55:05 PM	62009

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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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MeOH Blank
Project: North Drainage Ditch Area **Collection Date:**
Lab ID: 2108785-013 **Matrix:** MEOH BLAN **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0096	0.025		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Toluene	ND	0.0064	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Ethylbenzene	ND	0.012	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Methyl tert-butyl ether (MTBE)	ND	0.028	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,2,4-Trimethylbenzene	ND	0.0071	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,3,5-Trimethylbenzene	ND	0.011	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,2-Dichloroethane (EDC)	ND	0.011	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,2-Dibromoethane (EDB)	ND	0.020	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Naphthalene	ND	0.019	0.10		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1-Methylnaphthalene	ND	0.057	0.20		mg/Kg	1	8/24/2021 5:22:26 PM	62009
2-Methylnaphthalene	ND	0.046	0.20		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Acetone	ND	0.16	0.75		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Bromobenzene	ND	0.011	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Bromodichloromethane	ND	0.0064	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Bromoform	ND	0.012	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Bromomethane	ND	0.083	0.15		mg/Kg	1	8/24/2021 5:22:26 PM	62009
2-Butanone	ND	0.22	0.50		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Carbon disulfide	ND	0.021	0.50		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Carbon tetrachloride	ND	0.0056	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Chlorobenzene	ND	0.0090	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Chloroethane	ND	0.019	0.10		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Chloroform	ND	0.0071	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Chloromethane	ND	0.018	0.15		mg/Kg	1	8/24/2021 5:22:26 PM	62009
2-Chlorotoluene	ND	0.0067	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
4-Chlorotoluene	ND	0.026	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
cis-1,2-DCE	ND	0.025	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
cis-1,3-Dichloropropene	ND	0.0074	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,2-Dibromo-3-chloropropane	ND	0.022	0.10		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Dibromochloromethane	ND	0.0080	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Dibromomethane	ND	0.012	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,2-Dichlorobenzene	ND	0.010	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,3-Dichlorobenzene	ND	0.0094	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,4-Dichlorobenzene	ND	0.013	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Dichlorodifluoromethane	ND	0.019	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,1-Dichloroethane	ND	0.015	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,1-Dichloroethene	ND	0.011	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,2-Dichloropropane	ND	0.0097	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,3-Dichloropropane	ND	0.011	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
2,2-Dichloropropane	ND	0.0071	0.10		mg/Kg	1	8/24/2021 5:22:26 PM	62009

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

Analytical Report
Lab Order **2108785**
Date Reported: **9/17/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MeOH Blank
Project: North Drainage Ditch Area **Collection Date:**
Lab ID: 2108785-013 **Matrix:** MEOH BLAN **Received Date:** 8/13/2021 3:37:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,1-Dichloropropene	ND	0.0060	0.10		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Hexachlorobutadiene	ND	0.034	0.10		mg/Kg	1	8/24/2021 5:22:26 PM	62009
2-Hexanone	0.032	0.022	0.50	J	mg/Kg	1	8/24/2021 5:22:26 PM	62009
Isopropylbenzene	ND	0.0093	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
4-Isopropyltoluene	ND	0.013	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
4-Methyl-2-pentanone	ND	0.058	0.50		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Methylene chloride	ND	0.036	0.15		mg/Kg	1	8/24/2021 5:22:26 PM	62009
n-Butylbenzene	ND	0.013	0.15		mg/Kg	1	8/24/2021 5:22:26 PM	62009
n-Propylbenzene	ND	0.0081	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
sec-Butylbenzene	ND	0.041	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Styrene	ND	0.0068	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
tert-Butylbenzene	ND	0.012	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,1,1,2-Tetrachloroethane	ND	0.0073	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,1,2,2-Tetrachloroethane	ND	0.016	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Tetrachloroethene (PCE)	ND	0.014	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
trans-1,2-DCE	ND	0.0097	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
trans-1,3-Dichloropropene	ND	0.012	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,2,3-Trichlorobenzene	ND	0.0077	0.10		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,2,4-Trichlorobenzene	ND	0.017	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,1,1-Trichloroethane	ND	0.011	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,1,2-Trichloroethane	ND	0.013	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Trichloroethene (TCE)	ND	0.0098	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Trichlorofluoromethane	ND	0.011	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
1,2,3-Trichloropropane	ND	0.021	0.10		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Vinyl chloride	ND	0.0095	0.050		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Xylenes, Total	ND	0.026	0.10		mg/Kg	1	8/24/2021 5:22:26 PM	62009
Surr: Dibromofluoromethane	104		70-130		%Rec	1	8/24/2021 5:22:26 PM	62009
Surr: 1,2-Dichloroethane-d4	115		70-130		%Rec	1	8/24/2021 5:22:26 PM	62009
Surr: Toluene-d8	108		70-130		%Rec	1	8/24/2021 5:22:26 PM	62009
Surr: 4-Bromofluorobenzene	112		70-130		%Rec	1	8/24/2021 5:22:26 PM	62009

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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Client:	Hall Environmental Analysis Lab	Work Order:	MBH0656
Address:	4901 Hawkins NE Suite D	Project:	2108785
	Albuquerque, NM 87109	Reported:	9/17/2021 09:18
Attn:	Andy Freeman		

Analytical Results Report

Sample Location:	2108785-001B (NDD-TW-1(0-0.5'))		
Lab/Sample Number:	MBH0656-01	Collect Date:	08/12/21 09:17
Date Received:	08/17/21 11:42	Collected By:	
Matrix:	Soil		

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics								
% Solids	83.2	%	0.100	0.100	8/25/21 10:03	BKP	SM 2540 G	
Cyanide	ND	mg/kg dry	0.0872	0.295	8/25/21 14:00	BKP	EPA 335.4	U

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Analytical Results Report

(Continued)

Sample Location: 2108785-002B (NDD-TW-1(1.5-2'))
Lab/Sample Number: MBH0656-02 Collect Date: 08/12/21 09:33
Date Received: 08/17/21 11:42 Collected By:
Matrix: Soil

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics								
% Solids	89.2	%	0.100	0.100	8/25/21 10:03	BKP	SM 2540 G	
Cyanide	ND	mg/kg dry	0.0871	0.294	8/25/21 14:00	BKP	EPA 335.4	U

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Analytical Results Report

(Continued)

Sample Location: 2108785-003B (NDD-TW-1(26.5-27'))
Lab/Sample Number: MBH0656-03 Collect Date: 08/12/21 11:43
Date Received: 08/17/21 11:42 Collected By:
Matrix: Soil

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics								
% Solids	82.2	%	0.100	0.100	8/25/21 10:03	BKP	SM 2540 G	
Cyanide	ND	mg/kg dry	0.0301	0.102	8/25/21 14:00	BKP	EPA 335.4	U

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Analytical Results Report

(Continued)

Sample Location: 2108785-004B (NDD-TW-1(34-34.5'))
Lab/Sample Number: MBH0656-04 Collect Date: 08/12/21 12:15
Date Received: 08/17/21 11:42 Collected By:
Matrix: Soil

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics								
% Solids	84.0	%	0.100	0.100	8/25/21 10:03	BKP	SM 2540 G	
Cyanide	ND	mg/kg dry	0.0669	0.226	8/25/21 14:00	BKP	EPA 335.4	U

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Analytical Results Report

(Continued)

Sample Location: 2108785-005B (NDD-TW-2(0-0.5'))
Lab/Sample Number: MBH0656-05 Collect Date: 08/12/21 15:33
Date Received: 08/17/21 11:42 Collected By:
Matrix: Soil

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics								
% Solids	88.9	%	0.100	0.100	8/25/21 10:03	BKP	SM 2540 G	
Cyanide	ND	mg/kg dry	0.0868	0.293	8/25/21 14:00	BKP	EPA 335.4	U

Anatek Labs, Inc.

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Analytical Results Report

(Continued)

Sample Location: 2108785-006B (NDD-TW-2(1.5-2'))
Lab/Sample Number: MBH0656-06 Collect Date: 08/12/21 15:35
Date Received: 08/17/21 11:42 Collected By:
Matrix: Soil

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics								
% Solids	84.8	%	0.100	0.100	8/25/21 10:03	BKP	SM 2540 G	
Cyanide	ND	mg/kg dry	0.144	0.485	8/25/21 14:00	BKP	EPA 335.4	U

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Analytical Results Report

(Continued)

Sample Location: 2108785-007B (NDD-BD-1)
Lab/Sample Number: MBH0656-07 Collect Date: 08/12/21 00:00
Date Received: 08/17/21 11:42 Collected By:
Matrix: Soil

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics								
% Solids	84.2	%	0.100	0.100	8/25/21 10:03	BKP	SM 2540 G	
Cyanide	ND	mg/kg dry	0.0936	0.316	8/25/21 14:00	BKP	EPA 335.4	U

Anatek Labs, Inc.

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Analytical Results Report

(Continued)

Sample Location: 2108785-010B (NDD-TW-2(5.5-6'))
Lab/Sample Number: MBH0656-08 Collect Date: 08/13/21 09:35
Date Received: 08/17/21 11:42 Collected By:
Matrix: Soil

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics								
% Solids	86.5	%	0.100	0.100	8/25/21 10:03	BKP	SM 2540 G	
Cyanide	ND	mg/kg dry	0.0454	0.153	8/25/21 14:00	BKP	EPA 335.4	U

Anatek Labs, Inc.

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Analytical Results Report

(Continued)

Sample Location: 2108785-011B (NDD-TW-2(30.5-31'))
Lab/Sample Number: MBH0656-09 Collect Date: 08/13/21 09:43
Date Received: 08/17/21 11:42 Collected By:
Matrix: Soil

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics								
% Solids	81.7	%	0.100	0.100	8/25/21 10:03	BKP	SM 2540 G	
Cyanide	ND	mg/kg dry	0.0389	0.131	8/25/21 14:00	BKP	EPA 335.4	U

Anatek Labs, Inc.

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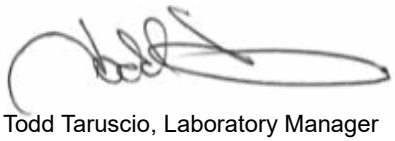
Analytical Results Report

(Continued)

Sample Location: 2108785-012B (NDD-TW-2(33.5-34'))
Lab/Sample Number: MBH0656-10 Collect Date: 08/13/21 09:51
Date Received: 08/17/21 11:42 Collected By:
Matrix: Soil

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Inorganics								
% Solids	69.8	%	0.100	0.100	8/25/21 10:03	BKP	SM 2540 G	
Cyanide	ND	mg/kg dry	0.137	0.463	8/25/21 14:00	BKP	EPA 335.4	U

Authorized Signature,



Todd Taruscio, Laboratory Manager

U	Compound was analyzed for but not detected
PQL	Practical Quantitation Limit
ND	Not Detected
MDL	Method Detection Limit
Dry	Sample results reported on a dry weight basis
*	Not a state-certified analyte
RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was spiked or duplicated.

This report shall not be reproduced except in full, without the written approval of the laboratory
The results reported related only to the samples indicated.

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Quality Control Data

Inorganics

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BBH0844 - Cyanide										
Blank (BBH0844-BLK1)					Prepared & Analyzed: 8/25/2021					
Cyanide	ND	U	0.0100	mg/kg wet						
LCS (BBH0844-BS1)					Prepared & Analyzed: 8/25/2021					
Cyanide	0.466		0.0100	mg/kg wet	0.500		93.1	90-110		
Matrix Spike (BBH0844-MS1)		**Source: MBH0656-01**			Prepared & Analyzed: 8/25/2021					
Cyanide	13.9		0.295	mg/kg dry	14.7	ND	94.4	90-110		
Matrix Spike Dup (BBH0844-MSD1)		**Source: MBH0656-01**			Prepared & Analyzed: 8/25/2021					
Cyanide	13.6		0.295	mg/kg dry	14.7	ND	92.2	90-110	2.34	25

Released to Imaging: 11/23/2022 1:30:09 PM

Received by OCD: 9/19/2022 12:31:41 PM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

MBH0656

Due: 08/31/21

SUB CONTRATOR: Anatek ID	COMPANY: Anatek Labs, Inc.	PHONE: (208) 883-2839	FAX: (208) 882-9246
ADDRESS: 1282 Alturas Dr		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Moscow, ID 83843			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2108785-001B	NDD-TW-1 (0-0.5')	4OZGU	MeOH (Soil)	8/12/2021 9:17:00 AM	1	Total Cyanide- J and MDL
2	2108785-002B	NDD-TW-1 (1.5-2')	4OZGU	MeOH (Soil)	8/12/2021 9:33:00 AM	1	Total Cyanide- J and MDL
3	2108785-003B	NDD-TW-1 (26.5-27')	4OZGU	MeOH (Soil)	8/12/2021 11:43:00 AM	1	Total Cyanide- J and MDL
4	2108785-004B	NDD-TW-1 (34-34.5')	4OZGU	MeOH (Soil)	8/12/2021 12:15:00 PM	1	Total Cyanide- J and MDL
5	2108785-005B	NDD-TW-2 (0-0.5')	4OZGU	MeOH (Soil)	8/12/2021 3:30:00 PM	1	Total Cyanide- J and MDL
6	2108785-006B	NDD-TW-2 (1.5-2')	4OZGU	MeOH (Soil)	8/12/2021 3:35:00 PM	1	Total Cyanide- J and MDL
7	2108785-007B	NDD-BD-1	4OZGU	MeOH (Soil)	8/12/2021	1	Total Cyanide- J and MDL
8	2108785-010B	NDD-TW-2 (5.5-6')	4OZGU	MeOH (Soil)	8/13/2021 9:35:00 AM	1	Total Cyanide- J and MDL
9	2108785-011B	NDD-TW-2 (30.5-31')	4OZGU	MeOH (Soil)	8/13/2021 9:43:00 AM	1	Total Cyanide- J and MDL
10	2108785-012B	NDD-TW-2 (33.5-34')	4OZGU	MeOH (Soil)	8/13/2021 9:51:00 AM	1	Total Cyanide- J and MDL

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: 8/13/2021	Time: 4:22 PM	Received By:	Date: 8/17/21	Time: 1142
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 _____ °C Attempt to Cool ? _____

Comments: _____

MBH0656

Due: 08/31/21

Anatek Labs, Inc.

Sample Receipt and Preservation Form

Client Name: Hall Project:

TAT: (Normal) RUSH: _____ days

Samples Received From: (FedEx) UPS USPS Client Courier Other: _____

Custody Seal on Cooler/Box: (Yes) No Custody Seals Intact: (Yes) No N/A

Number of Coolers/Boxes: 1 Type of Ice: (Ice/Ice Packs) Blue Ice Dry Ice None

Packing Material: (Bubble Wrap) Bags Foam/Peanuts None Other: _____

Cooler Temp As Read (°C): 1.1 Cooler Temp Corrected (°C): — Thermometer Used: IR-5

				Comments:
Samples Received Intact?	(Yes)	No	N/A	
Chain of Custody Present?	(Yes)	No	N/A	
Samples Received Within Hold Time?	(Yes)	No	N/A	
Samples Properly Preserved?	(Yes)	No	(N/A)	
VOC Vials Free of Headspace (<6mm)?	Yes	No	(N/A)	
VOC Trip Blanks Present?	Yes	No	(N/A)	
Labels and Chains Agree?	(Yes)	No	N/A	
Total Number of Sample Bottles Received: 10				

Chain of Custody Fully Completed?	(Yes)	No	N/A	
Correct Containers Received?	(Yes)	No	N/A	
Anatek Bottles Used?	Yes	No	Unknown	

Record preservatives (and lot numbers, if known) for containers below:

None

Notes, comments, etc. (also use this space if contacting the client - record names and date/time)

CN-9402 x10

Received/Inspected By: CB Date/Time: 08/17/2021 1142

Form F19.00 - Eff 8 Feb 2019 Page 1 of 1

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62022** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **62022** RunNo: **80624**
Prep Date: **8/17/2021** Analysis Date: **8/18/2021** SeqNo: **2844795** 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	13		10.00		130	70	130			S

Sample ID: **LCS-62022** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **62022** RunNo: **80624**
Prep Date: **8/17/2021** Analysis Date: **8/18/2021** SeqNo: **2844798** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	101	68.9	141			
Surr: DNOP	5.2		5.000		104	70	130			

Sample ID: **2108785-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **NDD-TW-1 (0-0.5')** Batch ID: **62022** RunNo: **80624**
Prep Date: **8/17/2021** Analysis Date: **8/18/2021** SeqNo: **2844801** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	9.3	46.30	0	93.7	15	184			
Surr: DNOP	4.6		4.630		98.5	70	130			

Sample ID: **2108785-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **NDD-TW-1 (0-0.5')** Batch ID: **62022** RunNo: **80624**
Prep Date: **8/17/2021** Analysis Date: **8/18/2021** SeqNo: **2844802** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.7	48.45	0	92.9	15	184	3.76	23.9	
Surr: DNOP	4.8		4.845		98.3	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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS** Batch ID: **A80682** RunNo: **80682**
Prep Date: Analysis Date: **8/19/2021** SeqNo: **2846468** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	114	70	130			
Toluene	1.0	0.050	1.000	0	103	70	130			
Chlorobenzene	1.0	0.050	1.000	0	102	70	130			
1,1-Dichloroethene	1.1	0.050	1.000	0	107	70	130			
Trichloroethene (TCE)	1.0	0.050	1.000	0	102	70	130			
Surr: Dibromofluoromethane	0.54		0.5000		109	70	130			
Surr: 1,2-Dichloroethane-d4	0.52		0.5000		104	70	130			
Surr: Toluene-d8	0.52		0.5000		105	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.6	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **A80682** RunNo: **80682**
Prep Date: Analysis Date: **8/19/2021** SeqNo: **2846469** 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								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A80682**	RunNo: **80682**
Prep Date:	Analysis Date: **8/19/2021**	SeqNo: **2846469** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A80682**	RunNo: **80682**
Prep Date:	Analysis Date: **8/19/2021**	SeqNo: **2846469** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.56		0.5000		112	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		100	70	130			
Surr: Toluene-d8	0.53		0.5000		106	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		93.5	70	130			

Sample ID: **lcs-62009**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **62009**	RunNo: **80737**
Prep Date: **8/16/2021**	Analysis Date: **8/23/2021**	SeqNo: **2848411** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	93.4	70	130			
Toluene	1.0	0.050	1.000	0	104	70	130			
Chlorobenzene	1.0	0.050	1.000	0	100	70	130			
1,1-Dichloroethene	0.96	0.050	1.000	0	95.6	70	130			
Trichloroethene (TCE)	0.89	0.050	1.000	0	89.5	70	130			
Surr: Dibromofluoromethane	0.46		0.5000		91.5	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.5	70	130			
Surr: Toluene-d8	0.49		0.5000		98.3	70	130			
Surr: 4-Bromofluorobenzene	0.58		0.5000		115	70	130			

Sample ID: **mb-62009**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **62009**	RunNo: **80737**
Prep Date: **8/16/2021**	Analysis Date: **8/23/2021**	SeqNo: **2848413** 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								

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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62009** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **62009** RunNo: **80737**
Prep Date: **8/16/2021** Analysis Date: **8/23/2021** SeqNo: **2848413** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62009** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **62009** RunNo: **80737**
Prep Date: **8/16/2021** Analysis Date: **8/23/2021** SeqNo: **2848413** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	0.43		0.5000		85.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		95.8	70	130			
Surr: Toluene-d8	0.51		0.5000		102	70	130			
Surr: 4-Bromofluorobenzene	0.57		0.5000		113	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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **100ng 8260 lcs2** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **B80573** RunNo: **80573**
Prep Date: Analysis Date: **8/17/2021** SeqNo: **2843032** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	25	1.0	20.00	0	123	70	130			
Toluene	23	1.0	20.00	0	117	70	130			
Chlorobenzene	23	1.0	20.00	0	114	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	112	70	130			
Trichloroethene (TCE)	23	1.0	20.00	0	114	70	130			
Surr: 1,2-Dichloroethane-d4	8.7		10.00		86.7	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.1	70	130			
Surr: Dibromofluoromethane	8.9		10.00		89.1	70	130			
Surr: Toluene-d8	9.4		10.00		94.4	70	130			

Sample ID: **mb2** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **B80573** RunNo: **80573**
Prep Date: Analysis Date: **8/18/2021** SeqNo: **2843033** 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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **B80573**	RunNo: **80573**
Prep Date:	Analysis Date: **8/18/2021**	SeqNo: **2843033** 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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb2** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **B80573** RunNo: **80573**
Prep Date: Analysis Date: **8/18/2021** SeqNo: **2843033** 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	9.0		10.00		89.6	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.9	70	130			
Surr: Dibromofluoromethane	9.0		10.00		89.6	70	130			
Surr: Toluene-d8	9.5		10.00		94.7	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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62082** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62082** RunNo: **80773**
Prep Date: **8/19/2021** Analysis Date: **8/24/2021** SeqNo: **2850040** 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	0.50								
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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62082** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62082** RunNo: **80773**
Prep Date: **8/19/2021** Analysis Date: **8/24/2021** SeqNo: **2850040** 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-Nitrosodimethylamine	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		70.2	20.3	74.1			
Surr: Phenol-d5	2.8		3.330		85.0	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.6		3.330		78.3	17.3	122			
Surr: Nitrobenzene-d5	1.2		1.670		70.2	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.4		1.670		81.3	21.5	90.1			
Surr: 4-Terphenyl-d14	1.6		1.670		95.3	15	140			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **lcs-62082** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62082** RunNo: **80773**
Prep Date: **8/19/2021** Analysis Date: **8/24/2021** SeqNo: **2850041** 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	84.9	22.9	109			
4-Chloro-3-methylphenol	2.6	0.50	3.330	0	78.2	24.2	109			
2-Chlorophenol	2.7	0.20	3.330	0	80.8	18.8	103			
1,4-Dichlorobenzene	1.2	0.20	1.670	0	70.5	18.8	89.5			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	69.4	20.2	94.5			
N-Nitrosodi-n-propylamine	1.3	0.20	1.670	0	75.7	19.2	96.9			
4-Nitrophenol	3.1	0.25	3.330	0	92.8	25	118			
Pentachlorophenol	2.5	0.40	3.330	0	74.4	24.1	107			
Phenol	2.9	0.20	3.330	0	86.0	17.8	112			
Pyrene	1.6	0.20	1.670	0	94.5	25.9	125			
1,2,4-Trichlorobenzene	1.3	0.20	1.670	0	76.3	18.5	92.8			
Surr: 2-Fluorophenol	2.4		3.330		72.0	20.3	74.1			
Surr: Phenol-d5	2.8		3.330		85.0	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.8		3.330		84.6	17.3	122			
Surr: Nitrobenzene-d5	1.3		1.670		75.2	24.7	73.2			S
Surr: 2-Fluorobiphenyl	1.4		1.670		81.8	21.5	90.1			
Surr: 4-Terphenyl-d14	1.7		1.670		100	15	140			

Sample ID: **mb-62128** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62128** RunNo: **80799**
Prep Date: **8/23/2021** Analysis Date: **8/25/2021** SeqNo: **2851005** 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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62128**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **62128**	RunNo: **80799**
Prep Date: **8/23/2021**	Analysis Date: **8/25/2021**	SeqNo: **2851005** 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	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	0.50								
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-Nitrosodimethylamine	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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **mb-62128** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **62128** RunNo: **80799**
Prep Date: **8/23/2021** Analysis Date: **8/25/2021** SeqNo: **2851005** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	2.6		3.330		77.7	20.3	74.1			S
Surr: Phenol-d5	3.3		3.330		100	23.1	92.7			S
Surr: 2,4,6-Tribromophenol	2.8		3.330		83.7	17.3	122			
Surr: Nitrobenzene-d5	1.2		1.670		71.8	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.4		1.670		82.0	21.5	90.1			
Surr: 4-Terphenyl-d14	1.1		1.670		66.2	15	140			

Sample ID: **lcs-62128** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62128** RunNo: **80799**
Prep Date: **8/23/2021** Analysis Date: **8/25/2021** SeqNo: **2851006** 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	78.9	22.9	109			
4-Chloro-3-methylphenol	2.6	0.50	3.330	0	77.3	24.2	109			
2-Chlorophenol	2.4	0.20	3.330	0	72.0	18.8	103			
1,4-Dichlorobenzene	1.0	0.20	1.670	0	61.7	18.8	89.5			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	68.9	20.2	94.5			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	73.5	19.2	96.9			
4-Nitrophenol	3.1	0.25	3.330	0	91.9	25	118			
Pentachlorophenol	2.2	0.40	3.330	0	66.8	24.1	107			
Phenol	2.6	0.20	3.330	0	76.6	17.8	112			
Pyrene	1.4	0.20	1.670	0	84.9	25.9	125			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	69.0	18.5	92.8			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **lcs-62128** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **62128** RunNo: **80799**
Prep Date: **8/23/2021** Analysis Date: **8/25/2021** SeqNo: **2851006** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	2.1		3.330		62.2	20.3	74.1			
Surr: Phenol-d5	2.5		3.330		75.4	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.6		3.330		79.0	17.3	122			
Surr: Nitrobenzene-d5	1.1		1.670		68.8	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.2		1.670		74.5	21.5	90.1			
Surr: 4-Terphenyl-d14	1.1		1.670		63.0	15	140			

Sample ID: **2108785-004ams** SampType: **MS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **NDD-TW-1 (34-34.5')** Batch ID: **62128** RunNo: **80838**
Prep Date: **8/23/2021** Analysis Date: **8/26/2021** SeqNo: **2852471** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.99	0.19	1.623	0	60.9	24.8	111			
4-Chloro-3-methylphenol	2.2	0.49	3.236	0	67.3	40.7	97.8			
2-Chlorophenol	2.0	0.19	3.236	0	61.1	21.2	91.6			
1,4-Dichlorobenzene	0.53	0.19	1.623	0	32.8	17.8	74.2			
2,4-Dinitrotoluene	1.0	0.49	1.623	0	64.6	36.5	81.5			
N-Nitrosodi-n-propylamine	0.95	0.19	1.623	0	58.7	25.5	85.2			
4-Nitrophenol	3.2	0.24	3.236	0	97.5	15	143			
Pentachlorophenol	2.4	0.39	3.236	0	74.5	15	116			
Phenol	2.1	0.19	3.236	0	66.0	24.8	94.5			
Pyrene	1.5	0.19	1.623	0	94.6	42	112			
1,2,4-Trichlorobenzene	0.72	0.19	1.623	0	44.3	18.5	85.3			
Surr: 2-Fluorophenol	1.7		3.236		52.7	20.3	74.1			
Surr: Phenol-d5	2.1		3.236		64.5	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.6		3.236		80.2	17.3	122			
Surr: Nitrobenzene-d5	0.92		1.623		56.9	24.7	73.2			
Surr: 2-Fluorobiphenyl	0.90		1.623		55.6	21.5	90.1			
Surr: 4-Terphenyl-d14	1.1		1.623		69.7	15	140			

Sample ID: **2108785-004amsd** SampType: **MSD** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **NDD-TW-1 (34-34.5')** Batch ID: **62128** RunNo: **80838**
Prep Date: **8/23/2021** Analysis Date: **8/26/2021** SeqNo: **2852472** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.652	0	65.8	24.8	111	9.68	20	
4-Chloro-3-methylphenol	2.2	0.49	3.295	0	66.0	40.7	97.8	0.154	20	
2-Chlorophenol	2.2	0.20	3.295	0	65.7	21.2	91.6	9.00	20	
1,4-Dichlorobenzene	0.61	0.20	1.652	0	36.6	17.8	74.2	12.8	20	
2,4-Dinitrotoluene	1.0	0.49	1.652	0	61.6	36.5	81.5	2.94	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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2108785-004amsd** SampType: **MSD** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **NDD-TW-1 (34-34.5')** Batch ID: **62128** RunNo: **80838**
Prep Date: **8/23/2021** Analysis Date: **8/26/2021** SeqNo: **2852472** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Nitrosodi-n-propylamine	1.0	0.20	1.652	0	62.1	25.5	85.2	7.46	20	
4-Nitrophenol	2.9	0.25	3.295	0	89.2	15	143	7.01	20	
Pentachlorophenol	2.3	0.40	3.295	0	69.0	15	116	5.88	20	
Phenol	2.3	0.20	3.295	0	69.4	24.8	94.5	6.89	20	
Pyrene	1.4	0.20	1.652	0	83.2	42	112	11.0	20	
1,2,4-Trichlorobenzene	0.77	0.20	1.652	0	46.7	18.5	85.3	6.89	20	
Surr: 2-Fluorophenol	1.9		3.295		58.3	20.3	74.1	0	0	
Surr: Phenol-d5	2.2		3.295		66.8	23.1	92.7	0	0	
Surr: 2,4,6-Tribromophenol	2.4		3.295		71.6	17.3	122	0	0	
Surr: Nitrobenzene-d5	0.97		1.652		58.5	24.7	73.2	0	0	
Surr: 2-Fluorobiphenyl	0.96		1.652		58.3	21.5	90.1	0	0	
Surr: 4-Terphenyl-d14	1.1		1.652		63.7	15	140	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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62296** SampType: **MBLK** TestCode: **EPA Method 7471B: Mercury**
Client ID: **PBS** Batch ID: **62296** RunNo: **80969**
Prep Date: **8/31/2021** Analysis Date: **9/1/2021** SeqNo: **2857593** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LLLCS-62296** SampType: **LCSLL** TestCode: **EPA Method 7471B: Mercury**
Client ID: **BatchQC** Batch ID: **62296** RunNo: **80969**
Prep Date: **8/31/2021** Analysis Date: **9/1/2021** SeqNo: **2857594** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0040	0.033	0.006660	0	59.5	70	130			JS

Sample ID: **LCS-62296** SampType: **LCS** TestCode: **EPA Method 7471B: Mercury**
Client ID: **LCSS** Batch ID: **62296** RunNo: **80969**
Prep Date: **8/31/2021** Analysis Date: **9/1/2021** SeqNo: **2857595** 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	104	80	120			

Sample ID: **2108785-002AMS** SampType: **MS** TestCode: **EPA Method 7471B: Mercury**
Client ID: **NDD-TW-1 (1.5-2')** Batch ID: **62296** RunNo: **80969**
Prep Date: **8/31/2021** Analysis Date: **9/1/2021** SeqNo: **2857606** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.18	0.033	0.1661	0	110	80	120			

Sample ID: **2108785-002AMSD** SampType: **MSD** TestCode: **EPA Method 7471B: Mercury**
Client ID: **NDD-TW-1 (1.5-2')** Batch ID: **62296** RunNo: **80969**
Prep Date: **8/31/2021** Analysis Date: **9/1/2021** SeqNo: **2857607** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.19	0.034	0.1742	0	109	80	120	3.74	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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **LCS-62196** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **62196** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853105** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	22	2.5	25.00	0	89.9	80	120			
Arsenic	21	2.5	25.00	0	82.2	80	120			
Barium	23	0.10	25.00	0	90.1	80	120			
Beryllium	24	0.15	25.00	0	94.4	80	120			
Cadmium	22	0.10	25.00	0	89.4	80	120			
Chromium	22	0.30	25.00	0	89.8	80	120			
Cobalt	23	0.30	25.00	0	90.3	80	120			
Iron	25	2.5	25.00	0	99.5	80	120			B
Manganese	22	0.20	25.00	0	89.7	80	120			
Nickel	22	0.50	25.00	0	89.5	80	120			
Selenium	21	2.5	25.00	0	85.4	80	120			
Silver	4.4	0.25	5.000	0	87.2	80	120			
Vanadium	23	2.5	25.00	0	92.2	80	120			
Zinc	24	2.5	25.00	0	94.5	80	120			

Sample ID: **MB-62196** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62196** RunNo: **80853**
Prep Date: **8/25/2021** Analysis Date: **8/26/2021** SeqNo: **2853107** 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	ND	0.10								
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	3.2	2.5								
Manganese	ND	0.20								
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	ND	2.5								

Sample ID: **MB-62196** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **62196** RunNo: **80919**
Prep Date: **8/25/2021** Analysis Date: **8/30/2021** SeqNo: **2855982** 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#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **MB-62196**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**							
Client ID: **PBS**	Batch ID: **62196**	RunNo: **80919**							
Prep Date: **8/25/2021**	Analysis Date: **8/30/2021**	SeqNo: **2855982**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.30								

Sample ID: **LCS-62196**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**							
Client ID: **LCSS**	Batch ID: **62196**	RunNo: **80919**							
Prep Date: **8/25/2021**	Analysis Date: **8/30/2021**	SeqNo: **2855984**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	24	0.30	25.00	0	97.0	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		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2108785**
17-Sep-21

Client: Marathon
Project: North Drainage Ditch Area

Sample ID: **2.5ug gro lcs** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **B80682** RunNo: **80682**
Prep Date: Analysis Date: **8/19/2021** SeqNo: **2846496** 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	90.4	70	130			
Surr: BFB	480		500.0		95.8	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **B80682** RunNo: **80682**
Prep Date: Analysis Date: **8/19/2021** SeqNo: **2846497** 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	480		500.0		96.8	70	130			

Sample ID: **lcs-62009** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **62009** RunNo: **80737**
Prep Date: **8/16/2021** Analysis Date: **8/23/2021** SeqNo: **2848444** 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	105	70	130			
Surr: BFB	520		500.0		105	70	130			

Sample ID: **mb-62009** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **62009** RunNo: **80737**
Prep Date: **8/16/2021** Analysis Date: **8/23/2021** SeqNo: **2848446** 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	520		500.0		105	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: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: **Marathon** Work Order Number: **2108785** RcptNo: 1

Received By: **Juan Rojas** **8/13/2021 3:37:00 PM**

Completed By: **Desiree Dominguez** **8/13/2021 4:06:02 PM**

Reviewed By: JD 8·16·21

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. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐
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: (<2 or >12 unless noted)

Adjusted?

Checked by: JR 8/16/21

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	4.8	Good				

Released to Imaging: 11/23/2022 1:30:39 PM

Chain-of-Custody Record

Client: Marathon Gallup Refinery

Mailing Address: 92 Giant Crossing Road
Jamestown NM,87301

Phone #: 808-640-1823

Email or Fax#:

QA/QC Package:
X Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

X EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name:
North Drainage Ditch Area

Project #:
697-082-002

Project Manager:
Caitlin Fields

Sampler: Kara Hoppes & Hilario Trejo

On Ice: ☑ Yes ☐ No

# of Coolers: 5

Cooler Temp(including CF): see checklist

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 Name	Container Type and #	Preservative Type	HEAL No. 2108785	TPH-DRO, Method 8015M/D	TPH-GRO, Method 8015D)	VOCs, Method 8260B/1311	Total metals, Method 6020	Mercury, Method 7470	SVOCs, Method 827/8270SIM	TPH-Modified 0.1 Range	Cyanide							
8/12/2021	0917	Soil	NDD-TW-1 (0-0.5')	4		-001	x	x	x	x	x	x	X	X							
8/12/2021	0933	Soil	NDD-TW-1 (1.5-2')	4		-002	x	x	x	x	x	x	X	X							
8/12/2021	1143	Soil	NDD-TW-1 (26.5-27')	4		-003	x	x	x	x	x	x	X	X							
8/12/2021	1215	Soil	NDD-TW-1 (34-34.5')	4		-004	x	x	x	x	x	x	X	X							
8/12/2021	1530	Soil	NDD-TW-2 (0-0.5')	4		-005	x	x	x	x	x	x	X	X							
8/12/2021	1535	Soil	NDD-TW-2 (1.5-2')	4		-006	x	x	x	x	x	x	X	X							
8/12/2021	—	Soil	NDD-BD1	4		-007	x	x	x	x	x	x	X	X							
8/12/2021	1535	Water	NDD-EB1	2		-008			x												
8/13/2021	0951	Water	NDD-EB2	2		-009			X												
8/13/2021	0935	Soil	NDD-TW-2 (5.5-6')	4		-010	X	X	X	X	X	X	X	X							
8/13/2021	0943	Soil	NDD-TW-2 (30.5-31')	4		-011	X	X	X	X	X	X	X	X							
8/13/2021	0951	Soil	NDD-TW-2 (33.5-34')	4	on 8/16/21	-012	X	X	X	X	X	X	X	X							

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
8/13/21	2:00 PM	Kara Hoppes		Courier	8/13/21	15:37
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

PAGE 1 of 1

# of coolers: 4

Received by OCD: 9/19/2022 12:31:41 PM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

September 28, 2021

Caitlin Fields

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: North Drainage Ditch Investigation OrderNo.: 2109522

Dear Caitlin Fields:

Hall Environmental Analysis Laboratory received 6 sample(s) on 9/10/2021 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
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Case Narrative

WO#: **2109522**
Date: **9/28/2021**

CLIENT: Marathon
Project: North Drainage Ditch Investigation

Analytical Notes Regarding EPA Method 8270:
The laboratory control spike (LCS) had low recoveries for 2 compounds: 4-nitrophenol and pentachlorophenol. The LCSD, MS and MSD all had acceptable recoveries. All 8270 samples were reextracted and reanalyzed, past the holding time, and they confirmed the initial results. The initial results are reported.

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** EB-09092021
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021 9:30:00 AM
Lab ID: 2109522-001 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	0.57	1.0		mg/L	1	9/16/2021 12:54:52 PM	62607
Motor Oil Range Organics (MRO)	ND	1.9	5.0		mg/L	1	9/16/2021 12:54:52 PM	62607
Surr: DNOP	116	0	64.8-167		%Rec	1	9/16/2021 12:54:52 PM	62607
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	ND	0.030	0.050		mg/L	1	9/15/2021 10:13:00 AM	R81278
Surr: BFB	109	0	68.5-136		%Rec	1	9/15/2021 10:13:00 AM	R81278
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	ND	0.20	0.50		mg/L	5	9/10/2021 9:46:23 PM	R81214
Chloride	ND	1.2	2.5		mg/L	5	9/10/2021 9:46:23 PM	R81214
Sulfate	ND	1.2	2.5		mg/L	5	9/10/2021 9:46:23 PM	R81214
EPA METHOD 6020: TOTAL METALS							Analyst: **DBK**	
Antimony	ND	0.00050	0.0010		mg/L	1	9/17/2021 1:49:09 PM	62558
Arsenic	ND	0.00050	0.0010		mg/L	1	9/14/2021 2:56:16 PM	62558
Barium	ND	0.00050	0.0010		mg/L	1	9/17/2021 1:49:09 PM	62558
Beryllium	ND	0.00050	0.0010		mg/L	1	9/14/2021 2:56:16 PM	62558
Cadmium	ND	0.00050	0.0010		mg/L	1	9/14/2021 2:56:16 PM	62558
Chromium	ND	0.00066	0.0010		mg/L	1	9/14/2021 2:56:16 PM	62558
Cobalt	ND	0.00050	0.0010		mg/L	1	9/14/2021 2:56:16 PM	62558
Iron	ND	0.010	0.020		mg/L	1	9/14/2021 2:56:16 PM	62558
Lead	ND	0.00050	0.0010		mg/L	1	9/14/2021 7:10:08 PM	62558
Manganese	ND	0.00050	0.0010		mg/L	1	9/14/2021 2:56:16 PM	62558
Nickel	ND	0.00050	0.0010		mg/L	1	9/14/2021 2:56:16 PM	62558
Selenium	ND	0.00050	0.0010		mg/L	1	9/14/2021 2:56:16 PM	62558
Silver	ND	0.00050	0.0010		mg/L	1	9/14/2021 2:56:16 PM	62558
Vanadium	ND	0.00050	0.0010		mg/L	1	9/14/2021 2:56:16 PM	62558
Zinc	ND	0.0050	0.010		mg/L	1	9/14/2021 2:56:16 PM	62558
EPA METHOD 7470A: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/14/2021 4:24:47 PM	62565
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.50	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Acenaphthylene	ND	0.42	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Aniline	ND	0.50	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Anthracene	ND	0.75	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Azobenzene	ND	0.55	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Benz(a)anthracene	ND	0.73	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Benzo(a)pyrene	ND	0.87	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Benzo(b)fluoranthene	ND	0.95	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09092021
Project: North Drainage Ditch Investigation
Collection Date: 9/9/2021 9:30:00 AM
Lab ID: 2109522-001 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Benzo(g,h,i)perylene	ND	1.1	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Benzo(k)fluoranthene	ND	0.82	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Benzoic acid	ND	1.1	20		µg/L	1	9/16/2021 6:08:17 PM	62559
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/16/2021 6:08:17 PM	62559
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Carbazole	ND	0.56	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Chrysene	ND	0.71	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/16/2021 6:08:17 PM	62559
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/16/2021 6:08:17 PM	62559
Dibenz(a,h)anthracene	ND	0.83	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Diethyl phthalate	ND	3.9	10		µg/L	1	9/16/2021 6:08:17 PM	62559
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/16/2021 6:08:17 PM	62559
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Fluoranthene	ND	3.5	10		µg/L	1	9/16/2021 6:08:17 PM	62559
Fluorene	ND	0.44	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** EB-09092021
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021 9:30:00 AM
Lab ID: 2109522-001 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Indeno(1,2,3-cd)pyrene	ND	0.92	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Isophorone	ND	0.40	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
1-Methylnaphthalene	ND	0.60	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2-Methylnaphthalene	ND	0.41	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2-Methylphenol	ND	0.51	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Naphthalene	ND	2.2	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Pentachlorophenol	ND	0.59	20		µg/L	1	9/16/2021 6:08:17 PM	62559
Phenanthrene	ND	0.79	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Phenol	ND	0.33	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Pyrene	ND	1.3	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Pyridine	ND	0.93	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/16/2021 6:08:17 PM	62559
Surr: 2-Fluorophenol	44.3	0	15-87		%Rec	1	9/16/2021 6:08:17 PM	62559
Surr: Phenol-d5	33.8	0	15-67.5		%Rec	1	9/16/2021 6:08:17 PM	62559
Surr: 2,4,6-Tribromophenol	62.4	0	15-122		%Rec	1	9/16/2021 6:08:17 PM	62559
Surr: Nitrobenzene-d5	53.7	0	15-103		%Rec	1	9/16/2021 6:08:17 PM	62559
Surr: 2-Fluorobiphenyl	54.0	0	15-103		%Rec	1	9/16/2021 6:08:17 PM	62559
Surr: 4-Terphenyl-d14	102	0	45-137		%Rec	1	9/16/2021 6:08:17 PM	62559
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.23	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Toluene	ND	0.20	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276

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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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09092021
Project: North Drainage Ditch Investigation
Collection Date: 9/9/2021 9:30:00 AM
Lab ID: 2109522-001 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Naphthalene	ND	0.50	2.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Acetone	5.9	2.5	10	J	µg/L	1	9/14/2021 5:42:56 PM	R81276
Bromobenzene	ND	0.28	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Bromodichloromethane	ND	0.20	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Bromoform	ND	0.31	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Bromomethane	ND	0.85	3.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
2-Butanone	8.6	2.0	10	J	µg/L	1	9/14/2021 5:42:56 PM	R81276
Carbon disulfide	ND	0.59	10		µg/L	1	9/14/2021 5:42:56 PM	R81276
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Chloroethane	ND	0.38	2.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Chloroform	ND	0.13	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Chloromethane	ND	0.41	3.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Dibromochloromethane	ND	0.28	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Dibromomethane	ND	0.31	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
2-Hexanone	ND	1.8	10		µg/L	1	9/14/2021 5:42:56 PM	R81276
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/14/2021 5:42:56 PM	R81276
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/14/2021 5:42:56 PM	R81276

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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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09092021
Project: North Drainage Ditch Investigation
Collection Date: 9/9/2021 9:30:00 AM
Lab ID: 2109522-001 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Styrene	ND	0.14	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/14/2021 5:42:56 PM	R81276
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/14/2021 5:42:56 PM	R81276
Surr: 1,2-Dichloroethane-d4	107	0	70-130		%Rec	1	9/14/2021 5:42:56 PM	R81276
Surr: 4-Bromofluorobenzene	97.8	0	70-130		%Rec	1	9/14/2021 5:42:56 PM	R81276
Surr: Dibromofluoromethane	107	0	70-130		%Rec	1	9/14/2021 5:42:56 PM	R81276
Surr: Toluene-d8	111	0	70-130		%Rec	1	9/14/2021 5:42:56 PM	R81276

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P	Sample pH Not In Range
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Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-05
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021 10:00:00 AM
Lab ID: 2109522-002 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	1.4	0.57	1.0		mg/L	1	9/16/2021 1:18:56 PM	62607
Motor Oil Range Organics (MRO)	ND	1.9	5.0		mg/L	1	9/16/2021 1:18:56 PM	62607
Surr: DNOP	74.9	0	64.8-167		%Rec	1	9/16/2021 1:18:56 PM	62607
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	37	1.5	2.5		mg/L	50	9/15/2021 11:12:00 AM	R81278
Surr: BFB	113	0	68.5-136		%Rec	50	9/15/2021 11:12:00 AM	R81278
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	0.22	0.20	0.50	J	mg/L	5	9/10/2021 10:11:04 PM	R81214
Chloride	220	5.0	10		mg/L	20	9/10/2021 10:23:24 PM	R81214
Sulfate	29	1.2	2.5		mg/L	5	9/10/2021 10:11:04 PM	R81214
EPA METHOD 6020: TOTAL METALS							Analyst: **DBK**	
Antimony	ND	0.010	0.020		mg/L	20	9/17/2021 2:07:46 PM	62558
Arsenic	0.018	0.0025	0.0050		mg/L	5	9/14/2021 3:12:28 PM	62558
Barium	7.8	0.10	0.20		mg/L	200	9/17/2021 2:03:07 PM	62558
Beryllium	0.010	0.0025	0.0050		mg/L	5	9/14/2021 3:12:28 PM	62558
Cadmium	ND	0.0025	0.0050		mg/L	5	9/14/2021 3:12:28 PM	62558
Chromium	0.24	0.013	0.020		mg/L	20	9/17/2021 4:14:51 PM	62644
Cobalt	0.10	0.0025	0.0050		mg/L	5	9/14/2021 3:12:28 PM	62558
Iron	120	2.0	4.0		mg/L	200	9/17/2021 2:03:07 PM	62558
Lead	0.071	0.0025	0.0050		mg/L	5	9/14/2021 7:30:00 PM	62558
Manganese	4.7	0.10	0.20		mg/L	200	9/14/2021 7:25:02 PM	62558
Nickel	0.32	0.0025	0.0050		mg/L	5	9/14/2021 3:12:28 PM	62558
Selenium	0.0077	0.0025	0.0050		mg/L	5	9/14/2021 3:12:28 PM	62558
Silver	ND	0.0025	0.0050		mg/L	5	9/14/2021 3:12:28 PM	62558
Vanadium	0.26	0.0025	0.0050		mg/L	5	9/14/2021 3:12:28 PM	62558
Zinc	0.26	0.025	0.050		mg/L	5	9/14/2021 3:12:28 PM	62558
EPA METHOD 7470A: MERCURY							Analyst: **ags**	
Mercury	ND	0.00048	0.00080		mg/L	1	9/14/2021 4:27:09 PM	62565
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.50	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Acenaphthylene	ND	0.42	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Aniline	ND	0.50	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Anthracene	ND	0.75	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Azobenzene	ND	0.55	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Benz(a)anthracene	ND	0.73	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Benzo(a)pyrene	ND	0.87	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Benzo(b)fluoranthene	ND	0.95	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559

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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-05
Project: North Drainage Ditch Investigation
Collection Date: 9/9/2021 10:00:00 AM
Lab ID: 2109522-002 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Benzo(g,h,i)perylene	ND	1.1	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Benzo(k)fluoranthene	ND	0.82	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Benzoic acid	ND	1.1	20		µg/L	1	9/16/2021 6:49:52 PM	62559
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/16/2021 6:49:52 PM	62559
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Carbazole	3.8	0.56	5.0	J	µg/L	1	9/16/2021 6:49:52 PM	62559
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Chrysene	ND	0.71	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/16/2021 6:49:52 PM	62559
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/16/2021 6:49:52 PM	62559
Dibenz(a,h)anthracene	ND	0.83	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Diethyl phthalate	ND	3.9	10		µg/L	1	9/16/2021 6:49:52 PM	62559
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/16/2021 6:49:52 PM	62559
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2,4-Dimethylphenol	7.5	0.97	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Fluoranthene	ND	3.5	10		µg/L	1	9/16/2021 6:49:52 PM	62559
Fluorene	1.2	0.44	5.0	J	µg/L	1	9/16/2021 6:49:52 PM	62559
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-05
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021 10:00:00 AM
Lab ID: 2109522-002 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Indeno(1,2,3-cd)pyrene	ND	0.92	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Isophorone	ND	0.40	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
1-Methylnaphthalene	6.4	0.60	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2-Methylnaphthalene	10	0.41	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2-Methylphenol	9.0	0.51	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
3+4-Methylphenol	13	0.45	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Naphthalene	38	2.2	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Pentachlorophenol	ND	0.59	20		µg/L	1	9/16/2021 6:49:52 PM	62559
Phenanthrene	ND	0.79	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Phenol	21	0.33	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Pyrene	ND	1.3	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Pyridine	3.1	0.93	5.0	J	µg/L	1	9/16/2021 6:49:52 PM	62559
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/16/2021 6:49:52 PM	62559
Surr: 2-Fluorophenol	0	0	15-87	S	%Rec	1	9/16/2021 6:49:52 PM	62559
Surr: Phenol-d5	36.9	0	15-67.5		%Rec	1	9/16/2021 6:49:52 PM	62559
Surr: 2,4,6-Tribromophenol	73.8	0	15-122		%Rec	1	9/16/2021 6:49:52 PM	62559
Surr: Nitrobenzene-d5	57.1	0	15-103		%Rec	1	9/16/2021 6:49:52 PM	62559
Surr: 2-Fluorobiphenyl	56.4	0	15-103		%Rec	1	9/16/2021 6:49:52 PM	62559
Surr: 4-Terphenyl-d14	89.6	0	45-137		%Rec	1	9/16/2021 6:49:52 PM	62559
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	4800	11	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Toluene	3500	10	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Ethylbenzene	760	11	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Methyl tert-butyl ether (MTBE)	730	20	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,2,4-Trimethylbenzene	350	6.1	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,3,5-Trimethylbenzene	78	9.1	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,2-Dichloroethane (EDC)	ND	13	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,2-Dibromoethane (EDB)	ND	15	50		µg/L	50	9/15/2021 3:52:17 PM	R81312

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-05
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021 10:00:00 AM
Lab ID: 2109522-002 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Naphthalene	64	25	100	J	µg/L	50	9/15/2021 3:52:17 PM	R81312
1-Methylnaphthalene	ND	42	200		µg/L	50	9/15/2021 3:52:17 PM	R81312
2-Methylnaphthalene	ND	35	200		µg/L	50	9/15/2021 3:52:17 PM	R81312
Acetone	ND	130	500		µg/L	50	9/15/2021 3:52:17 PM	R81312
Bromobenzene	ND	14	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Bromodichloromethane	ND	10	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Bromoform	ND	16	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Bromomethane	ND	43	150		µg/L	50	9/15/2021 3:52:17 PM	R81312
2-Butanone	ND	100	500		µg/L	50	9/15/2021 3:52:17 PM	R81312
Carbon disulfide	ND	30	500		µg/L	50	9/15/2021 3:52:17 PM	R81312
Carbon Tetrachloride	ND	8.8	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Chlorobenzene	ND	7.8	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Chloroethane	ND	19	100		µg/L	50	9/15/2021 3:52:17 PM	R81312
Chloroform	ND	6.7	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Chloromethane	53	21	150	J	µg/L	50	9/15/2021 3:52:17 PM	R81312
2-Chlorotoluene	ND	6.6	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
4-Chlorotoluene	ND	17	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
cis-1,2-DCE	ND	19	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
cis-1,3-Dichloropropene	ND	18	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,2-Dibromo-3-chloropropane	ND	29	100		µg/L	50	9/15/2021 3:52:17 PM	R81312
Dibromochloromethane	ND	14	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Dibromomethane	ND	15	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,2-Dichlorobenzene	ND	7.7	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,3-Dichlorobenzene	ND	8.1	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,4-Dichlorobenzene	ND	10	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Dichlorodifluoromethane	ND	20	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,1-Dichloroethane	ND	14	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,1-Dichloroethene	ND	10	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,2-Dichloropropane	ND	10	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,3-Dichloropropane	ND	9.0	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
2,2-Dichloropropane	ND	13	100		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,1-Dichloropropene	ND	9.0	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Hexachlorobutadiene	ND	28	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
2-Hexanone	ND	90	500		µg/L	50	9/15/2021 3:52:17 PM	R81312
Isopropylbenzene	ND	9.1	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
4-Isopropyltoluene	ND	10	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
4-Methyl-2-pentanone	ND	44	500		µg/L	50	9/15/2021 3:52:17 PM	R81312
Methylene Chloride	ND	25	150		µg/L	50	9/15/2021 3:52:17 PM	R81312
n-Butylbenzene	ND	13	150		µg/L	50	9/15/2021 3:52:17 PM	R81312

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-05
Project: North Drainage Ditch Investigation
Collection Date: 9/9/2021 10:00:00 AM
Lab ID: 2109522-002 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
n-Propylbenzene	45	9.1	50	J	µg/L	50	9/15/2021 3:52:17 PM	R81312
sec-Butylbenzene	ND	7.2	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Styrene	ND	6.8	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
tert-Butylbenzene	ND	12	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,1,1,2-Tetrachloroethane	ND	13	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,1,2,2-Tetrachloroethane	ND	14	100		µg/L	50	9/15/2021 3:52:17 PM	R81312
Tetrachloroethene (PCE)	ND	18	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
trans-1,2-DCE	ND	9.7	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
trans-1,3-Dichloropropene	ND	17	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,2,3-Trichlorobenzene	ND	12	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,2,4-Trichlorobenzene	ND	12	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,1,1-Trichloroethane	ND	15	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,1,2-Trichloroethane	ND	9.9	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Trichloroethene (TCE)	ND	10	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Trichlorofluoromethane	ND	7.9	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
1,2,3-Trichloropropane	ND	22	100		µg/L	50	9/15/2021 3:52:17 PM	R81312
Vinyl chloride	ND	16	50		µg/L	50	9/15/2021 3:52:17 PM	R81312
Xylenes, Total	3500	19	75		µg/L	50	9/15/2021 3:52:17 PM	R81312
Surr: 1,2-Dichloroethane-d4	101	0	70-130		%Rec	50	9/15/2021 3:52:17 PM	R81312
Surr: 4-Bromofluorobenzene	92.3	0	70-130		%Rec	50	9/15/2021 3:52:17 PM	R81312
Surr: Dibromofluoromethane	97.7	0	70-130		%Rec	50	9/15/2021 3:52:17 PM	R81312
Surr: Toluene-d8	106	0	70-130		%Rec	50	9/15/2021 3:52:17 PM	R81312

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S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-02
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021 10:45:00 AM
Lab ID: 2109522-003 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	ND	0.57	1.0		mg/L	1	9/16/2021 1:43:05 PM	62607
Motor Oil Range Organics (MRO)	ND	1.9	5.0		mg/L	1	9/16/2021 1:43:05 PM	62607
Surr: DNOP	97.1	0	64.8-167		%Rec	1	9/16/2021 1:43:05 PM	62607
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	ND	0.030	0.050		mg/L	1	9/15/2021 10:33:00 AM	R81278
Surr: BFB	112	0	68.5-136		%Rec	1	9/15/2021 10:33:00 AM	R81278
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	ND	0.20	0.50		mg/L	5	9/10/2021 10:35:45 PM	R81214
Chloride	1100	25	50	*	mg/L	100	9/15/2021 5:56:24 PM	R81311
Sulfate	100	1.2	2.5		mg/L	5	9/10/2021 10:35:45 PM	R81214
EPA METHOD 6020: TOTAL METALS							Analyst: **DBK**	
Antimony	ND	0.010	0.020		mg/L	20	9/17/2021 2:12:25 PM	62558
Arsenic	0.0026	0.0025	0.0050	J	mg/L	5	9/14/2021 3:17:53 PM	62558
Barium	0.47	0.010	0.020		mg/L	20	9/17/2021 2:12:25 PM	62558
Beryllium	ND	0.0025	0.0050		mg/L	5	9/14/2021 3:17:53 PM	62558
Cadmium	ND	0.0025	0.0050		mg/L	5	9/14/2021 3:17:53 PM	62558
Chromium	0.024	0.013	0.020		mg/L	20	9/17/2021 4:38:27 PM	62644
Cobalt	0.0062	0.0025	0.0050		mg/L	5	9/14/2021 3:17:53 PM	62558
Iron	16	0.050	0.10		mg/L	5	9/14/2021 3:17:53 PM	62558
Lead	0.0081	0.0025	0.0050		mg/L	5	9/14/2021 7:49:53 PM	62558
Manganese	0.28	0.0025	0.0050		mg/L	5	9/14/2021 3:17:53 PM	62558
Nickel	0.014	0.0025	0.0050		mg/L	5	9/14/2021 3:17:53 PM	62558
Selenium	0.0078	0.0025	0.0050		mg/L	5	9/14/2021 3:17:53 PM	62558
Silver	ND	0.0025	0.0050		mg/L	5	9/14/2021 3:17:53 PM	62558
Vanadium	0.030	0.0025	0.0050		mg/L	5	9/14/2021 3:17:53 PM	62558
Zinc	0.051	0.025	0.050		mg/L	5	9/14/2021 3:17:53 PM	62558
EPA METHOD 7470A: MERCURY							Analyst: **ags**	
Mercury	0.00066	0.00024	0.00040		mg/L	1	9/14/2021 4:29:31 PM	62565
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.50	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Acenaphthylene	ND	0.42	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Aniline	ND	0.50	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Anthracene	ND	0.75	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Azobenzene	ND	0.55	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Benz(a)anthracene	ND	0.73	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Benzo(a)pyrene	ND	0.87	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Benzo(b)fluoranthene	ND	0.95	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559

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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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** NDD-TW-02
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021 10:45:00 AM
Lab ID: 2109522-003 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Benzo(g,h,i)perylene	ND	1.1	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Benzo(k)fluoranthene	ND	0.82	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Benzoic acid	ND	1.1	20		µg/L	1	9/16/2021 7:31:31 PM	62559
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/16/2021 7:31:31 PM	62559
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Carbazole	ND	0.56	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Chrysene	ND	0.71	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/16/2021 7:31:31 PM	62559
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/16/2021 7:31:31 PM	62559
Dibenz(a,h)anthracene	ND	0.83	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Diethyl phthalate	ND	3.9	10		µg/L	1	9/16/2021 7:31:31 PM	62559
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/16/2021 7:31:31 PM	62559
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Fluoranthene	ND	3.5	10		µg/L	1	9/16/2021 7:31:31 PM	62559
Fluorene	ND	0.44	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-02
Project: North Drainage Ditch Investigation
Collection Date: 9/9/2021 10:45:00 AM
Lab ID: 2109522-003 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Indeno(1,2,3-cd)pyrene	ND	0.92	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Isophorone	ND	0.40	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
1-Methylnaphthalene	ND	0.60	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2-Methylnaphthalene	ND	0.41	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2-Methylphenol	ND	0.51	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Naphthalene	ND	2.2	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Pentachlorophenol	ND	0.59	20		µg/L	1	9/16/2021 7:31:31 PM	62559
Phenanthrene	ND	0.79	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Phenol	ND	0.33	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Pyrene	ND	1.3	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Pyridine	ND	0.93	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/16/2021 7:31:31 PM	62559
Surr: 2-Fluorophenol	47.5	0	15-87		%Rec	1	9/16/2021 7:31:31 PM	62559
Surr: Phenol-d5	37.9	0	15-67.5		%Rec	1	9/16/2021 7:31:31 PM	62559
Surr: 2,4,6-Tribromophenol	56.4	0	15-122		%Rec	1	9/16/2021 7:31:31 PM	62559
Surr: Nitrobenzene-d5	54.5	0	15-103		%Rec	1	9/16/2021 7:31:31 PM	62559
Surr: 2-Fluorobiphenyl	53.7	0	15-103		%Rec	1	9/16/2021 7:31:31 PM	62559
Surr: 4-Terphenyl-d14	94.1	0	45-137		%Rec	1	9/16/2021 7:31:31 PM	62559
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.23	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Toluene	ND	0.20	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,2-Dichloroethane (EDC)	0.39	0.25	1.0	J	µg/L	1	9/14/2021 7:38:18 PM	R81276
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-02
Project: North Drainage Ditch Investigation
Collection Date: 9/9/2021 10:45:00 AM
Lab ID: 2109522-003 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Naphthalene	ND	0.50	2.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Acetone	ND	2.5	10		µg/L	1	9/14/2021 7:38:18 PM	R81276
Bromobenzene	ND	0.28	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Bromodichloromethane	ND	0.20	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Bromoform	ND	0.31	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Bromomethane	ND	0.85	3.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
2-Butanone	ND	2.0	10		µg/L	1	9/14/2021 7:38:18 PM	R81276
Carbon disulfide	ND	0.59	10		µg/L	1	9/14/2021 7:38:18 PM	R81276
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Chloroethane	ND	0.38	2.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Chloroform	ND	0.13	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Chloromethane	ND	0.41	3.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Dibromochloromethane	ND	0.28	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Dibromomethane	ND	0.31	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
2-Hexanone	ND	1.8	10		µg/L	1	9/14/2021 7:38:18 PM	R81276
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/14/2021 7:38:18 PM	R81276
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/14/2021 7:38:18 PM	R81276

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: NDD-TW-02
Project: North Drainage Ditch Investigation
Collection Date: 9/9/2021 10:45:00 AM
Lab ID: 2109522-003 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Styrene	ND	0.14	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/14/2021 7:38:18 PM	R81276
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/14/2021 7:38:18 PM	R81276
Surr: 1,2-Dichloroethane-d4	111	0	70-130		%Rec	1	9/14/2021 7:38:18 PM	R81276
Surr: 4-Bromofluorobenzene	98.3	0	70-130		%Rec	1	9/14/2021 7:38:18 PM	R81276
Surr: Dibromofluoromethane	105	0	70-130		%Rec	1	9/14/2021 7:38:18 PM	R81276
Surr: Toluene-d8	103	0	70-130		%Rec	1	9/14/2021 7:38:18 PM	R81276

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: FB-09092021
Project: North Drainage Ditch Investigation
Collection Date: 9/9/2021 10:30:00 AM
Lab ID: 2109522-004 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.23	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Toluene	ND	0.20	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Naphthalene	ND	0.50	2.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Acetone	35	2.5	10		µg/L	1	9/14/2021 8:07:04 PM	R81276
Bromobenzene	ND	0.28	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Bromodichloromethane	ND	0.20	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Bromoform	ND	0.31	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Bromomethane	ND	0.85	3.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
2-Butanone	20	2.0	10		µg/L	1	9/14/2021 8:07:04 PM	R81276
Carbon disulfide	ND	0.59	10		µg/L	1	9/14/2021 8:07:04 PM	R81276
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Chloroethane	ND	0.38	2.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Chloroform	ND	0.13	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Chloromethane	0.43	0.41	3.0	J	µg/L	1	9/14/2021 8:07:04 PM	R81276
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Dibromochloromethane	ND	0.28	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Dibromomethane	ND	0.31	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/14/2021 8:07:04 PM	R81276

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: FB-09092021
Project: North Drainage Ditch Investigation
Collection Date: 9/9/2021 10:30:00 AM
Lab ID: 2109522-004 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
2-Hexanone	3.6	1.8	10	J	µg/L	1	9/14/2021 8:07:04 PM	R81276
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
4-Isopropyltoluene	0.44	0.20	1.0	J	µg/L	1	9/14/2021 8:07:04 PM	R81276
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/14/2021 8:07:04 PM	R81276
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Styrene	ND	0.14	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/14/2021 8:07:04 PM	R81276
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/14/2021 8:07:04 PM	R81276
Surr: 1,2-Dichloroethane-d4	107	0	70-130		%Rec	1	9/14/2021 8:07:04 PM	R81276
Surr: 4-Bromofluorobenzene	100	0	70-130		%Rec	1	9/14/2021 8:07:04 PM	R81276
Surr: Dibromofluoromethane	102	0	70-130		%Rec	1	9/14/2021 8:07:04 PM	R81276
Surr: Toluene-d8	100	0	70-130		%Rec	1	9/14/2021 8:07:04 PM	R81276

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Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** DUP-09092021
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021
Lab ID: 2109522-005 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	1.5	0.57	1.0		mg/L	1	9/16/2021 2:07:14 PM	62607
Motor Oil Range Organics (MRO)	ND	1.9	5.0		mg/L	1	9/16/2021 2:07:14 PM	62607
Surr: DNOP	81.9	0	64.8-167		%Rec	1	9/16/2021 2:07:14 PM	62607
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	37	1.5	2.5		mg/L	50	9/15/2021 10:52:00 AM	R81278
Surr: BFB	108	0	68.5-136		%Rec	50	9/15/2021 10:52:00 AM	R81278
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	0.24	0.20	0.50	J	mg/L	5	9/10/2021 11:25:07 PM	R81214
Chloride	220	5.0	10		mg/L	20	9/10/2021 11:37:28 PM	R81214
Sulfate	31	1.2	2.5		mg/L	5	9/10/2021 11:25:07 PM	R81214
EPA METHOD 6020: TOTAL METALS							Analyst: **DBK**	
Antimony	ND	0.010	0.020		mg/L	20	9/17/2021 2:36:52 PM	62558
Arsenic	0.016	0.0025	0.0050		mg/L	5	9/14/2021 3:23:17 PM	62558
Barium	6.9	0.10	0.20		mg/L	200	9/17/2021 2:17:04 PM	62558
Beryllium	0.0088	0.0025	0.0050		mg/L	5	9/14/2021 3:23:17 PM	62558
Cadmium	ND	0.0025	0.0050		mg/L	5	9/14/2021 3:23:17 PM	62558
Chromium	0.21	0.013	0.020		mg/L	20	9/17/2021 4:43:08 PM	62644
Cobalt	0.090	0.0025	0.0050		mg/L	5	9/14/2021 3:23:17 PM	62558
Iron	120	2.0	4.0		mg/L	200	9/17/2021 2:17:04 PM	62558
Lead	0.070	0.0025	0.0050		mg/L	5	9/14/2021 7:59:50 PM	62558
Manganese	4.6	0.10	0.20		mg/L	200	9/14/2021 7:54:51 PM	62558
Nickel	0.31	0.0025	0.0050		mg/L	5	9/14/2021 3:23:17 PM	62558
Selenium	0.0075	0.0025	0.0050		mg/L	5	9/14/2021 3:23:17 PM	62558
Silver	ND	0.0025	0.0050		mg/L	5	9/14/2021 3:23:17 PM	62558
Vanadium	0.24	0.0025	0.0050		mg/L	5	9/14/2021 3:23:17 PM	62558
Zinc	0.23	0.025	0.050		mg/L	5	9/14/2021 3:23:17 PM	62558
EPA METHOD 7470A: MERCURY							Analyst: **ags**	
Mercury	0.00089	0.00048	0.00080		mg/L	1	9/14/2021 4:31:54 PM	62565
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.50	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Acenaphthylene	ND	0.42	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Aniline	ND	0.50	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Anthracene	ND	0.75	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Azobenzene	ND	0.55	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Benz(a)anthracene	ND	0.73	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Benzo(a)pyrene	ND	0.87	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Benzo(b)fluoranthene	ND	0.95	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559

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Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** DUP-09092021
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021
Lab ID: 2109522-005 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Benzo(g,h,i)perylene	ND	1.1	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Benzo(k)fluoranthene	ND	0.82	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Benzoic acid	ND	1.1	20		µg/L	1	9/16/2021 8:13:09 PM	62559
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/16/2021 8:13:09 PM	62559
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Carbazole	3.9	0.56	5.0	J	µg/L	1	9/16/2021 8:13:09 PM	62559
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Chrysene	ND	0.71	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/16/2021 8:13:09 PM	62559
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/16/2021 8:13:09 PM	62559
Dibenz(a,h)anthracene	ND	0.83	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Diethyl phthalate	ND	3.9	10		µg/L	1	9/16/2021 8:13:09 PM	62559
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/16/2021 8:13:09 PM	62559
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2,4-Dimethylphenol	8.9	0.97	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Fluoranthene	ND	3.5	10		µg/L	1	9/16/2021 8:13:09 PM	62559
Fluorene	1.1	0.44	5.0	J	µg/L	1	9/16/2021 8:13:09 PM	62559
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559

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Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** DUP-09092021
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021
Lab ID: 2109522-005 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Indeno(1,2,3-cd)pyrene	ND	0.92	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Isophorone	ND	0.40	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
1-Methylnaphthalene	7.4	0.60	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2-Methylnaphthalene	11	0.41	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2-Methylphenol	12	0.51	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
3+4-Methylphenol	16	0.45	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Naphthalene	45	2.2	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Pentachlorophenol	ND	0.59	20		µg/L	1	9/16/2021 8:13:09 PM	62559
Phenanthrene	1.8	0.79	5.0	J	µg/L	1	9/16/2021 8:13:09 PM	62559
Phenol	25	0.33	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Pyrene	ND	1.3	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Pyridine	2.8	0.93	5.0	J	µg/L	1	9/16/2021 8:13:09 PM	62559
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/16/2021 8:13:09 PM	62559
Surr: 2-Fluorophenol	0	0	15-87	S	%Rec	1	9/16/2021 8:13:09 PM	62559
Surr: Phenol-d5	40.2	0	15-67.5		%Rec	1	9/16/2021 8:13:09 PM	62559
Surr: 2,4,6-Tribromophenol	76.4	0	15-122		%Rec	1	9/16/2021 8:13:09 PM	62559
Surr: Nitrobenzene-d5	63.2	0	15-103		%Rec	1	9/16/2021 8:13:09 PM	62559
Surr: 2-Fluorobiphenyl	62.4	0	15-103		%Rec	1	9/16/2021 8:13:09 PM	62559
Surr: 4-Terphenyl-d14	87.8	0	45-137		%Rec	1	9/16/2021 8:13:09 PM	62559
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	4600	11	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Toluene	3400	10	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Ethylbenzene	710	11	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Methyl tert-butyl ether (MTBE)	720	20	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,2,4-Trimethylbenzene	320	6.1	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,3,5-Trimethylbenzene	71	9.1	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,2-Dichloroethane (EDC)	ND	13	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,2-Dibromoethane (EDB)	ND	15	50		µg/L	50	9/15/2021 4:21:06 PM	R81312

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Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** DUP-09092021
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021
Lab ID: 2109522-005 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Naphthalene	65	25	100	J	µg/L	50	9/15/2021 4:21:06 PM	R81312
1-Methylnaphthalene	ND	42	200		µg/L	50	9/15/2021 4:21:06 PM	R81312
2-Methylnaphthalene	ND	35	200		µg/L	50	9/15/2021 4:21:06 PM	R81312
Acetone	ND	130	500		µg/L	50	9/15/2021 4:21:06 PM	R81312
Bromobenzene	ND	14	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Bromodichloromethane	ND	10	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Bromoform	ND	16	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Bromomethane	ND	43	150		µg/L	50	9/15/2021 4:21:06 PM	R81312
2-Butanone	ND	100	500		µg/L	50	9/15/2021 4:21:06 PM	R81312
Carbon disulfide	ND	30	500		µg/L	50	9/15/2021 4:21:06 PM	R81312
Carbon Tetrachloride	ND	8.8	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Chlorobenzene	ND	7.8	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Chloroethane	ND	19	100		µg/L	50	9/15/2021 4:21:06 PM	R81312
Chloroform	ND	6.7	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Chloromethane	45	21	150	J	µg/L	50	9/15/2021 4:21:06 PM	R81312
2-Chlorotoluene	ND	6.6	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
4-Chlorotoluene	ND	17	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
cis-1,2-DCE	ND	19	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
cis-1,3-Dichloropropene	ND	18	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,2-Dibromo-3-chloropropane	ND	29	100		µg/L	50	9/15/2021 4:21:06 PM	R81312
Dibromochloromethane	ND	14	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Dibromomethane	ND	15	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,2-Dichlorobenzene	ND	7.7	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,3-Dichlorobenzene	ND	8.1	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,4-Dichlorobenzene	ND	10	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Dichlorodifluoromethane	ND	20	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,1-Dichloroethane	ND	14	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,1-Dichloroethene	ND	10	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,2-Dichloropropane	ND	10	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,3-Dichloropropane	ND	9.0	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
2,2-Dichloropropane	ND	13	100		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,1-Dichloropropene	ND	9.0	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Hexachlorobutadiene	ND	28	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
2-Hexanone	ND	90	500		µg/L	50	9/15/2021 4:21:06 PM	R81312
Isopropylbenzene	ND	9.1	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
4-Isopropyltoluene	ND	10	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
4-Methyl-2-pentanone	ND	44	500		µg/L	50	9/15/2021 4:21:06 PM	R81312
Methylene Chloride	ND	25	150		µg/L	50	9/15/2021 4:21:06 PM	R81312
n-Butylbenzene	ND	13	150		µg/L	50	9/15/2021 4:21:06 PM	R81312

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Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** DUP-09092021
Project: North Drainage Ditch Investigation **Collection Date:** 9/9/2021
Lab ID: 2109522-005 **Matrix:** AQUEOUS **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
n-Propylbenzene	41	9.1	50	J	µg/L	50	9/15/2021 4:21:06 PM	R81312
sec-Butylbenzene	ND	7.2	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Styrene	ND	6.8	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
tert-Butylbenzene	ND	12	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,1,1,2-Tetrachloroethane	ND	13	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,1,2,2-Tetrachloroethane	ND	14	100		µg/L	50	9/15/2021 4:21:06 PM	R81312
Tetrachloroethene (PCE)	ND	18	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
trans-1,2-DCE	ND	9.7	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
trans-1,3-Dichloropropene	ND	17	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,2,3-Trichlorobenzene	ND	12	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,2,4-Trichlorobenzene	ND	12	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,1,1-Trichloroethane	ND	15	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,1,2-Trichloroethane	ND	9.9	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Trichloroethene (TCE)	ND	10	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Trichlorofluoromethane	ND	7.9	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
1,2,3-Trichloropropane	ND	22	100		µg/L	50	9/15/2021 4:21:06 PM	R81312
Vinyl chloride	ND	16	50		µg/L	50	9/15/2021 4:21:06 PM	R81312
Xylenes, Total	3300	19	75		µg/L	50	9/15/2021 4:21:06 PM	R81312
Surr: 1,2-Dichloroethane-d4	101	0	70-130		%Rec	50	9/15/2021 4:21:06 PM	R81312
Surr: 4-Bromofluorobenzene	94.5	0	70-130		%Rec	50	9/15/2021 4:21:06 PM	R81312
Surr: Dibromofluoromethane	96.1	0	70-130		%Rec	50	9/15/2021 4:21:06 PM	R81312
Surr: Toluene-d8	107	0	70-130		%Rec	50	9/15/2021 4:21:06 PM	R81312

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** Trip Blank
Project: North Drainage Ditch Investigation **Collection Date:**
Lab ID: 2109522-006 **Matrix:** TRIP BLANK **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.23	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Toluene	ND	0.20	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Naphthalene	ND	0.50	2.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Acetone	ND	2.5	10		µg/L	1	9/14/2021 9:04:31 PM	R81276
Bromobenzene	ND	0.28	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Bromodichloromethane	ND	0.20	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Bromoform	ND	0.31	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Bromomethane	ND	0.85	3.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
2-Butanone	ND	2.0	10		µg/L	1	9/14/2021 9:04:31 PM	R81276
Carbon disulfide	ND	0.59	10		µg/L	1	9/14/2021 9:04:31 PM	R81276
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Chloroethane	ND	0.38	2.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Chloroform	ND	0.13	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Chloromethane	0.41	0.41	3.0	J	µg/L	1	9/14/2021 9:04:31 PM	R81276
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Dibromochloromethane	ND	0.28	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Dibromomethane	ND	0.31	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/14/2021 9:04:31 PM	R81276

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

Analytical Report
Lab Order **2109522**
Date Reported: **9/28/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** Trip Blank
Project: North Drainage Ditch Investigation **Collection Date:**
Lab ID: 2109522-006 **Matrix:** TRIP BLANK **Received Date:** 9/10/2021 7:20:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
2-Hexanone	ND	1.8	10		µg/L	1	9/14/2021 9:04:31 PM	R81276
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/14/2021 9:04:31 PM	R81276
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Styrene	ND	0.14	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/14/2021 9:04:31 PM	R81276
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/14/2021 9:04:31 PM	R81276
Surr: 1,2-Dichloroethane-d4	115	0	70-130		%Rec	1	9/14/2021 9:04:31 PM	R81276
Surr: 4-Bromofluorobenzene	93.2	0	70-130		%Rec	1	9/14/2021 9:04:31 PM	R81276
Surr: Dibromofluoromethane	108	0	70-130		%Rec	1	9/14/2021 9:04:31 PM	R81276
Surr: Toluene-d8	106	0	70-130		%Rec	1	9/14/2021 9:04:31 PM	R81276

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Pace Analytical®

ANALYTICAL REPORT

September 26, 2021

Hall Environmental Analysis Laboratory

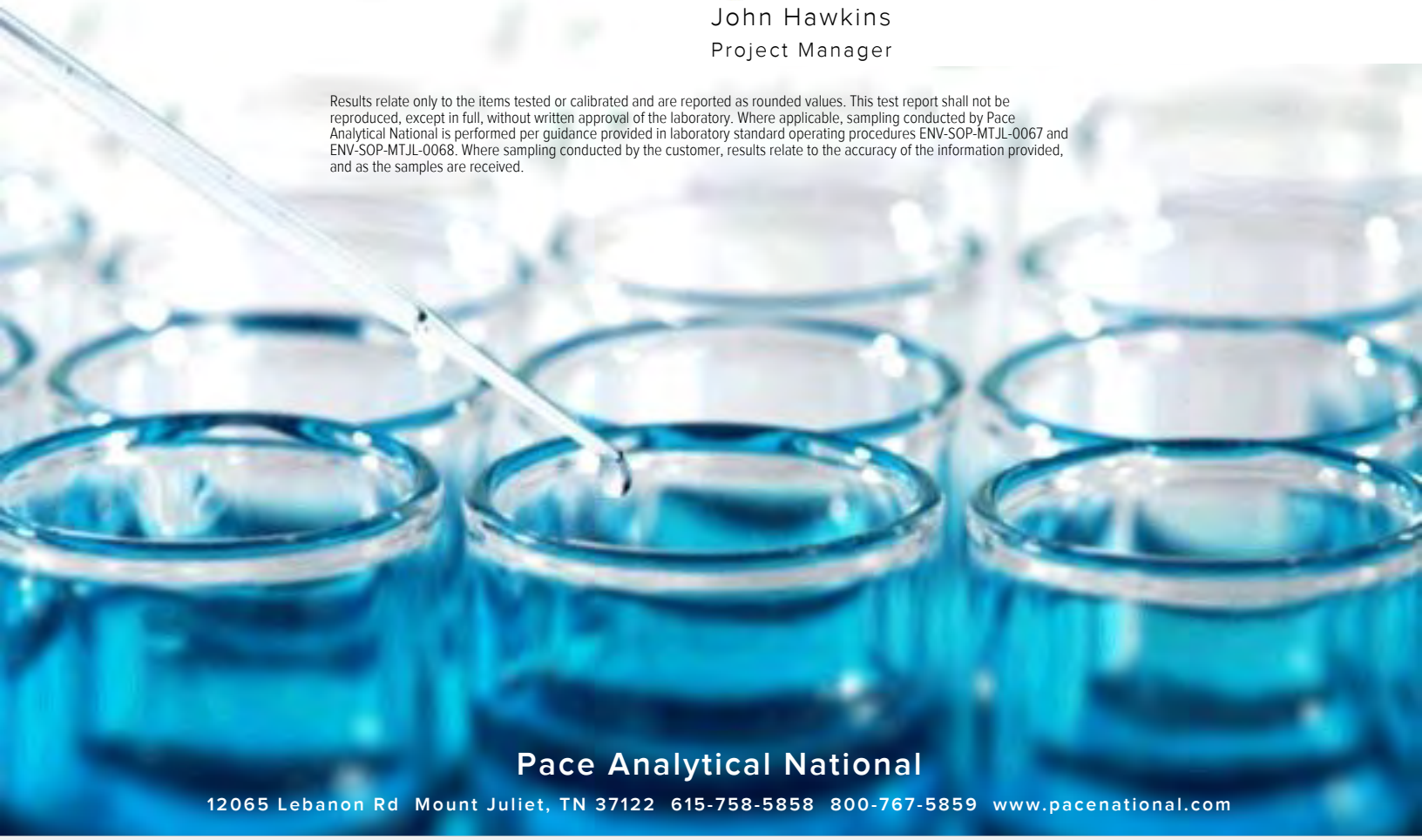
Sample Delivery Group:	L1403469
Samples Received:	09/15/2021
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By: John V Hawkins

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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2109522-003F NDD-TW-02 L1403469-03 7

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SAMPLE SUMMARY

2109522-001F EB-09092021 L1403469-01 DW

			Collected by	Collected date/time	Received date/time	
				09/09/21 09:30	09/15/21 09:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 335.4	WG1744231	1	09/22/21 09:09	09/22/21 19:39	SDL	Mt. Juliet, TN

2109522-002F NDD-TW-05 L1403469-02 DW

			Collected by	Collected date/time	Received date/time	
				09/09/21 10:00	09/15/21 09:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 335.4	WG1744231	1	09/22/21 09:09	09/22/21 19:40	SDL	Mt. Juliet, TN

2109522-003F NDD-TW-02 L1403469-03 DW

			Collected by	Collected date/time	Received date/time	
				09/09/21 10:45	09/15/21 09:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 335.4	WG1744231	1	09/22/21 09:09	09/22/21 19:41	SDL	Mt. Juliet, TN

2109522-005F DUP-09092021 L1403469-04 DW

			Collected by	Collected date/time	Received date/time	
				09/09/21 00:00	09/15/21 09:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 335.4	WG1744231	1	09/22/21 09:09	09/22/21 19:44	SDL	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.

John V Hawkins

John Hawkins
Project Manager

Wet Chemistry by Method 335.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	09/22/2021 19:39	WG1744231

Wet Chemistry by Method 335.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Cyanide	0.00917		0.00500	1	09/22/2021 19:40	WG1744231

Received by OCD: 9/19/2022 12:31:41 PM

SAMPLE RESULTS - 03

210922-0037 NDD-TW-02
Collected date/time: 09/09/21 10:45

L1403469

Wet Chemistry by Method 335.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	09/22/2021 19:41	WG1744231

Released to Imaging: 11/23/2022 1:30:09 PM

Wet Chemistry by Method 335.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Cyanide	0.00681		0.00500	1	09/22/2021 19:44	WG1744231

Method Blank (MB)

(MB) R3707534-1 09/22/21 19:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3707534-3 09/22/21 19:38

Analyte	Original Result	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide		ND	1	0.000		20

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3707534-6 09/22/21 19:52

Analyte	Original Result	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide		ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3707534-2 09/22/21 19:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.110	110	90.0-110	

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3707534-4 09/22/21 19:49 • (MSD) R3707534-5 09/22/21 19:50

Analyte	Spike Amount mg/l	Original Result	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		0.0989	0.101	98.9	101	1	90.0-110			2.10	20

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3707534-7 09/22/21 19:58 • (MSD) R3707534-8 09/22/21 19:59

Analyte	Spike Amount mg/l	Original Result	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		0.0999	0.0983	87.4	85.8	1	90.0-110	J6	J6	1.61	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.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
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]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.

Received by OCD: 9/19/2022 12:31:41 PM

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: clients.hallenvironmental.com

L040

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

L40348

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	VOC 212 ANALYTICAL COMMENTS	
1	2109522-001F	EB-09092021	500AMBHDP F-NAOH	Aqueous	9/9/2021 9:30:00 AM	1	Total Cyanide by 335.4	-01
2	2109522-002F	NDD-TW-05	500AMBHDP F-NAOH	Aqueous	9/9/2021 10:00:00 AM	1	Total Cyanide by 335.4	-02
3	2109522-003F	NDD-TW-02	500AMBHDP F-NAOH	Aqueous	9/9/2021 10:45:00 AM	1	Total Cyanide by 335.4	-03
4	2109522-005F	DUP-09092021	500AMBHDP F-NAOH	Aqueous	9/9/2021	1	Total Cyanide by 335.4	-04

Sample Receipt Checklist

COC Seal Present/Intact: Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
RAD Screen <0.5 mR/hr: Y N

If Applicable
VOA Zero Headspace: Y N
Pres.Correct/Check: Y N

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.

OK

Relinquished By:	Date: 9/10/2021	Time: 9:16 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date: 9/15/21	Time: 0945

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 2-2.1-2.3 AG 3.4 Attempt to Cool ?
Comments:

7747 8765 5623

Released to Imaging: 11/23/2022 1:30:09 PM

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R81214**	RunNo: **81214**
Prep Date:	Analysis Date: **9/10/2021**	SeqNo: **2867234** 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								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R81214**	RunNo: **81214**
Prep Date:	Analysis Date: **9/10/2021**	SeqNo: **2867235** 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	99.6	90	110			
Chloride	4.8	0.50	5.000	0	95.2	90	110			
Sulfate	9.7	0.50	10.00	0	97.3	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R81311**	RunNo: **81311**
Prep Date:	Analysis Date: **9/15/2021**	SeqNo: **2871708** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R81311**	RunNo: **81311**
Prep Date:	Analysis Date: **9/15/2021**	SeqNo: **2871716** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.5	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **MB-62558** SampType: **MBLK** TestCode: **EPA Method 6020: Total Metals**
Client ID: **PBW** Batch ID: **62558** RunNo: **81260**
Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2869330** 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								
Barium	ND	0.0010								
Beryllium	ND	0.0010								
Cadmium	ND	0.0010								
Cobalt	ND	0.0010								
Iron	ND	0.020								
Lead	ND	0.0010								
Manganese	ND	0.0010								
Nickel	ND	0.0010								
Selenium	ND	0.0010								
Silver	ND	0.0010								
Vanadium	ND	0.0010								
Zinc	ND	0.010								

Sample ID: **MSLLLCS-62558** SampType: **LCSLL** TestCode: **EPA Method 6020: Total Metals**
Client ID: **BatchQC** Batch ID: **62558** RunNo: **81260**
Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2869331** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00084	0.0010	0.001000	0	83.9	70	130			J
Arsenic	0.00089	0.0010	0.001000	0	88.6	70	130			J
Barium	0.00091	0.0010	0.001000	0	90.8	70	130			J
Beryllium	0.0011	0.0010	0.001000	0	107	70	130			
Cadmium	0.0010	0.0010	0.001000	0	99.6	70	130			J
Cobalt	0.00094	0.0010	0.001000	0	94.4	70	130			J
Iron	0.026	0.020	0.02000	0	130	70	130			
Lead	0.00099	0.0010	0.001000	0	98.6	70	130			J
Manganese	0.00092	0.0010	0.001000	0	92.5	70	130			J
Nickel	0.00083	0.0010	0.001000	0	83.3	70	130			J
Selenium	0.00092	0.0010	0.001000	0	92.1	70	130			J
Silver	0.0012	0.0010	0.001000	0	116	70	130			
Vanadium	0.0011	0.0010	0.001000	0	110	70	130			
Zinc	0.011	0.010	0.01000	0	111	70	130			

Sample ID: **MSLCS-62558** SampType: **LCS** TestCode: **EPA Method 6020: Total Metals**
Client ID: **LCSW** Batch ID: **62558** RunNo: **81260**
Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2869333** Units: **mg/L**

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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **MSLCS-62558** SampType: **LCS** TestCode: **EPA Method 6020: Total Metals**
Client ID: **LCSW** Batch ID: **62558** RunNo: **81260**
Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2869333** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.053	0.0010	0.05000	0	106	80	120			
Arsenic	0.048	0.0010	0.05000	0	95.8	80	120			
Barium	0.052	0.0010	0.05000	0	105	80	120			
Beryllium	0.055	0.0010	0.05000	0	110	80	120			
Cadmium	0.050	0.0010	0.05000	0	99.6	80	120			
Cobalt	0.049	0.0010	0.05000	0	97.4	80	120			
Iron	2.4	0.020	2.500	0	97.9	80	120			
Lead	0.053	0.0010	0.05000	0	105	80	120			
Manganese	0.049	0.0010	0.05000	0	98.1	80	120			
Nickel	0.049	0.0010	0.05000	0	97.8	80	120			
Selenium	0.048	0.0010	0.05000	0	95.3	80	120			
Silver	0.025	0.0010	0.02500	0	99.6	80	120			
Vanadium	0.049	0.0010	0.05000	0	98.9	80	120			
Zinc	0.51	0.010	0.5000	0	102	80	120			

Sample ID: **2109522-001EMSLL** SampType: **MS** TestCode: **EPA Method 6020: Total Metals**
Client ID: **EB-09092021** Batch ID: **62558** RunNo: **81260**
Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2869637** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.048	0.0010	0.05000	0	95.5	75	125			
Beryllium	0.050	0.0010	0.05000	0	100	75	125			
Cadmium	0.047	0.0010	0.05000	0	94.4	75	125			
Chromium	0.050	0.0010	0.05000	0	100	75	125			
Cobalt	0.049	0.0010	0.05000	0	98.8	75	125			
Iron	2.5	0.020	2.500	0	99.0	75	125			
Manganese	0.051	0.0010	0.05000	0	101	75	125			
Nickel	0.050	0.0010	0.05000	0	100	75	125			
Selenium	0.047	0.0010	0.05000	0	94.4	75	125			
Silver	0.024	0.0010	0.02500	0	96.4	75	125			
Vanadium	0.048	0.0010	0.05000	0	96.9	75	125			
Zinc	0.51	0.010	0.5000	0	102	75	125			

Sample ID: **2109522-001EMSDL** SampType: **MSD** TestCode: **EPA Method 6020: Total Metals**
Client ID: **EB-09092021** Batch ID: **62558** RunNo: **81260**
Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2869638** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.048	0.0010	0.05000	0	95.0	75	125	0.492	20	
Beryllium	0.050	0.0010	0.05000	0	101	75	125	0.345	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **2109522-001EMSDL** SampType: **MSD** TestCode: **EPA Method 6020: Total Metals**
Client ID: **EB-09092021** Batch ID: **62558** RunNo: **81260**
Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2869638** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.047	0.0010	0.05000	0	93.1	75	125	1.36	20	
Chromium	0.050	0.0010	0.05000	0	99.8	75	125	0.628	20	
Cobalt	0.049	0.0010	0.05000	0	97.4	75	125	1.46	20	
Iron	2.5	0.020	2.500	0	98.2	75	125	0.794	20	
Manganese	0.050	0.0010	0.05000	0	100	75	125	0.882	20	
Nickel	0.050	0.0010	0.05000	0	99.0	75	125	1.30	20	
Selenium	0.046	0.0010	0.05000	0	92.6	75	125	1.95	20	
Silver	0.024	0.0010	0.02500	0	95.5	75	125	0.919	20	
Vanadium	0.049	0.0010	0.05000	0	97.9	75	125	1.03	20	
Zinc	0.51	0.010	0.5000	0	102	75	125	0.119	20	

Sample ID: **2109522-001EMSLL** SampType: **MS** TestCode: **EPA Method 6020: Total Metals**
Client ID: **EB-09092021** Batch ID: **62558** RunNo: **81260**
Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2870342** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.046	0.0010	0.05000	0	91.1	75	125			

Sample ID: **2109522-001EMSDL** SampType: **MSD** TestCode: **EPA Method 6020: Total Metals**
Client ID: **EB-09092021** Batch ID: **62558** RunNo: **81260**
Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2870343** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.042	0.0010	0.05000	0	84.9	75	125	7.04	20	

Sample ID: **2109522-001EMSLL** SampType: **MS** TestCode: **EPA Method 6020: Total Metals**
Client ID: **EB-09092021** Batch ID: **62558** RunNo: **81364**
Prep Date: **9/13/2021** Analysis Date: **9/17/2021** SeqNo: **2873529** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.048	0.0010	0.05000	0	95.6	75	125			
Barium	0.047	0.0010	0.05000	0	94.8	75	125			

Sample ID: **2109522-001EMSDL** SampType: **MSD** TestCode: **EPA Method 6020: Total Metals**
Client ID: **EB-09092021** Batch ID: **62558** RunNo: **81364**
Prep Date: **9/13/2021** Analysis Date: **9/17/2021** SeqNo: **2873530** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.047	0.0010	0.05000	0	95.0	75	125	0.645	20	
Barium	0.047	0.0010	0.05000	0	94.6	75	125	0.251	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **MSLCS-62644**	SampType: **LCS**	TestCode: **EPA Method 6020: Total Metals**
Client ID: **LCSW**	Batch ID: **62644**	RunNo: **81364**
Prep Date: **9/16/2021**	Analysis Date: **9/17/2021**	SeqNo: **2873576** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.050	0.0010	0.05000	0	101	80	120			

Sample ID: **MB-62644**	SampType: **MBLK**	TestCode: **EPA Method 6020: Total Metals**
Client ID: **PBW**	Batch ID: **62644**	RunNo: **81364**
Prep Date: **9/16/2021**	Analysis Date: **9/17/2021**	SeqNo: **2873592** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	ND	0.0010								

Sample ID: **MSLLLCS-62644**	SampType: **LCSLL**	TestCode: **EPA Method 6020: Total Metals**
Client ID: **BatchQC**	Batch ID: **62644**	RunNo: **81364**
Prep Date: **9/16/2021**	Analysis Date: **9/17/2021**	SeqNo: **2873593** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.0011	0.0010	0.001000	0	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **MB-62607** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW** Batch ID: **62607** RunNo: **81330**
Prep Date: **9/16/2021** Analysis Date: **9/16/2021** SeqNo: **2872310** 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	0.39		0.5000		78.5	64.8	167			

Sample ID: **LCS-62607** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW** Batch ID: **62607** RunNo: **81330**
Prep Date: **9/16/2021** Analysis Date: **9/16/2021** SeqNo: **2872311** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.1	1.0	2.500	0	84.9	73	138			
Surr: DNOP	0.23		0.2500		92.7	64.8	167			

Sample ID: **2109522-001BMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **EB-09092021** Batch ID: **62607** RunNo: **81330**
Prep Date: **9/16/2021** Analysis Date: **9/16/2021** SeqNo: **2872362** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.1	1.0	2.500	0	126	64.7	146			
Surr: DNOP	0.34		0.2500		136	64.8	167			

Sample ID: **2109522-001BMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **EB-09092021** Batch ID: **62607** RunNo: **81330**
Prep Date: **9/16/2021** Analysis Date: **9/16/2021** SeqNo: **2872461** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.8	1.0	2.500	0	111	64.7	146	12.6	20	
Surr: DNOP	0.30		0.2500		121	64.8	167	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBW**	Batch ID: **R81278**	RunNo: **81278**							
Prep Date:	Analysis Date: **9/15/2021**	SeqNo: **2871037**	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	21		20.00		105	68.5	136			

Sample ID: **2.5ug lcs gro**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSW**	Batch ID: **R81278**	RunNo: **81278**							
Prep Date:	Analysis Date: **9/15/2021**	SeqNo: **2871038**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.50	0.050	0.5000	0	101	80	120			
Surr: BFB	24		20.00		122	68.5	136			

Sample ID: **2109522-002ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **NDD-TW-05**	Batch ID: **R81278**	RunNo: **81278**							
Prep Date:	Analysis Date: **9/15/2021**	SeqNo: **2871043**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	60	2.5	25.00	36.51	93.6	67.3	116			
Surr: BFB	1200		1000		122	68.5	136			

Sample ID: **2109522-002amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **NDD-TW-05**	Batch ID: **R81278**	RunNo: **81278**							
Prep Date:	Analysis Date: **9/15/2021**	SeqNo: **2871044**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	59	2.5	25.00	36.51	90.0	67.3	116	1.53	20	
Surr: BFB	1200		1000		121	68.5	136	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R81276** RunNo: **81276**
Prep Date: Analysis Date: **9/14/2021** SeqNo: **2870296** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	25	1.0	20.00	0	124	70	130			
Toluene	21	1.0	20.00	0	107	70	130			
Chlorobenzene	21	1.0	20.00	0	105	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	106	70	130			
Trichloroethene (TCE)	23	1.0	20.00	0	113	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		114	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.4	70	130			
Surr: Dibromofluoromethane	11		10.00		109	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R81276** RunNo: **81276**
Prep Date: Analysis Date: **9/14/2021** SeqNo: **2870297** 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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R81276**	RunNo: **81276**
Prep Date:	Analysis Date: **9/14/2021**	SeqNo: **2870297** 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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R81276** RunNo: **81276**
Prep Date: Analysis Date: **9/14/2021** SeqNo: **2870297** 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	10		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.3	70	130			
Surr: Dibromofluoromethane	11		10.00		107	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: **2109522-001ams** SampType: **MS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **EB-09092021** Batch ID: **R81276** RunNo: **81276**
Prep Date: Analysis Date: **9/14/2021** SeqNo: **2870307** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	24	1.0	20.00	0	119	70	130			
Toluene	22	1.0	20.00	0	111	70	130			
Chlorobenzene	22	1.0	20.00	0	110	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	104	70	130			
Trichloroethene (TCE)	22	1.0	20.00	0	109	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.5	70	130			
Surr: Dibromofluoromethane	11		10.00		107	70	130			
Surr: Toluene-d8	11		10.00		110	70	130			

Sample ID: **2109522-001amsd** SampType: **MSD** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **EB-09092021** Batch ID: **R81276** RunNo: **81276**
Prep Date: Analysis Date: **9/14/2021** SeqNo: **2870308** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	112	70	130	5.26	20	
Toluene	20	1.0	20.00	0	102	70	130	7.76	20	
Chlorobenzene	21	1.0	20.00	0	106	70	130	3.59	20	
1,1-Dichloroethene	19	1.0	20.00	0	93.8	70	130	10.5	20	
Trichloroethene (TCE)	21	1.0	20.00	0	104	70	130	4.12	20	
Surr: 1,2-Dichloroethane-d4	11		10.00		108	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.5		10.00		95.1	70	130	0	0	
Surr: Dibromofluoromethane	11		10.00		107	70	130	0	0	
Surr: Toluene-d8	11		10.00		106	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R81312**	RunNo: **81312**
Prep Date:	Analysis Date: **9/15/2021**	SeqNo: **2871882** 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.	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R81312** RunNo: **81312**
Prep Date: Analysis Date: **9/15/2021** SeqNo: **2871882** 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	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.6	70	130			
Surr: Dibromofluoromethane	9.7		10.00		96.8	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

Sample ID: **100ng lcs2** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R81312** RunNo: **81312**
Prep Date: Analysis Date: **9/15/2021** SeqNo: **2871906** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	25	1.0	20.00	0	125	70	130			
Toluene	22	1.0	20.00	0	108	70	130			
Chlorobenzene	22	1.0	20.00	0	112	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **100ng lcs2** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R81312** RunNo: **81312**
Prep Date: Analysis Date: **9/15/2021** SeqNo: **2871906** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	22	1.0	20.00	0	109	70	130			
Trichloroethene (TCE)	22	1.0	20.00	0	111	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.7	70	130			
Surr: Dibromofluoromethane	10		10.00		99.8	70	130			
Surr: Toluene-d8	10		10.00		99.9	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **MB-62559** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW** Batch ID: **62559** RunNo: **81342**
Prep Date: **9/14/2021** Analysis Date: **9/16/2021** SeqNo: **2872725** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Azobenzene	ND	5.0								
Benz(a)anthracene	ND	5.0								
Benzo(a)pyrene	ND	5.0								
Benzo(b)fluoranthene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
Benzo(k)fluoranthene	ND	5.0								
Benzoic acid	ND	20								
Benzyl alcohol	ND	5.0								
Bis(2-chloroethoxy)methane	ND	5.0								
Bis(2-chloroethyl)ether	ND	5.0								
Bis(2-chloroisopropyl)ether	ND	5.0								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	5.0								
Butyl benzyl phthalate	ND	5.0								
Carbazole	ND	5.0								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	5.0								
2-Chloronaphthalene	ND	5.0								
2-Chlorophenol	ND	5.0								
4-Chlorophenyl phenyl ether	ND	5.0								
Chrysene	ND	5.0								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	20								
Dibenz(a,h)anthracene	ND	5.0								
Dibenzofuran	ND	5.0								
1,2-Dichlorobenzene	ND	5.0								
1,3-Dichlorobenzene	ND	5.0								
1,4-Dichlorobenzene	ND	5.0								
3,3´-Dichlorobenzidine	ND	5.0								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	5.0								
2,4-Dimethylphenol	ND	5.0								
4,6-Dinitro-2-methylphenol	ND	5.0								
2,4-Dinitrophenol	ND	5.0								

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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **MB-62559** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW** Batch ID: **62559** RunNo: **81342**
Prep Date: **9/14/2021** Analysis Date: **9/16/2021** SeqNo: **2872725** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	5.0								
2,6-Dinitrotoluene	ND	5.0								
Fluoranthene	ND	10								
Fluorene	ND	5.0								
Hexachlorobenzene	ND	5.0								
Hexachlorobutadiene	ND	5.0								
Hexachlorocyclopentadiene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
1-Methylnaphthalene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
3+4-Methylphenol	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Naphthalene	ND	5.0								
2-Nitroaniline	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
Nitrobenzene	ND	5.0								
2-Nitrophenol	ND	5.0								
4-Nitrophenol	ND	5.0								
Pentachlorophenol	ND	20								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Pyridine	ND	5.0								
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
Surr: 2-Fluorophenol	71		200.0		35.3	15	87			
Surr: Phenol-d5	62		200.0		30.9	15	67.5			
Surr: 2,4,6-Tribromophenol	79		200.0		39.6	15	122			
Surr: Nitrobenzene-d5	45		100.0		44.5	15	103			
Surr: 2-Fluorobiphenyl	45		100.0		45.1	15	103			
Surr: 4-Terphenyl-d14	110		100.0		106	45	137			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **LCS-62559** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW** Batch ID: **62559** RunNo: **81342**
Prep Date: **9/14/2021** Analysis Date: **9/16/2021** SeqNo: **2872726** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	47	5.0	100.0	0	46.6	28	101			
4-Chloro-3-methylphenol	87	5.0	200.0	0	43.6	28.3	103			
2-Chlorophenol	61	5.0	200.0	0	30.6	29.3	105			
1,4-Dichlorobenzene	36	5.0	100.0	0	36.1	15	87.6			
2,4-Dinitrotoluene	44	5.0	100.0	0	43.9	23.6	90.9			
N-Nitrosodi-n-propylamine	42	5.0	100.0	0	41.5	23.1	94.6			
4-Nitrophenol	6.2	5.0	200.0	0	3.08	15	77			S
Pentachlorophenol	19	20	200.0	0	9.37	21	111			JS
Phenol	45	5.0	200.0	0	22.6	16.8	70.5			
Pyrene	82	5.0	100.0	0	82.1	30.5	129			
1,2,4-Trichlorobenzene	34	5.0	100.0	0	33.8	15	88.2			
Surr: 2-Fluorophenol	34		200.0		16.8	15	84.2			
Surr: Phenol-d5	51		200.0		25.6	15	67.5			
Surr: 2,4,6-Tribromophenol	25		200.0		12.4	15	115			S
Surr: Nitrobenzene-d5	42		100.0		42.0	15	103			
Surr: 2-Fluorobiphenyl	44		100.0		44.4	15	105			
Surr: 4-Terphenyl-d14	97		100.0		97.0	42.3	137			

Sample ID: **LCSD-62559** SampType: **LCSD** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02** Batch ID: **62559** RunNo: **81342**
Prep Date: **9/14/2021** Analysis Date: **9/16/2021** SeqNo: **2872727** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	47	5.0	100.0	0	47.2	28	101	1.33	41.2	
4-Chloro-3-methylphenol	100	5.0	200.0	0	49.9	28.3	103	13.4	44.7	
2-Chlorophenol	94	5.0	200.0	0	46.9	29.3	105	42.0	35.6	R
1,4-Dichlorobenzene	39	5.0	100.0	0	38.7	15	87.6	7.05	30.4	
2,4-Dinitrotoluene	49	5.0	100.0	0	49.1	23.6	90.9	11.3	53.1	
N-Nitrosodi-n-propylamine	46	5.0	100.0	0	46.2	23.1	94.6	10.6	31.1	
4-Nitrophenol	86	5.0	200.0	0	43.1	15	77	173	52.4	R
Pentachlorophenol	110	20	200.0	0	54.3	21	111	141	71.6	R
Phenol	51	5.0	200.0	0	25.7	16.8	70.5	12.8	37.2	
Pyrene	89	5.0	100.0	0	89.1	30.5	129	8.22	51.3	
1,2,4-Trichlorobenzene	38	5.0	100.0	0	37.6	15	88.2	10.7	31.8	
Surr: 2-Fluorophenol	70		200.0		35.1	15	87	0	0	
Surr: Phenol-d5	58		200.0		29.2	15	67.5	0	0	
Surr: 2,4,6-Tribromophenol	110		200.0		54.5	15	122	0	0	
Surr: Nitrobenzene-d5	45		100.0		44.6	15	103	0	0	
Surr: 2-Fluorobiphenyl	45		100.0		44.7	15	103	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **LCSD-62559** SampType: **LCSD** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02** Batch ID: **62559** RunNo: **81342**
Prep Date: **9/14/2021** Analysis Date: **9/16/2021** SeqNo: **2872727** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	100		100.0		105	45	137	0	0	

Sample ID: **MB-62627** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW** Batch ID: **62627** RunNo: **81474**
Prep Date: **9/16/2021** Analysis Date: **9/21/2021** SeqNo: **2878361** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	75		200.0		37.5	15	87			
Surr: Phenol-d5	58		200.0		28.9	15	67.5			
Surr: 2,4,6-Tribromophenol	95		200.0		47.6	15	122			
Surr: Nitrobenzene-d5	45		100.0		45.2	15	103			
Surr: 2-Fluorobiphenyl	43		100.0		43.0	15	103			
Surr: 4-Terphenyl-d14	98		100.0		97.7	45	137			

Sample ID: **LCS-62627** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW** Batch ID: **62627** RunNo: **81474**
Prep Date: **9/16/2021** Analysis Date: **9/21/2021** SeqNo: **2878362** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	71		200.0		35.4	15	84.2			
Surr: Phenol-d5	57		200.0		28.4	15	67.5			
Surr: 2,4,6-Tribromophenol	83		200.0		41.6	15	115			
Surr: Nitrobenzene-d5	38		100.0		38.5	15	103			
Surr: 2-Fluorobiphenyl	36		100.0		35.9	15	105			
Surr: 4-Terphenyl-d14	85		100.0		85.1	42.3	137			

Sample ID: **LCSD-62627** SampType: **LCSD** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02** Batch ID: **62627** RunNo: **81474**
Prep Date: **9/16/2021** Analysis Date: **9/21/2021** SeqNo: **2878363** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	99		200.0		49.7	15	87	0	0	
Surr: Phenol-d5	79		200.0		39.7	15	67.5	0	0	
Surr: 2,4,6-Tribromophenol	130		200.0		66.3	15	122	0	0	
Surr: Nitrobenzene-d5	62		100.0		62.1	15	103	0	0	
Surr: 2-Fluorobiphenyl	58		100.0		58.4	15	103	0	0	
Surr: 4-Terphenyl-d14	110		100.0		105	45	137	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **MB-62647** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW** Batch ID: **62647** RunNo: **81474**
Prep Date: **9/17/2021** Analysis Date: **9/21/2021** SeqNo: **2878364** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	65		200.0		32.6	15	87			
Surr: Phenol-d5	72		200.0		36.2	15	67.5			
Surr: 2,4,6-Tribromophenol	32		200.0		15.9	15	122			
Surr: Nitrobenzene-d5	56		100.0		55.7	15	103			
Surr: 2-Fluorobiphenyl	53		100.0		53.3	15	103			
Surr: 4-Terphenyl-d14	95		100.0		95.4	45	137			

Sample ID: **LCS-62647** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW** Batch ID: **62647** RunNo: **81474**
Prep Date: **9/17/2021** Analysis Date: **9/21/2021** SeqNo: **2878365** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	87		200.0		43.6	15	84.2			
Surr: Phenol-d5	68		200.0		34.1	15	67.5			
Surr: 2,4,6-Tribromophenol	120		200.0		58.5	15	115			
Surr: Nitrobenzene-d5	53		100.0		52.7	15	103			
Surr: 2-Fluorobiphenyl	51		100.0		51.2	15	105			
Surr: 4-Terphenyl-d14	97		100.0		96.6	42.3	137			

Sample ID: **LCSD-62647** SampType: **LCSD** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02** Batch ID: **62647** RunNo: **81474**
Prep Date: **9/17/2021** Analysis Date: **9/21/2021** SeqNo: **2878366** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	95		200.0		47.5	15	87	0	0	
Surr: Phenol-d5	76		200.0		38.1	15	67.5	0	0	
Surr: 2,4,6-Tribromophenol	120		200.0		59.0	15	122	0	0	
Surr: Nitrobenzene-d5	60		100.0		59.5	15	103	0	0	
Surr: 2-Fluorobiphenyl	57		100.0		57.2	15	103	0	0	
Surr: 4-Terphenyl-d14	99		100.0		99.3	45	137	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#: **2109522**
28-Sep-21

Client: Marathon
Project: North Drainage Ditch Investigation

Sample ID: **MB-62565**	SampType: **MBLK**	TestCode: **EPA Method 7470A: Mercury**							
Client ID: **PBW**	Batch ID: **62565**	RunNo: **81267**							
Prep Date: **9/14/2021**	Analysis Date: **9/14/2021**	SeqNo: **2869659**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCS-65265**	SampType: **LCS**	TestCode: **EPA Method 7470A: Mercury**							
Client ID: **LCSW**	Batch ID: **62565**	RunNo: **81267**							
Prep Date: **9/14/2021**	Analysis Date: **9/14/2021**	SeqNo: **2869661**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: **Marathon** Work Order Number: **2109522** RcptNo: 1

Received By: **Cheyenne Cason** 9/10/2021 7:20:00 AM

Completed By: **Sean Livingston** 9/10/2021 9:06:05 AM

Reviewed By: JR 9/10/21

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 ☑ TMC 9.10.21 NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐
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: 4-4 (<2 or >12 unless noted)

Adjusted? yes

Checked by: TMC 9.10.21

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: Added an additional .50mL of HNO_3 to samples 002E + 005E for pH. - TMC 9.10.21

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.2	Good				
2	5.9	Good				

Released to Imaging: 11/3/2022 3:30:09 PM

Received by OCD: 9/19/2022 12:31:41 PM

Chain of Custody Record

Client: Marathon Gallup Refinery

Mailing Address:

Giant Crossing Rd, Jamestown, NM, 87347

Phone #: 808-640-1823

Email or Fax#:

QA/QC Package:
Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
NELAC ☐ Other

EDD (Type)

X Standard ☐ Rush

Project Name:
North Drainage Ditch Investigation

Project #: 697-096-001

PO#: 4500273327

Project Manager:
Caitlin Fields / Brian McLouglin

Sampler: Hilario Trejo

On Ice: ☑ Yes ☐ No

# of Coolers: 2 4.1 + 0.1 = 4.2

Cooler Temp(including CF): 5.8 + 0.1 = 5.9

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 Name	Container Type and #	Preservative Type	HEAL No. 210922	Analysis Request: SW8260B	SW8270C	SW8015 - DRO	SW8015 - GRO	SW6020(Sb,As,Ba,Be,Cd,Cr,Co,Pb,Ni,Se,Ag,V,Zn,Fe,Mn)	E335.4	SW7470	E300 (Cl, F, SO4)
9-9-21	9:30		EB-09092021	10		001	X	X	X	X	X	X	X	X
9-9-21	10:00		MDD-TW-05	10		002	X	X	X	X	X	X	X	X
9-9-21	10:45		MDD-TW-02	10		003	X	X	X	X	X	X	X	X
9-9-21	10:30		FB-09092021	2		004	X							
9-9-21			~~BAP~~ DUP-09092021	10		005	X	X	X	X	X	X	X	X
			Trip Blank DAD 9/10/21			-006								

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
9-9-21	17:45	Hilario Trejo	Cmc	courier	9/10/21	0720
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Appendix F – Groundwater Gauging Data and Sampling Forms

APPENDIX F. FLUID LEVEL DATA
NORTH DRAINAGE DITCH
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NM

Well ID	Date Measured	DTW (ft)	DTB (ft)
NDD-MW-1	9/8/2021	3.41	35
NDD-MW-2	9/8/2021	Dry	35
NDD-TW-1	9/8/2021	Dry	35
NDD-TW-2	9/8/2021	23.15	35
NDD-TW-4	9/8/2021	Dry	35
NDD-TW-5	9/8/2021	19.33	35

DTB - depth to bottom
DTW - depth to water
ft - feet
ID - identification

MARATHON GALLUP REFINERY

THIRD QUARTER 2021

WELL ID		TEST PARAMETERS									
NDD-MW-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	Turbidity (NTU)
GAUGE DATE	9/8/2021	Initial	11:25	7.68	14.7	1.21	786.5	0.60	2.18	195.3	21.2
GAUGE TIME	12:45	1	11:35	7.71	14.4	1.24	777	0.59	2.10	190.4	24.0
DHC (FEET)	-	2									
DTW (FEET)	3.41	3									
DTB (FEET)	35	4									
DTB - DTW	31.59	5									
CAPACITY PER FOOT	0.74 - 4"	6									
	0.163 - 2"										

PURGING DATA

10 WELL VOLUMES	51	**WEATHER CONDITIONS:**	Sunny, 88°F
PURGE DATE	9/8/2021	**WATER APPEARANCE / ODOR:**	Clear/No Odor
END OF PURGE TIME	13:30	**COMMENTS:**	Purged Dry
PURGE AMOUNT	38		
DTW (FEET)	Dry		

SAMPLING DATA

SAMPLE DATE	9/17/2021	**WEATHER CONDITIONS:**	Sunny 75°G
DTW (FEET)	3.48	**WATER APPEARANCE / ODO**	Clear / No Odor
SAMPLE TIME	11:30	**COMMENTS:**	DUP collected

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
MKTF-		40 ML VOA		HCL
		1 LITER AMBER		NEAT
		250 ML AMBER		NEAT
		250 ML PLASTIC		HNO_3
		125 ML PLASTIC		HNO_3
		125 ML PLASTIC		H_2SO_4
		125 ML PLASTIC		NEAT

INSTRUMENTS USED	OIL / WATER INTERFACE PROBE
	WATER QUALITY METER

COMPLETED BY: SIGNATURE:

MARATHON GALLUP REFINERY

THIRD QUARTER 2021

WELL ID		TEST PARAMETERS									
NDD-MW-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	Turbidity (NTU)
GAUGE DATE	9/8/2021	Initial									
GAUGE TIME	13:30	1									
DHC (FEET)	-	2									
DTW (FEET)	Dry	3									
DTB (FEET)	35	4									
DTB - DTW		5									
CAPACITY PER FOOT	0.74 - 4"	6									
	0.163 - 2"										

PURGING DATA

10 WELL VOLUMES	0	**WEATHER CONDITIONS:**	Sunny
PURGE DATE		**WATER APPEARANCE / ODOR:**	**Dry Well**
END OF PURGE TIME		**COMMENTS:**	**Dry Well**
PURGE AMOUNT			
DTW (FEET)			

SAMPLING DATA

SAMPLE DATE		**WEATHER CONDITIONS:**	
DTW (FEET)		**WATER APPEARANCE / ODOR:**	
SAMPLE TIME		**COMMENTS:**	DUP collected

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
MKTF-		40 ML VOA		HCL
		1 LITER AMBER		NEAT
		250 ML AMBER		NEAT
		250 ML PLASTIC		HNO_3
		125 ML PLASTIC		HNO_3
		125 ML PLASTIC		H_2SO_4
		125 ML PLASTIC		NEAT

INSTRUMENTS USED	OIL / WATER INTERFACE PROBE
	WATER QUALITY METER

COMPLETED BY: SIGNATURE:

MARATHON GALLUP REFINERY

THIRD QUARTER 2021

WELL ID		TEST PARAMETERS									
NDD-TW-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	Turbidity (NTU)
GAUGE DATE	9/8/2021	Initial									
GAUGE TIME	13:40	1									
DHC (FEET)	-	2									
DTW (FEET)	Dry	3									
DTB (FEET)	35	4									
DTB - DTW		5									
CAPACITY PER FOOT	0.74 - 4"	6									
	0.163 - 2"										

PURGING DATA

10 WELL VOLUMES	0	**WEATHER CONDITIONS:** Sunny
PURGE DATE		**WATER APPEARANCE / ODOR:** Dry Well
END OF PURGE TIME		**COMMENTS:** Dry Well
PURGE AMOUNT		
DTW (FEET)		

SAMPLING DATA

SAMPLE DATE		**WEATHER CONDITIONS:**
DTW (FEET)		**WATER APPEARANCE / ODOR:**
SAMPLE TIME		**COMMENTS:** DUP collected

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
MKTF-		40 ML VOA		HCL
		1 LITER AMBER		NEAT
		250 ML AMBER		NEAT
		250 ML PLASTIC		HNO_3
		125 ML PLASTIC		HNO_3
		125 ML PLASTIC		H_2SO_4
		125 ML PLASTIC		NEAT

INSTRUMENTS USED: OIL / WATER INTERFACE PROBE; WATER QUALITY METER

COMPLETED BY: SIGNATURE:

MARATHON GALLUP REFINERY

THIRD QUARTER 2021

WELL ID		TEST PARAMETERS									
NDD-TW-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	Turbidity (NTU)
GAUGE DATE	9/8/2021	Initial	10:50	7.45	18.3	3.66	2379	1.94	5	186.1	58.4
GAUGE TIME	14:55	1	11:15	7.42	15.1	3.76	2444	1.99	5.16	193.2	55.0
DHC (FEET)	-	2									
DTW (FEET)	23.15	3									
DTB (FEET)	35	4									
DTB - DTW	11.85	5									
CAPACITY PER FOOT	0.74 - 4"	6									
	0.163 - 2"										

PURGING DATA

10 WELL VOLUMES	19.3	**WEATHER CONDITIONS:**	Sunny, 88°F
PURGE DATE	9/8/2021	**WATER APPEARANCE / ODOR:**	Brown/HC odor
END OF PURGE TIME	15:45	**COMMENTS:**	Purged Dry
PURGE AMOUNT	7.5		
DTW (FEET)	Dry		

SAMPLING DATA

SAMPLE DATE	9/17/2021	**WEATHER CONDITIONS:**	Sunny 75°G
DTW (FEET)	3.48	**WATER APPEARANCE / ODOI**	Clear / No Odor
SAMPLE TIME	11:30	**COMMENTS:**	DUP collected

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
MKTF-		40 ML VOA		HCL
		1 LITER AMBER		NEAT
		250 ML AMBER		NEAT
		250 ML PLASTIC		HNO_3
		125 ML PLASTIC		HNO_3
		125 ML PLASTIC		H_2SO_4
		125 ML PLASTIC		NEAT

INSTRUMENTS USED: OIL / WATER INTERFACE PROBE; WATER QUALITY METER

COMPLETED BY: SIGNATURE:

MARATHON GALLUP REFINERY

THIRD QUARTER 2021

WELL ID		TEST PARAMETERS									
NDD-TW-4		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	Turbidity (NTU)
GAUGE DATE	9/8/2021	Initial									
GAUGE TIME	14:45	1									
DHC (FEET)	-	2									
DTW (FEET)	Dry	3									
DTB (FEET)	35	4									
DTB - DTW		5									
CAPACITY PER FOOT	0.74 - 4"	6									
	0.163 - 2"										

PURGING DATA

10 WELL VOLUMES	0	**WEATHER CONDITIONS:** Sunny
PURGE DATE		**WATER APPEARANCE / ODOR:** Dry Well
END OF PURGE TIME		**COMMENTS:** Dry Well
PURGE AMOUNT		
DTW (FEET)		

SAMPLING DATA

SAMPLE DATE		**WEATHER CONDITIONS:**
DTW (FEET)		**WATER APPEARANCE / ODOR:**
SAMPLE TIME		**COMMENTS:** DUP collected

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
MKTF-		40 ML VOA		HCL
		1 LITER AMBER		NEAT
		250 ML AMBER		NEAT
		250 ML PLASTIC		HNO_3
		125 ML PLASTIC		HNO_3
		125 ML PLASTIC		H_2SO_4
		125 ML PLASTIC		NEAT

INSTRUMENTS USED: OIL / WATER INTERFACE PROBE; WATER QUALITY METER

COMPLETED BY: SIGNATURE:

MARATHON GALLUP REFINERY

THIRD QUARTER 2021

WELL ID		TEST PARAMETERS									
NDD-TW-5		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	Turbidity (NTU)
GAUGE DATE	9/8/2021	Initial	14:30	6.82	16.8	1.98	1287	1.01	0.81	81.9	31.2
GAUGE TIME	14:10	1	14:36	6.86	16.5	1.95	1274	1.00	0.82	90.1	30.9
DHC (FEET)	-	2	14:44	6.86	16.5	1.99	1293	1.00	0.77	89.9	30.7
DTW (FEET)	19.33	3									
DTB (FEET)	35	4									
DTB - DTW	15.67	5									
CAPACITY PER FOOT	0.74 - 4"	6									
	0.163 - 2"										

PURGING DATA

10 WELL VOLUMES	25.5	**WEATHER CONDITIONS:**	Sunny, 88°F
PURGE DATE	9/8/2021	**WATER APPEARANCE / ODOR:**	Brown/HC odor
END OF PURGE TIME	14:45	**COMMENTS:**	Purged Dry
PURGE AMOUNT	19		
DTW (FEET)	17.55		

SAMPLING DATA

SAMPLE DATE	9/17/2021	**WEATHER CONDITIONS:**	Sunny 75°G
DTW (FEET)	3.48	**WATER APPEARANCE / ODO**	Clear / No Odor
SAMPLE TIME	11:30	**COMMENTS:**	DUP collected

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
MKTF-		40 ML VOA		HCL
		1 LITER AMBER		NEAT
		250 ML AMBER		NEAT
		250 ML PLASTIC		HNO_3
		125 ML PLASTIC		HNO_3
		125 ML PLASTIC		H_2SO_4
		125 ML PLASTIC		NEAT

INSTRUMENTS USED	OIL / WATER INTERFACE PROBE
	WATER QUALITY METER

COMPLETED BY: SIGNATURE:

Appendix G – Data Validation Report

Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental
Project Name: Western Refining SW, North Drainage Ditch	Sample Matrix: Soil
Project Number: 697-096-001 Task: 0002	Sample Start Date: 08/16/2021
Date Validated: 10/06/2021	Sample End Date: 08/18/2021
Parameters Included: ▪ Volatile Organic Compounds (VOC) by Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270C ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D MOD ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015M/D ▪ Total Metals by SW-846 Method 6010B ▪ Total Mercury by SW-846 Method 7471B ▪ Cyanide by SW-846 Method 9012B	
Laboratory Project ID: 2108A32	
Data Validator: Charles Ballek, Senior Chemist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace Analytical in Mt. Juliet, Tennessee, evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- Laboratory control samples (LCS)
- Organic system monitoring compounds (surrogates)

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks
- Equipment blanks

Tier II Data Validation Report Summary

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
NDD-MW-1 (0-0.5')	2108A32-001
NDD-MW-1 (1.5-2')	2108A32-002
NDD-BD2	2108A32-003
NDD-MW-1 (7.5-8')	2108A32-004
NDD-MW-1 (27.5-28')	2108A32-005
NDD-MW-1 (35-35.5')	2108A32-006
NDD-MW-1 (45.5-46')	2108A32-007
NDD-MW-2 (0-0.5')	2108A32-008
NDD-MW-2 (1.5-2')	2108A32-009
NDD-MW-2 (28.2-28.7)	2108A32-010
NDD-EB3	2108A32-011
NDD-EB4	2108A32-012
NDD-MW-2 (42.5-43')	2108A32-013
NDD-MW-2 (47.5-48')	2108A32-014A
MeOH Blank	2108a32-015

Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- ○ Initial and Continuing Calibrations (Items 9 and 10)
- ⊗ Laboratory Blanks (Items 11 and 12)
- ⊗ MS/MSD (Items 13 and 14)
- ⊗ LCS (Items 15 and 16)
- ⊗ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ✓ Trip and Equipment Blanks (Items 18 and 19)
- ⊗ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)
- ✓ Data Relationships (Item 23)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-542-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, February 2021.

Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

Qualifier	Definition
J	Estimated concentration
J+	The result is an estimated concentration, but may be biased high
JB	Estimated concentration due to blank contamination
UJ	Estimated reporting limit
U	Evaluated to be undetected at the reporting limit

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 1,872 data points. The data completeness calculation does not include any submitted blank sample results. Data points were not rejected. The data completeness measure for this data package is calculated to be 100% and is acceptable.

VALIDATION CRITERIA CHECKLIST	
1. Was the report free of non-conformances identified by the laboratory?	Yes
Comments: The laboratory did not identify analytical non-conformances related to this data set.	
2. Were the data free of data qualification flags and/or notes used by the laboratory? If no, define.	No
Comments: The laboratory used the following data qualification flags with this data set. J – Analyte detected below quantitation limits D – Sample diluted due to matrix. S – % Recovery outside of range due to dilution or matrix. J4 – The associated batch QC was outside the established quality control range for accuracy. J5 – The sample matrix interfered with the ability to make any accurate determination; spike value is high.	
3. Were sample CoC forms and custody procedures complete?	Yes
Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel information, dates, and times of receipt. The "Relinquished by:" information was typed rather than signed by the appropriate field personnel, but custody was not affected. Custody seals were not present or required since the samples were delivered to the laboratory by courier, and custody was maintained at all times.	
4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable?	Yes
Comments: The reporting limits for the data set were reviewed and appeared to be acceptable. The following dilutions were applied to the project samples. Method 8260B: Dilutions of 5 times were applied to samples NDD-MW-1 (27.5-28') and NDD-MW-2 (47.5-48') for the analysis of VOCs. Method 8270C: The submitted samples were diluted by factors of 10 and 20 times for the analyses of SVOC target analytes. Method 8015D: Dilutions of 5 times were applied to samples NDD-MW-1 (27.5-28') and NDD-MW-2 (47.5-48') for the analysis of GRO. Method 8015M/D: Sample NDD-MW-1 (7.5-8') was diluted by a factor of 100 times for the analysis of DRO and MRO. Method 6010B: Dilutions of 2 to 200 times were applied to select submitted samples for the analysis of total metals. Method 7471: Sample NDD-BD2 was diluted by a factor of 5 times for the analysis of mercury.	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?	No
Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC. The CoC indicated requests for metals by Method 6020 and mercury by Method 7470. The analyses by Method 6010B and Method 7471B met the project accuracy and precision goals and were acceptable replacements.	
6. Were samples received in good condition within method-specified requirements?	Yes
Comments: Samples were received at Hall Environmental on ice, in good condition, and with the cooler temperature within the recommended temperature range of 4°C ± 2°C at 5.8°C as noted on the CoC and on the *Sample Log-in Check List*. Portions of the samples transferred to Pace Analytical were received intact and with the cooler temperature within the recommended range at 3.9°C as noted on the CoC.	
7. Were samples extracted/digested and analyzed within method-specified or technical holding times?	Yes
Comments: The samples were digested/extracted and analyzed within method-specific holding times.	

VALIDATION CRITERIA CHECKLIST

8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil. — Yes

Comments: The results were reported in concentration units of milligrams per kilogram (mg/kg), which were acceptable for the sample matrix and the analyses requested. The results for the soil samples were reported on a wet weight, as-received basis. The equipment blank results were reported in the appropriate units of micrograms per liter (µg/L).

9. Did the laboratory provide any specific initial and/or continuing calibration results? — No

Comments: Initial and continuing calibration data were not included as part of this data set.

10. If initial and/or continuing calibration results were provided, were the results within acceptable limits? — N/A

Comments: Initial and continuing calibration data were not included as part of this data set.

11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? — Yes

Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.

12. Were target analytes reported as not detected in the laboratory blanks? — No

Comments: Target analytes were reported as not detected in the laboratory blanks, with the following exceptions.

Method	Analyte	Batch	Concentration
8015D	**GRO**	**62086**	**1.7 mg/kg**
8015D	**GRO**	**62159**	**1.5 mg/kg**
8015M/D	**DRO**	**62277**	**11 mg/kg**
6010B	Beryllium	62201	0.041 mg/kg
6010B	Cobalt	62201	0.062 mg/kg
6010B	Cadmium	62280	0.055 mg/kg

Detections of the identified analytes in the associated samples that were less than the blank results or less than the applicable reporting limits were assigned U qualifiers. Detections of the identified analytes in the associated samples that were greater than the reporting limits but less than 10 times the blank results were assigned JB qualifiers. Non-detections of the identified analytes in the associated samples and detections that were above the reporting limit and greater than 10 times the blank concentration did not require qualification.

VALIDATION CRITERIA CHECKLIST

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Analysis Batch	Prep Batch	MS Sample Source
8260B	VOCs	62086	-----	Not Prepared
8260B	VOCs	62159	-----	Not Prepared
8260B	VOCs	R80688	-----	Not Prepared
8270C	SVOCs	80799	62128	Not Prepared
8270C	SVOCs	80881	62187	Not Prepared
8270C	SVOCs	81016	62216	Not Prepared
8270C	SVOCs	80978	62272	Not Prepared
Method	Analytes	Analysis Batch	Prep Batch	MS Sample Source
8015D MOD	GRO	62086	-----	Not Prepared
8015D MOD	GRO	62159	-----	Not Prepared
8015M/D	DRO	80736	62109	Not Prepared
8015M/D	DRO	80756	62132	Not Prepared
8015M/D	DRO	80913	62277	Not Prepared
6010B	Metals	80853	62201	Not Prepared
6010B	Metals	80954	62280	Not Prepared
7471	Mercury	80969	62297	NDD-BD2
9012B	Cyanide	WG1730156	R81401	NDD-MW-1 (0-0.5') and NDD-MW-1 (45.5-46')
9012B	Cyanide	WG1731390	R81401	NDD-MW-2 (1.5-2') and Not Associated

Not Associated – The MS sample source was not associated with this project.
Not Prepared – Matrix spikes were not prepared for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? No

Comments: The percent recoveries and RPDs for the MS/MSDs prepared from project samples were within laboratory and data validation QC limits, with the following exceptions.

Method	Analyte	Batch	MS Recovery	MSD Recovery	MS/MSD QC Limits
7471	**Mercury**	**62297**	**150%**	**148%**	**75-125%**
9012B	Cyanide	R81401	146%	136%	75-125%
9012B	Cyanide	R81401	149%	143%	75-125%
9012B	**Cyanide**	**R81401**	**149%**	**156%**	**75-125%**

Detections of mercury and cyanide in the associated samples were assigned J+ qualifiers due to evidence of potential high bias. Non-detections of these analytes in the associated samples did not require qualification due to these non-conformances.

Recoveries and RPDs for MS/MSDs prepared from non-project samples were considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

VALIDATION CRITERIA CHECKLIST

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? No

Comments: The LCS percent recoveries were within laboratory QC limits, with the following exceptions.

The reported recovery for mercury in the LCS for Method 7471 batch 62297 was outside the acceptance range of 70-130% at 61.7%. Detections of mercury in the associated samples were previously qualified J+ based on evidence of potential high bias in the matrix spike results. These qualifiers were changed to J with no bias indicators due to the conflicting QC results. The associated non-detect results were assigned UJ qualifiers due to evidence of potential low bias.

The cyanide recovery in the LCS for Method 9012B batch R81401 was outside the acceptance range of 85-115% at 73.5%. Cyanide was not detected in the associated sample in this batch, NDD-MW-1 (0-0.5'), and the result was assigned a UJ qualifier due to evidence of potential low bias.

LCSDs were not analyzed as part of this data set.

17. Were surrogate recoveries within laboratory QC limits? No

Comments: Surrogate recoveries in the analyses of the submitted samples were within laboratory QC limits, with the following exceptions.

Method	Sample	Surrogate	Surrogate Recovery	QC Limits
8015M/D	**NDD-MW-1 (27.5-28')**	**DNOP**	**135%**	**70-130%**
8015M/D	NDD-MW-1 (35-35.5')	DNOP	152%	70-130%
8015M/D	NDD-MW-1 (45.5-46')	DNOP	138%	70-130%
8015M/D	NDD-MW-2 (28.2-28.7)	DNOP	131%	70-130%

DRO was detected in sample NDD-MW-1 (27.5-28'), and the result was assigned a J+ qualifier due to evidence of potential high bias. MRO was not detected in this sample, and qualification of the result was not required. DRO and MRO were not detected in the remaining samples, and qualification of the results was not required based on the evidence of potential high bias.

The SVOC results were not qualified based on the surrogate non-conformances in the Method 8270C analyses since the applied dilutions of 10 to 20 times resulted in surrogate concentrations below routinely calibrated levels, and those results were deemed unreliable and possibly inaccurate.

The DRO and MRO results for sample NDD-MW-1 (7.5-8') were not qualified based on the surrogate non-conformances in the Method 8015M/D analysis since the applied dilution of 100 times resulted in a surrogate concentration below routinely calibrated levels, and those results were deemed unreliable and possibly inaccurate.

Qualification of sample data was not required based on surrogate non-conformances in QC samples as the environmental samples were evaluated based on their specific surrogate recoveries.

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the total number of samples. One trip blank sample, MeOH Blank, and two equipment blank samples, NDD-EB3 and NDD-EB4, were collected as part of this sample set.

VALIDATION CRITERIA CHECKLIST	
19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples?	Yes
Comments: Target analytes were reported as not detected in the trip blank and equipment blank samples.	
20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit?	No
Comments: The number of field duplicates collected was not equal to at least 10% of the number of samples. • Sample NDD-BD2 was collected as a field duplicate of sample NDD-MW-1(1.5-2).	
21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)?	No
Comment: As indicated in the Field Duplicate Summary Table at the end of this report, field duplicate RPD values were within data validation QC limits of 0-50% for soil samples, with the following exception. **The RPD for mercury exceeded the data validation limit of 50% at 66.7%. The mercury results for the parent and duplicate samples, NDD-MW-1 (1.5-2') and NDD-BD2, were assigned J qualifiers due to evidence of poor precision.**	

VALIDATION CRITERIA CHECKLIST

22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits? Yes

Comments: Laboratory duplicates were prepared for the analyses in this data set as summarized below.

Method	Analytes	Batch	Laboratory Duplicate Sample Source
9012B	Cyanide	R81401	NDD-MW-1 (0-0.5') and NDD-MW-1 (45.5-46')
9012B	Cyanide	R81401	NDD-MW-1 (27.5-28') and Not Associated

Not Associated – The MS sample source was not associated with this project.

The reported RPDs for laboratory duplicates prepared from project samples were within laboratory acceptance limits.

The RPD values for laboratory duplicate samples prepared from non-project samples were evaluated and considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

23. Were the following data relationships realistic and acceptable?

- Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270), and the results were in agreement? Yes

Comments: Analytical results for 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1-methylnaphthalene, 2-methylnaphthalene, hexachlorobutadiene, and naphthalene were reported by both Method 8260B and Method 8270C for the submitted samples. The results for these analytes were reported as not detected by both methods with the following exceptions.

Sample	Analyte	Method 8260B (mg/kg)	Method 8270C (mg/kg)	Reporting Limits (8260/8270)	RPD
NDD-MW-1 (1.5-2')	1-Methylnaphthalene	0.092	ND	0.14 / 3.9	----
NDD-MW-1 (7.5-8')	1-Methylnaphthalene	0.066	ND	0.11 / 3.9	----
NDD-MW-1 (27.5-28')	1-Methylnaphthalene	0.32	ND	0.49 / 2.0	----
NDD-MW-1 (1.5-2')	2-Methylnaphthalene	0.078	ND	0.14 / 3.9	----
NDD-MW-1 (7.5-8')	2-Methylnaphthalene	0.097	ND	0.11 / 3.9	----
NDD-MW-1 (27.5-28')	2-Methylnaphthalene	0.54	ND	0.49 / 2.0	----
NDD-MW-2 (47.5-48')	2-Methylnaphthalene	0.34	ND	0.80 / 1.9	----
NDD-MW-1 (1.5-2')	Naphthalene	0.016	ND	0.072 / 3.9	----
NDD-MW-1 (7.5-8')	Naphthalene	0.024	ND	0.053 / 3.9	----
NDD-MW-1 (27.5-28')	Naphthalene	0.34	ND	0.24 / 2.0	----
NDD-MW-2 (42.5-43')	Naphthalene	0.018	ND	0.073 / 2.0	----
NDD-MW-2 (47.5-48')	Naphthalene	0.19	ND	0.40 / 1.9	----

----- – RPD could not be calculated.

The differences between the results reported for Method 8260B and Method 8270C were evaluated to be within the measurement uncertainty of the analytical methods at concentrations near or below the reporting limits. Qualification of results was not required.

- Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results? N/A

Comments: Only total metals were analyzed as part of this data set.

FIELD DUPLICATE SUMMARY

Client Sample ID: NDD-MW-1 (1.5-2') Field Duplicate Sample ID: NDD-BD2				
Analyte	**Method**	**Laboratory Result (mg/kg)**	**Duplicate Result (mg/kg)**	**Relative Percent Difference (RPD)**
1-Methylnaphthalene	SW8260B	0.092	ND (0.15)	DL
2-Butanone	SW8260B	0.21	0.21	0.0% +/-RL
2-Hexanone	SW8260B	0.044	ND (0.39)	DL
2-Methylnaphthalene	SW8260B	0.078	ND (0.15)	DL
Naphthalene	SW8260B	0.016	ND (0.077)	DL
Toluene	SW8260B	0.0088	ND (0.039)	DL
TPH DRO	SW8015	27	35	25.8%
TPH GRO	SW8015	1.4	1.3	7.4% +/-RL
TPH ORO	SW8015	200	140	35.3%
Barium, Total	SW6010B	710	730	2.8%
Beryllium, Total	SW6010B	0.83	0.83	0.0%
Chromium, Total	SW6010B	22	22	0.0%
Cobalt, Total	SW6010B	5.3	4.9	7.8%
Iron, Total	SW6010B	14,000	13,000	7.4%
Lead, Total	SW6010B	16	16	0.0%
Manganese, Total	SW6010B	450	480	6.5%
Nickel, Total	SW6010B	16	17	6.1%
Vanadium, Total	SW6010B	24	24	0.0%
Zinc, Total	SW6010B	54	53	1.9%
Mercury, Total	**SW7471**	**0.26**	**0.52**	**66.7%**
Cyanide, Total	SW9012	0.884	0.690	24.7%

Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.

The RPD for mercury exceeded the data validation limit of 50% at 66.7%. The mercury results for the parent and duplicate samples, NDD-MW-1 (1.5-2') and NDD-BD2, were assigned J qualifiers due to evidence of poor precision.

DATA QUALIFICATION SUMMARY

Abbreviation	Reason
MBD	Method blank detection
HR-MS	The MS and/or MSD percent recovery was greater than the upper acceptable limit indicating possible matrix interference.
LR-LCS	The LCS and/or LCSD percent recovery was less than the lower acceptable limit indicating a possible low bias.
HR-SUR	The surrogate percent recovery was greater than the upper acceptable limit indicating a possible high bias.
ERPD-FD	High field duplicate RPD.
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,2,4-Trimethylbenzene	SW8260B	NDD-MW-1 (7.5-8')	2108a32-004a	0.01	0.026	mg/kg	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	NDD-MW-2 (1.5-2')	2108a32-009a	0.013	0.031	mg/kg	J	MDLRL
1,2-Dibromoethane	SW8260B	NDD-MW-2 (42.5-43')	2108a32-013a	0.026	0.037	mg/kg	J	MDLRL
1,2-Dichloroethane	SW8260B	NDD-MW-2 (42.5-43')	2108a32-013a	0.02	0.037	mg/kg	J	MDLRL
1,2-Dichloroethane	SW8260B	NDD-MW-2 (47.5-48')	2108a32-014a	0.1	0.2	mg/kg	J	MDLRL
1-Methylnaphthalene	SW8260B	NDD-MW-1 (1.5-2')	2108a32-002a	0.092	0.14	mg/kg	J	MDLRL
1-Methylnaphthalene	SW8260B	NDD-MW-1 (7.5-8')	2108a32-004a	0.066	0.11	mg/kg	J	MDLRL
1-Methylnaphthalene	SW8260B	NDD-MW-1 (27.5-28')	2108a32-005a	0.32	0.49	mg/kg	J	MDLRL
2-Butanone	SW8260B	NDD-MW-1 (0-0.5')	2108a32-001a	0.18	0.35	mg/kg	J	MDLRL
2-Butanone	SW8260B	NDD-MW-1 (1.5-2')	2108a32-002a	0.21	0.36	mg/kg	J	MDLRL
2-Butanone	SW8260B	NDD-BD2	2108a32-003a	0.21	0.39	mg/kg	J	MDLRL
2-Butanone	SW8260B	NDD-MW-2 (0-0.5')	2108a32-008a	0.14	0.3	mg/kg	J	MDLRL
2-Hexanone	SW8260B	NDD-MW-1 (0-0.5')	2108a32-001a	0.022	0.35	mg/kg	J	MDLRL
2-Hexanone	SW8260B	NDD-MW-1 (1.5-2')	2108a32-002a	0.044	0.36	mg/kg	J	MDLRL
2-Hexanone	SW8260B	NDD-MW-1 (35-35.5')	2108a32-006a	0.019	0.27	mg/kg	J	MDLRL
2-Hexanone	SW8260B	NDD-MW-2 (0-0.5')	2108a32-008a	0.018	0.3	mg/kg	J	MDLRL
2-Hexanone	SW8260B	NDD-MW-2 (47.5-48')	2108a32-014a	1.4	2	mg/kg	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
2-Methylnaphthalene	SW8260B	NDD-MW-1 (1.5-2')	2108a32-002a	0.078	0.14	mg/kg	J	MDLRL
2-Methylnaphthalene	SW8260B	NDD-MW-1 (7.5-8')	2108a32-004a	0.097	0.11	mg/kg	J	MDLRL
2-Methylnaphthalene	SW8260B	NDD-MW-2 (47.5-48')	2108a32-014a	0.34	0.8	mg/kg	J	MDLRL
4-Methyl-2-Pentanone	SW8260B	NDD-MW-1 (7.5-8')	2108a32-004a	0.032	0.26	mg/kg	J	MDLRL
Arsenic, Total	SW6010B	NDD-MW-1 (0-0.5')	2108A32-001A	1.6	2.5	mg/kg	J	MDLRL
Arsenic, Total	SW6010B	NDD-MW-2 (1.5-2')	2108A32-009A	4.7	5.1	mg/kg	J	MDLRL
Benzene	SW8260B	NDD-MW-1 (7.5-8')	2108a32-004a	0.0051	0.013	mg/kg	J	MDLRL
Benzene	SW8260B	NDD-MW-2 (42.5-43')	2108a32-013a	0.012	0.018	mg/kg	J	MDLRL
Benzene	SW8260B	NDD-MW-2 (47.5-48')	2108a32-014a	0.065	0.1	mg/kg	J	MDLRL
Bromodichloromethane	SW8260B	NDD-MW-2 (1.5-2')	2108a32-009a	0.0061	0.031	mg/kg	J	MDLRL
Bromodichloromethane	SW8260B	NDD-MW-2 (42.5-43')	2108a32-013a	0.024	0.037	mg/kg	J	MDLRL
Bromodichloromethane	SW8260B	NDD-MW-2 (47.5-48')	2108a32-014a	0.092	0.2	mg/kg	J	MDLRL
Chlorobenzene	SW8260B	NDD-MW-1 (27.5-28')	2108a32-005a	0.049	0.12	mg/kg	J	MDLRL
Chlorobenzene	SW8260B	NDD-MW-2 (42.5-43')	2108a32-013a	0.01	0.037	mg/kg	J	MDLRL
Chlorobenzene	SW8260B	NDD-MW-2 (47.5-48')	2108a32-014a	0.078	0.2	mg/kg	J	MDLRL
Chloroform	SW8260B	NDD-MW-1 (27.5-28')	2108a32-005a	0.11	0.12	mg/kg	J	MDLRL
Chloroform	SW8260B	NDD-MW-2 (42.5-43')	2108a32-013a	0.022	0.037	mg/kg	J	MDLRL
Chloroform	SW8260B	NDD-MW-2 (47.5-48')	2108a32-014a	0.09	0.2	mg/kg	J	MDLRL
Cyanide, Total	SW9012	NDD-MW-1 (0-0.5')	2108A32-001B	ND	0.25	mg/kg	UJ	LR-LCS
Cyanide, Total	SW9012	NDD-MW-1 (1.5-2')	2108A32-002B	0.884	0.25	mg/kg	J+	HR-MS
Cyanide, Total	SW9012	NDD-BD2	2108A32-003B	0.69	0.25	mg/kg	J+	HR-MS
Cyanide, Total	SW9012	NDD-MW-1 (7.5-8')	2108A32-004B	0.258	0.25	mg/kg	J+	HR-MS
Ethylbenzene	SW8260B	NDD-MW-1 (7.5-8')	2108a32-004a	0.007	0.026	mg/kg	J	MDLRL
Isopropylbenzene	SW8260B	NDD-MW-2 (42.5-43')	2108a32-013a	0.032	0.037	mg/kg	J	MDLRL
Isopropylbenzene	SW8260B	NDD-MW-2 (47.5-48')	2108a32-014a	0.2	0.2	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-MW-1 (0-0.5')	2108A32-001A	0.089	0.035	mg/kg	J	HR-MS, LR-LCS
Mercury, Total	SW7471	NDD-MW-1 (1.5-2')	2108A32-002A	0.26	0.031	mg/kg	J	ERPD-FD, HR-MS, LR-LCS
Mercury, Total	SW7471	NDD-BD2	2108A32-003A	0.52	0.18	mg/kg	J	ERPD-FD, HR-MS, LR-LCS

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Mercury, Total	SW7471	NDD-MW-1 (7.5-8')	2108A32-004A	0.21	0.033	mg/kg	J	HR-MS, LR-LCS
Mercury, Total	SW7471	NDD-MW-1 (27.5-28')	2108A32-005A	ND	0.033	mg/kg	UJ	LR-LCS
Mercury, Total	SW7471	NDD-MW-1 (35-35.5')	2108A32-006A	ND	0.033	mg/kg	UJ	LR-LCS
Mercury, Total	SW7471	NDD-MW-1 (45.5-46')	2108A32-007A	ND	0.033	mg/kg	UJ	LR-LCS
Mercury, Total	SW7471	NDD-MW-2 (0-0.5')	2108A32-008A	0.019	0.033	mg/kg	J	HR-MS, LR-LCS, MDLRL
Mercury, Total	SW7471	NDD-MW-2 (1.5-2')	2108A32-009A	0.037	0.032	mg/kg	J	HR-MS, LR-LCS
Mercury, Total	SW7471	NDD-MW-2 (28.2-28.7)	2108A32-010A	0.004	0.033	mg/kg	J	HR-MS, LR-LCS, MDLRL
Mercury, Total	SW7471	NDD-MW-2 (42.5-43')	2108A32-013A	ND	0.033	mg/kg	UJ	LR-LCS
Mercury, Total	SW7471	NDD-MW-2 (47.5-48')	2108A32-014A	ND	0.035	mg/kg	UJ	LR-LCS
MTBE	SW8260B	NDD-MW-1 (35-35.5')	2108a32-006a	0.016	0.027	mg/kg	J	MDLRL
Naphthalene	SW8260B	NDD-MW-1 (1.5-2')	2108a32-002a	0.016	0.072	mg/kg	J	MDLRL
Naphthalene	SW8260B	NDD-MW-1 (7.5-8')	2108a32-004a	0.024	0.053	mg/kg	J	MDLRL
Naphthalene	SW8260B	NDD-MW-2 (42.5-43')	2108a32-013a	0.018	0.073	mg/kg	J	MDLRL
Naphthalene	SW8260B	NDD-MW-2 (47.5-48')	2108a32-014a	0.19	0.4	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-MW-1 (27.5-28')	2108a32-005a	0.19	0.37	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-MW-2 (42.5-43')	2108a32-013a	0.022	0.11	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-MW-2 (47.5-48')	2108a32-014a	0.19	0.6	mg/kg	J	MDLRL
p-Isopropyltoluene	SW8260B	NDD-MW-1 (27.5-28')	2108a32-005a	0.08	0.12	mg/kg	J	MDLRL
p-Isopropyltoluene	SW8260B	NDD-MW-2 (42.5-43')	2108a32-013a	0.014	0.037	mg/kg	J	MDLRL
p-Isopropyltoluene	SW8260B	NDD-MW-2 (47.5-48')	2108a32-014a	0.11	0.2	mg/kg	J	MDLRL
sec-Butylbenzene	SW8260B	NDD-MW-1 (27.5-28')	2108a32-005a	0.12	0.12	mg/kg	J	MDLRL
Silver, Total	SW6010B	NDD-MW-2 (28.2-28.7)	2108A32-010A	1.1	1.2	mg/kg	J	MDLRL
Toluene	SW8260B	NDD-MW-1 (1.5-2')	2108a32-002a	0.0088	0.036	mg/kg	J	MDLRL
Toluene	SW8260B	NDD-MW-1 (7.5-8')	2108a32-004a	0.0041	0.026	mg/kg	J	MDLRL
Toluene	SW8260B	NDD-MW-1 (27.5-28')	2108a32-005a	0.044	0.12	mg/kg	J	MDLRL
TPH DRO	SW8015	NDD-MW-1 (27.5-28')	2108A32-005A	27	9.8	mg/kg	J+	HR-SUR
TPH DRO	SW8015	NDD-MW-2 (0-0.5')	2108A32-008A	4.9	9.3	mg/kg	J	MDLRL
TPH DRO	SW8015	NDD-MW-2 (1.5-2')	2108A32-009A	9.5	9.6	mg/kg	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
TPH DRO	SW8015	NDD-MW-2 (42.5-43')	2108A32-013A	89	9.5	mg/kg	JB	MBD
TPH DRO	SW8015	NDD-MW-2 (47.5-48')	2108A32-014A	45	9.6	mg/kg	JB	MBD
TPH GRO	SW8015	NDD-MW-1 (0-0.5')	2108a32-001a	1.1	3.5	mg/kg	U	MBD, MDLRL
TPH GRO	SW8015	NDD-MW-1 (1.5-2')	2108a32-002a	1.4	3.6	mg/kg	U	MBD, MDLRL
TPH GRO	SW8015	NDD-BD2	2108a32-003a	1.3	3.9	mg/kg	U	MBD, MDLRL
TPH GRO	SW8015	NDD-MW-1 (7.5-8')	2108a32-004a	1.2	2.6	mg/kg	U	MBD, MDLRL
TPH GRO	SW8015	NDD-MW-1 (35-35.5')	2108a32-006a	0.94	2.7	mg/kg	U	MBD, MDLRL
TPH GRO	SW8015	NDD-MW-1 (45.5-46')	2108a32-007a	1.1	3.3	mg/kg	U	MBD, MDLRL
TPH GRO	SW8015	NDD-MW-2 (0-0.5')	2108a32-008a	0.97	3	mg/kg	U	MBD, MDLRL
TPH GRO	SW8015	NDD-MW-2 (1.5-2')	2108a32-009a	5.2	3.1	mg/kg	JB	MBD
TPH GRO	SW8015	NDD-MW-2 (28.2-28.7)	2108a32-010a	0.9	2.8	mg/kg	U	MBD, MDLRL
Xylenes, Total	SW8260B	NDD-MW-1 (7.5-8')	2108a32-004a	0.031	0.053	mg/kg	J	MDLRL

Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental
Project Name: Western Refining SW, North Drainage Ditch	Sample Matrix: Soil
Project Number: 697-096-001 Task: 0002	Sample Start Date: 08/18/2021
Date Validated: 10/08/2021	Sample End Date: 08/20/2021
Parameters Included: ▪ Volatile Organic Compounds (VOC) by Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270C ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D MOD ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015M/D ▪ Total Metals by SW-846 Method 6010B ▪ Total Mercury by SW-846 Method 7471B ▪ Cyanide by SW-846 Method 9012B	
Laboratory Project ID: 2108B84	
Data Validator: Charles Ballek, Senior Chemist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace Analytical in Mt. Juliet, Tennessee, evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- Laboratory control samples (LCS)
- Organic system monitoring compounds (surrogates)

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS percent recoveries against method-specific requirements.

Tier II Data Validation Report Summary

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
NDD-TW-5 (0-0.5')	2108B84-001
NDD-TW-5 (1.5-2')	2108B84-002
NDD-TW-5 (18.5-19')	2108B84-003
NDD-TW-5 (23-23.5')	2108B84-004
NDD-BD4	2108B84-005
NDD-TW-5 (30.5-31)	2108B84-008
NDD-SB-2 (0-0.5')	2108B84-009
NDD-SB-2 (1.5-2')	2108B84-010
NDD-SB-2 (3.5-4')	2108B84-011
NDD-SB-2 (19-19.5')	2108B84-012
NDD-SB-1 (0-0.5')	2108B84-013
NDD-SB-1 (1.5-2')	2108B84-014
NDD-SB-1 (5-5.5')	2108B84-015
NDD-BD3	2108B84-016
NDD-SB-1 (13.5-14')	2108B84-017
NDD-TW-3 (0-0.5')	2108B84-018
NDD-TW-3 (1.5-2')	2108B84-019
NDD-TW-3 (33.5-34')	2108B84-020
NDD-TW-4 (0-0.5')	2108B84-021
NDD-TW-4 (1.5-2')	2108B84-022
NDD-TW-4 (15-15.5')	2108B84-023
NDD-TW-4 (31.5-32')	2108B84-024
MeOh Blank-1	2108b84-025
MeOh Blank-2	2108b84-026

Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- ○ Initial and Continuing Calibrations (Items 9 and 10)
- ✓ Laboratory Blanks (Items 11 and 12)
- ⊗ MS/MSD (Items 13 and 14)
- ✓ LCS (Items 15 and 16)
- ⊗ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ⊗ Trip Blanks (Items 18 and 19)
- ⊗ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)
- ✓ Data Relationships (Item 23)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-542-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, February 2021.

Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

Qualifier	Definition
J	Estimated concentration
J+	The result is an estimated concentration, but may be biased high
J-	The result is an estimated concentration, but may be biased low
UJ	Estimated reporting limit
U	Evaluated to be undetected at the reporting limit
R	Rejected, data not usable

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 3,432 data points. The data completeness calculation does not include any submitted blank sample results. One data point was rejected. The data completeness measure for this data package is calculated to be 99.97% and is acceptable.

VALIDATION CRITERIA CHECKLIST	
1. Was the report free of non-conformances identified by the laboratory?	Yes
Comments: The laboratory did not identify analytical non-conformances related to this data set.	
2. Were the data free of data qualification flags and/or notes used by the laboratory? If no, define.	No
Comments: The laboratory used the following data qualification flags with this data set. J – Analyte detected below quantitation limits D – Sample diluted due to matrix. S – % Recovery outside of range due to dilution or matrix. J6 – The sample matrix interfered with the ability to make any accurate determination; spike value is low.	
3. Were sample CoC forms and custody procedures complete?	No
Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel information, dates, and times of receipt. The "Relinquished by:" information was typed rather than signed by the appropriate field personnel, but custody was not affected. Custody seals were not present or required since the samples were delivered to the laboratory by courier, and custody was maintained at all times. Equipment blank samples NDD-EB5 and NDD-EB6 were listed on the CoC but were not included in the shipping containers. Blank sample results are not included in the completeness calculation; therefore, validation action was not required for this omission.	
4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable?	Yes
Comments: The reporting limits for the data set were reviewed and appeared to be acceptable. The following dilutions were applied to the project samples. Method 8260B: Dilutions of 5 to 500 times were applied to select samples for the analysis of VOCs. Method 8270C: Select submitted samples were diluted by factors of 10 to 50 times for the analyses of SVOC target analytes. Method 8015D: Samples NDD-TW-5 (18.5-19') and NDD-SB-2 (0-0.5') were diluted by factors of 5 for GRO analyses. Dilutions of 50 times were applied to samples NDD-SB-2 (1.5-2'), NDD-SB-2 (3.5-4'), NDD-SB-1 (5-5.5'), and NDD-BD3. Method 8015M/D: Dilution factors of 10 times were applied to samples NDD-SB-1 (5-5.5') and NDD-BD3 for the analysis of DRO and MRO. Samples NDD-SB-2 (1.5-2') and NDD-SB-2 (3.5-4') were diluted by factors of 50 times. Method 6010B: Dilutions of 2 to 200 times were applied to select submitted samples for the analysis of total metals.	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?	No
Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC. The CoC indicated requests for metals by Method 6020 and mercury by Method 7470. The analyses by Method 6010B and Method 7471B, respectively, met the project accuracy and precision goals and were acceptable replacements. The analytical method for cyanide was not identified on the CoC and the use of EPA Method 335.4 and the equivalent SW-846 Method 9012 was appropriate.	
6. Were samples received in good condition within method-specified requirements?	No
Comments: Samples were received at Hall Environmental on ice, in good condition, and with the cooler temperatures within the recommended temperature range of 4°C ± 2°C at 2.3°C and 2.7°C as noted on the *Sample Log-in Check List*. Portions of the samples transferred to Pace Analytical were received intact and with the cooler temperature outside the recommended range at 1.7°C as noted on the CoC. The cooler temperature below 2.0°C was judged as acceptable since the laboratory did not report the sample containers as broken or frozen.	

VALIDATION CRITERIA CHECKLIST

7. Were samples extracted/digested and analyzed within method-specified or technical holding times? Yes

Comments: The samples were digested/extracted and analyzed within method-specific holding times.

8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil. Yes

Comments: The results were reported in concentration units of milligrams per kilogram (mg/kg), which were acceptable for the sample matrix and the analyses requested. The results for the soil samples were reported on a wet weight, as-received basis.

9. Did the laboratory provide any specific initial and/or continuing calibration results? No

Comments: Initial and continuing calibration data were not included as part of this data set.

10. If initial and/or continuing calibration results were provided, were the results within acceptable limits? N/A

Comments: Initial and continuing calibration data were not included as part of this data set.

11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.

12. Were target analytes reported as not detected in the laboratory blanks? No

Comments: Target analytes were reported as not detected in the laboratory blanks, with the following exceptions.

Method	Analyte	Batch	Concentration
6010B	Beryllium	62200	0.033 mg/kg
6010B	Beryllium	62201	0.041 mg/kg
6010B	Cobalt	62201	0.062 mg/kg

Detections of beryllium and cobalt in the associated samples were greater than 10 times the blank concentrations, and the results did not require qualification.

VALIDATION CRITERIA CHECKLIST

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Analysis Batch	Prep Batch	MS Sample Source
8260B	VOCs	A80915	-----	Not Prepared
8260B	VOCs	A80948	-----	NDD-SB-2 (0-0.5')
8260B	VOCs	R80995	-----	Not Prepared
8270C	SVOCs	80881	62157	Not Prepared
8270C	SVOCs	80881	62187	Not Prepared
8015D MOD	GRO	B80915	-----	Not Prepared
8015D MOD	GRO	B80948	-----	NDD-TW-5 (30.5-31)
8015D MOD	GRO	B80995	-----	Not Prepared
8015M/D	DRO	80756	62132	Not Prepared
Method	Analytes	Analysis Batch	Prep Batch	MS Sample Source
8015M/D	DRO	80779	62136	NDD-TW-4 (0-0.5')
6010B	Metals	80853, 80919	62200	NDD-TW-5 (0-0.5')
6010B	Metals	80853, 80919, 80954	62201	NDD-TW-4 (15-15.5')
7471	Mercury	81040	62361	NDD-SB-2 (1.5-2')
7471	Mercury	81040	62362	NDD-TW-4 (1.5-2')
9012B	Cyanide	R3698238	R81402	NDD-SB-2 (19-19.5') and NDD-TW-4 (1.5-2')
9012B	Cyanide	R2398745	R81402	NDD-TW-4 (31.5-32') and Not Associated

Not Associated – The MS sample source was not associated with this project.
Not Prepared – Matrix spikes were not prepared for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? No

Comments: The percent recoveries and RPDs for MS/MSDs prepared from project samples were within data validation and laboratory QC limits or were not applicable because the unspiked amount was more than four times the spike added, with the following exceptions.

Method	Analyte	Batch	MS Recovery	MSD Recovery	MS/MSD QC Limits	MS/MSD RPD	RPD QC Limits
6010B	**Antimony**	**62200**	**20.5%**	**15.2%**	**75-125%**	**29.6%**	**20%**
6010B	**Silver**	**62200**	**50.0%**	**49.1%**	**75-125%**	**Acceptable**	**20%**

Antimony and silver were not detected in the associated samples, and the results were assigned UJ qualifiers due to evidence of potential low bias. The result for antimony in the parent sample, NDD-TW-5 (0-0.5'), was assigned an R qualifier, due to evidence of extreme low bias (recoveries less than 30%). The antimony results were also qualified based on the evidence of poor precision.

Recoveries and RPDs for MS/MSDs prepared from non-project samples were considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

VALIDATION CRITERIA CHECKLIST

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? Yes

Comments: The LCS percent recoveries were within laboratory QC limits. LCSDs were not analyzed as part of this data set.

17. Were surrogate recoveries within laboratory QC limits? No

Comments: The reported surrogate recoveries were within laboratory QC limits, with the following exceptions.

Method	Sample	Surrogate	Surrogate Recovery	QC Limits
8015M/D	NDD-TW-5 (23-23.5')	DNOP	130%	70-130%
8015M/D	**NDD-TW-5 (30.5-31)**	**DNOP**	**130%**	**70-130%**
8015M/D	**NDD-SB-2 (19-19.5')**	**DNOP**	**132%**	**70-130%**
8015M/D	NDD-SB-1 (0-0.5')	DNOP	131%	70-130%
8260B	**NDD-SB-1 (5-5.5')**	**Dibromofluoromethane**	**68.7%**	**70-130%**
8015M/D	NDD-TW-3 (1.5-2')	DNOP	132%	70-130%
8015M/D	**NDD-TW-4 (1.5-2')**	**DNOP**	**138%**	**70-130%**
8270C	NDD-TW-4 (1.5-2')	Nitrobenzene-d_5	23.3%	24.7-73.2%

DRO was detected in samples NDD-TW-5 (30.5-31), NDD-SB-2 (19-19.5'), and NDD-TW-4 (1.5-2') and the results were assigned J+ qualifiers due to evidence of potential high bias. MRO was not detected in these samples, and qualification of the result was not required. DRO and MRO were not detected in the remaining identified samples, and qualification of the results was not required based on the evidence of potential high bias.

Since Method 8260B surrogate associations were not available from the laboratory, qualification was assigned to all target analytes when one or more surrogates was outside the acceptance range. This condition existed for sample NDD-SB-1 (5-5.5'). Detections of the target analytes in sample NDD-SB-1 (5-5.5') were assigned J- qualifiers and non-detect results were qualified UJ due to evidence of potential low bias.

Since Method 8270C surrogate associations were not available from the laboratory, qualification was assigned to all of the target analytes in a given fraction (acid or base/neutral) when two or more surrogates from the same fraction (acid or base/neutral) were outside the acceptance range. This condition did not exist for the sample NDD-TW-4 (1.5-2'), and qualification of sample data was not required based on the single surrogate non-coonformance.

SVOC and DRO/MRO results were not qualified based on the surrogate non-conformances in the Method 8270C and Method 8015M/D analyses with applied dilutions of 10 times or greater since these resulted in surrogate concentrations below routinely calibrated levels, and those results were deemed unreliable and possibly inaccurate.

Qualification of sample data was not required based on surrogate non-conformances in QC samples as the environmental samples were evaluated based on their specific surrogate recoveries.

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the total number of samples. Two trip blank samples, MeOh Blank-1 and MeOh Blank-2, were collected as part of this sample set. Equipment blank samples NDD-EB5 and NDD-EB6 were listed on the CoC but were not included in the shipping containers.

VALIDATION CRITERIA CHECKLIST

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? — No

Comments: Target analytes were reported as not detected in the trip blank samples, with the following exceptions.

In trip blank sample MeOh Blank-1, methylene chloride was detected at a concentration of 0.064 mg/kg and toluene was reported at a concentration of 0.011 mg/kg. Methylene chloride was not detected in the associated samples, and qualification of results was not required based on this trip blank detection.

Toluene was detected in samples NDD-TW-5 (30.5-31) and NDD-SB-2 (19-19.5') at concentrations less than the applicable reporting limits, and the results were assigned U qualifiers. Toluene was not detected in the remaining associated samples or the reported concentrations were greater than 10 times the trip blank detection; therefore, qualification of those results was not required.

20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? — Yes

Comments: The number of field duplicates collected was equal to 10% of the number of samples.

• Sample NDD-BD3 was collected as a field duplicate of sample NDD-SB-1(5-5.5').

• Sample NDD-BD4 was collected as a field duplicate of sample NDD-TW-5(23-23.5').

21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)? — No

Comment: As indicated in the Field Duplicate Summary Tables at the end of this report, field duplicate RPD values were within data validation QC limits of 0-50% for soil samples, with the following exceptions.

Duplicate pair NDD-SB-1(5-5.5') / NDD-BD3: **The RPD for naphthalene exceeded the data validation limit of 50% at 54.9%. The naphthalene results for the parent and duplicate samples, NDD-SB-1(5-5.5') and NDD-BD3, were assigned J qualifiers due to evidence of poor precision.**

Duplicate pair NDD-TW-5(23-23.5') / NDD-BD4: **The RPD values for benzene, toluene, and manganese exceeded the data validation limit of 50%. The benzene, toluene, and manganese results for the parent and duplicate samples, NDD-TW-5(23-23.5') and NDD-BD4, were assigned J qualifiers due to evidence of poor precision.**

22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits? — Yes

Comments: Laboratory duplicates were prepared for the analyses in this data set as summarized below.

Method	Analytes	Batch	Laboratory Duplicate Sample Source
9012B	Cyanide	R81402	NDD-SB-2 (19-19.5') and NDD-TW-4 (1.5-2')
9012B	Cyanide	R81402	NDD-TW-4 (31.5-32') and Not Associated

Not Associated – The MS sample source was not associated with this project.

The reported RPDs for laboratory duplicates prepared from project samples were within laboratory acceptance limits.

The RPD values for laboratory duplicate samples prepared from non-project samples were evaluated and considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

VALIDATION CRITERIA CHECKLIST

23. Were the following data relationships realistic and acceptable?

- Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270), and the results were in agreement? Yes

Comments: Analytical results for 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1-methylnaphthalene, 2-methylnaphthalene, hexachlorobutadiene, and naphthalene were reported by both Method 8260B and Method 8270C for the submitted samples. The results for these analytes were reported as not detected by both methods with the following exceptions.

Sample	Analyte	Method 8260B (mg/kg)	Method 8270C (mg/kg)	Reporting Limits (8260/8270)	RPD
NDD-TW-5 (18.5-19')	1-Methylnaphthalene	0.70	0.17	0.50 / 0.19	122% ◄
NDD-SB-2 (0-0.5')	1-Methylnaphthalene	21	ND	6.8 / 1.9	----
NDD-SB-2 (1.5-2')	1-Methylnaphthalene	24	27	7.6 / 1.9	11.8% ◄
NDD-SB-2 (3.5-4')	1-Methylnaphthalene	17	39	5.8 / 9.6	78.6% ◄
NDD-SB-1 (5-5.5')	1-Methylnaphthalene	16	19	5.6 / 2.0	17.1% ◄
NDD-BD3	1-Methylnaphthalene	14	12	5.5 / 1.9	15.4% ◄
NDD-TW-5 (18.5-19')	2-Methylnaphthalene	1.3	0.31	0.50 / 0.19	123% ◄
Sample	Analyte	Method 8260B (mg/kg)	Method 8270C (mg/kg)	Reporting Limits (8260/8270)	RPD
NDD-TW-5 (23-23.5')	2-Methylnaphthalene	0.039	ND	0.097 / 0.20	----
NDD-BD4	2-Methylnaphthalene	0.044	ND	0.10 / 0.20	----
NDD-SB-2 (0-0.5')	2-Methylnaphthalene	27	ND	6.8 / 1.9	----
NDD-SB-2 (1.5-2')	2-Methylnaphthalene	37	43	7.6 / 3.9	15.0% ◄
NDD-SB-2 (3.5-4')	2-Methylnaphthalene	25	59	5.8 / 9.6	81.0% ◄
NDD-SB-1 (5-5.5')	2-Methylnaphthalene	25	30	5.6 / 2.0	18.2% ◄
NDD-BD3	2-Methylnaphthalene	21	18	5.5 / 1.9	15.4% ◄
NDD-SB-1 (13.5-14')	2-Methylnaphthalene	0.039	ND	0.11 / 1.9	----
NDD-TW-5 (18.5-19')	Naphthalene	1.2	0.30	0.25 / 0.19	120% ◄
NDD-TW-5 (23-23.5')	Naphthalene	0.059	ND	0.049 / 0.20	----
NDD-BD4	Naphthalene	0.060	ND	0.051 / 0.20	----
NDD-SB-2 (0-0.5')	Naphthalene	10	ND	0.34 / 1.9	----
NDD-SB-2 (1.5-2')	Naphthalene	22	19	3.8 / 1.9	14.6%
NDD-SB-2 (3.5-4')	Naphthalene	18	30	2.9 / 1.9	50.0%
NDD-SB-1 (5-5.5')	Naphthalene	12	13	0.28 / 2.0	8.0%
NDD-BD3	Naphthalene	12	7.4	0.27 / 1.9	47.4% ◄
NDD-SB-1 (13.5-14')	Naphthalene	0.017	ND	0.054 / 1.9	----

◄ – one or both results were within 5 times the applicable reporting limit.

----- – RPD could not be calculated.

The differences between the results reported for Method 8260B and Method 8270C were evaluated to be within the measurement uncertainty of the analytical methods at concentrations near or below the reporting limits. Qualification of results was not required.

VALIDATION CRITERIA CHECKLIST	
• Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results?	N/A
Comments: Only total metals were analyzed as part of this data set.	

FIELD DUPLICATE SUMMARY

Client Sample ID: NDD-SB-1(5-5.5') Field Duplicate Sample ID: NDD-BD3				
Analyte	**Method**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
1,2,4-Trimethylbenzene	SW8260B	42 mg/kg	37 mg/kg	12.7%
1,3,5-Trimethylbenzene	SW8260B	13 mg/kg	13 mg/kg	0.0%
1-Methylnaphthalene	SW8260B	16 mg/kg	14 mg/kg	13.3%
2-Methylnaphthalene	SW8260B	25 mg/kg	21 mg/kg	17.4%
Benzene	SW8260B	6.2 mg/kg	4.4 mg/kg	34.0%
Ethylbenzene	SW8260B	12 mg/kg	9.5 mg/kg	23.3%
Isopropylbenzene	SW8260B	1.8 mg/kg	1.6 mg/kg	11.8%
Naphthalene	SW8260B	12 mg/kg	12 mg/kg	0.0%
n-Butylbenzene	SW8260B	3.3 mg/kg	3.2 mg/kg	3.1%
n-Propylbenzene	SW8260B	5.8 mg/kg	5.2 mg/kg	10.9%
p-Isopropyltoluene	SW8260B	1.5 mg/kg	1.4 mg/kg	6.9%
sec-Butylbenzene	SW8260B	1.4 mg/kg	1.3 mg/kg	7.4%
Toluene	SW8260B	1.1 mg/kg	0.7 mg/kg	44.4%
Xylenes, Total	SW8260B	80 mg/kg	69 mg/kg	14.8%
1-Methylnaphthalene	SW8270C	19 mg/kg	12 mg/kg	45.2%
2-Methylnaphthalene	SW8270C	30 mg/kg	18 mg/kg	50.0%
Naphthalene	**SW8270C**	**13 mg/kg**	**7.4 mg/kg**	**54.9%**
TPH GRO	SW8015	1100 mg/kg	940 mg/kg	15.7%
TPH DRO	SW8015	2500 mg/kg	1500 mg/kg	50.0%
Barium, Total	SW6010B	260 mg/kg	300 mg/kg	14.3%
Beryllium, Total	SW6010B	0.78 mg/kg	0.78 mg/kg	0.0%
Chromium, Total	SW6010B	7.3 mg/kg	6.7 mg/kg	8.6%
Cobalt, Total	SW6010B	4.0 mg/kg	3.7 mg/kg	7.8%
Iron, Total	SW6010B	11,000 mg/kg	11,000 mg/kg	0.0%
Lead, Total	SW6010B	5.9 mg/kg	6.3 mg/kg	6.6%
Manganese, Total	SW6010B	300 mg/kg	190 mg/kg	44.9%
Nickel, Total	SW6010B	7.1 mg/kg	6.6 mg/kg	7.3%
Vanadium, Total	SW6010B	16 mg/kg	15 mg/kg	6.5%
Zinc, Total	SW6010B	11 mg/kg	11 mg/kg	0.0%
Mercury, Total	SW7471	0.0043 mg/kg	0.0035 mg/kg	20.5% +/-RL

Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.

+/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required

The RPD for naphthalene exceeded the data validation limit of 50% at 54.9%. The naphthalene results for the parent and duplicate samples, NDD-SB-1(5-5.5') and NDD-BD3, were assigned J qualifiers due to evidence of poor precision.

Client Sample ID: NDD-TW-5(23-23.5') Field Duplicate Sample ID: NDD-BD4				
Analyte	**Method**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
1,2,4-Trimethylbenzene	SW8260B	0.16 mg/kg	0.13 mg/kg	20.7%
1,3,5-Trimethylbenzene	SW8260B	0.036 mg/kg	0.031 mg/kg	14.9% +/-RL
2-Methylnaphthalene	SW8260B	0.039 mg/kg	0.044 mg/kg	12.0% +/-RL
Benzene	**SW8260B**	**0.75 mg/kg**	**0.43 mg/kg**	**54.2%**
Ethylbenzene	SW8260B	0.15 mg/kg	0.11 mg/kg	30.8%
MTBE	SW8260B	0.065 mg/kg	0.046 mg/kg	34.2%
Naphthalene	SW8260B	0.059 mg/kg	0.060 mg/kg	1.7% +/-RL
n-Propylbenzene	SW8260B	0.017 mg/kg	0.013 mg/kg	26.7% +/-RL
Toluene	**SW8260B**	**0.39 mg/kg**	**0.22 mg/kg**	**55.7%**
Xylenes, Total	SW8260B	0.88 mg/kg	0.63 mg/kg	33.1%
TPH GRO	SW8015	8.1 mg/kg	5.1 mg/kg	45.5%
Barium, Total	SW6010B	360 mg/kg	290 mg/kg	21.5%
Beryllium, Total	SW6010B	0.95 mg/kg	0.97 mg/kg	2.1%
Chromium, Total	SW6010B	8.8 mg/kg	8.1 mg/kg	8.3%
Cobalt, Total	SW6010B	4.5 mg/kg	4.2 mg/kg	6.9%
Iron, Total	SW6010B	14,000 mg/kg	12,000 mg/kg	15.4%
Lead, Total	SW6010B	4.0 mg/kg	3.7 mg/kg	7.8%
Manganese, Total	**SW6010B**	**490 mg/kg**	**840 mg/kg**	**52.6%**
Nickel, Total	SW6010B	8.3 mg/kg	7.7 mg/kg	7.5%
Vanadium, Total	SW6010B	19 mg/kg	17 mg/kg	11.1%
Zinc, Total	SW6010B	12 mg/kg	12 mg/kg	0.0%

Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.

+/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required

The RPD values for benzene, toluene, and manganese exceeded the data validation limit of 50%. The benzene, toluene, and manganese results for the parent and duplicate samples, NDD-TW-5(23-23.5') and NDD-BD4, were assigned J qualifiers due to evidence of poor precision.

DATA QUALIFICATION SUMMARY

Abbreviation	Reason
LR-MS	The MS and/or MSD percent recovery was less than the lower acceptable limit indicating possible matrix interference.
ERPD-MS	The MS/MSD RPD exceeded the upper acceptable limit indicating poor precision.
HR-SUR	The surrogate percent recovery was greater than the upper acceptable limit indicating a possible high bias.
LR-SUR	The surrogate percent recovery was less than the lower acceptable limit indicating a possible low bias.
TBD	Trip blank detection
ERPD-FD	High field duplicate RPD.
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,1,1,2-Tetrachloroethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,1,1-Trichloroethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,1,2,2-Tetrachloroethane	SW8260B	NDD-SB-2 (19-19.5')	2108b84-012a	0.011	0.033	mg/kg	J	MDLRL
1,1,2,2-Tetrachloroethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,1,2-Trichloroethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,1-Dichloroethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,1-Dichloroethene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,1-Dichloropropene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.28	mg/kg	UJ	LR-SUR
1,2,3-Trichlorobenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.28	mg/kg	UJ	LR-SUR
1,2,3-Trichloropropane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.28	mg/kg	UJ	LR-SUR
1,2,4-Trichlorobenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,2,4-Trimethylbenzene	SW8260B	NDD-TW-5 (30.5-31)	2108b84-008a	0.0075	0.031	mg/kg	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	NDD-SB-2 (19-19.5')	2108b84-012a	0.014	0.033	mg/kg	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	42	1.4	mg/kg	J-	LR-SUR
1,2,4-Trimethylbenzene	SW8260B	NDD-SB-1 (13.5-14')	2108b84-017a	0.0087	0.027	mg/kg	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	NDD-TW-3 (0-0.5')	2108b84-018a	0.0067	0.027	mg/kg	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,2,4-Trimethylbenzene	SW8260B	NDD-TW-4 (31.5-32')	2108b84-024a	0.0076	0.033	mg/kg	J	MDLRL
1,2-Dibromo-3-Chloropropane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.28	mg/kg	UJ	LR-SUR
1,2-Dibromoethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,2-Dichlorobenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,2-Dichloroethane	SW8260B	NDD-SB-2 (3.5-4')	2108b84-011a	1.3	1.4	mg/kg	J	MDLRL
1,2-Dichloroethane	SW8260B	NDD-SB-2 (19-19.5')	2108b84-012a	0.017	0.033	mg/kg	J	MDLRL
1,2-Dichloroethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,2-Dichloroethane	SW8260B	NDD-SB-1 (13.5-14')	2108b84-017a	0.02	0.027	mg/kg	J	MDLRL
1,2-Dichloropropane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,3,5-Trimethylbenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	13	0.14	mg/kg	J-	LR-SUR
1,3-Dichlorobenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,3-Dichloropropane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1,4-Dichlorobenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
1-Methylnaphthalene	SW8270C	NDD-TW-5 (18.5-19')	2108b84-003a	0.17	0.19	mg/kg	J	MDLRL
1-Methylnaphthalene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	16	5.6	mg/kg	J-	LR-SUR
2,2-Dichloropropane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.28	mg/kg	UJ	LR-SUR
2,4-Dimethylphenol	SW8270C	NDD-TW-5 (18.5-19')	2108b84-003a	0.068	0.28	mg/kg	J	MDLRL
2-Butanone	SW8260B	NDD-SB-2 (19-19.5')	2108b84-012a	0.22	0.33	mg/kg	J	MDLRL
2-Butanone	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	1.4	mg/kg	UJ	LR-SUR
2-Chlorotoluene	SW8260B	NDD-SB-2 (1.5-2')	2108b84-010a	0.29	1.9	mg/kg	J	MDLRL
2-Chlorotoluene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
2-Hexanone	SW8260B	NDD-SB-2 (19-19.5')	2108b84-012a	0.031	0.33	mg/kg	J	MDLRL
2-Hexanone	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	1.4	mg/kg	UJ	LR-SUR
2-Methylnaphthalene	SW8260B	NDD-TW-5 (23-23.5')	2108b84-004a	0.039	0.097	mg/kg	J	MDLRL
2-Methylnaphthalene	SW8260B	NDD-BD4	2108b84-005a	0.044	0.1	mg/kg	J	MDLRL
2-Methylnaphthalene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	25	5.6	mg/kg	J-	LR-SUR
2-Methylnaphthalene	SW8260B	NDD-SB-1 (13.5-14')	2108b84-017a	0.039	0.11	mg/kg	J	MDLRL
4-Chlorotoluene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
4-Methyl-2-Pentanone	SW8260B	NDD-SB-2 (19-19.5')	2108b84-012a	0.064	0.33	mg/kg	J	MDLRL
4-Methyl-2-Pentanone	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	1.4	mg/kg	UJ	LR-SUR
Acetone	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	2.1	mg/kg	UJ	LR-SUR
Antimony, Total	SW6010B	NDD-TW-5 (0-0.5')	2108B84-001A	ND	5	mg/kg	R	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-TW-5 (1.5-2')	2108B84-002A	ND	4.8	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-TW-5 (18.5-19')	2108B84-003A	ND	4.9	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-TW-5 (23-23.5')	2108B84-004A	ND	4.9	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-BD4	2108B84-005A	ND	5.2	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-TW-5 (30.5-31)	2108B84-008A	ND	4.9	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-SB-2 (0-0.5')	2108B84-009A	ND	5	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-SB-2 (1.5-2')	2108B84-010A	ND	5	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-SB-2 (3.5-4')	2108B84-011A	ND	4.8	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-SB-2 (19-19.5')	2108B84-012A	ND	5.1	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-SB-1 (0-0.5')	2108B84-013A	ND	4.8	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-SB-1 (1.5-2')	2108B84-014A	ND	5	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-SB-1 (5-5.5')	2108B84-015A	ND	4.8	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-BD3	2108B84-016A	ND	5	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-SB-1 (13.5-14')	2108B84-017A	ND	5.1	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-TW-3 (0-0.5')	2108B84-018A	ND	4.9	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-TW-3 (1.5-2')	2108B84-019A	ND	5.1	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-TW-3 (33.5-34')	2108B84-020A	ND	4.8	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-TW-4 (0-0.5')	2108B84-021A	ND	5.2	mg/kg	UJ	ERPD-MS, LR-MS
Antimony, Total	SW6010B	NDD-TW-4 (1.5-2')	2108B84-022A	ND	4.9	mg/kg	UJ	ERPD-MS, LR-MS
Benzene	SW8260B	NDD-TW-5 (23-23.5')	2108b84-004a	0.75	0.012	mg/kg	J	ERPD-FD
Benzene	SW8260B	NDD-BD4	2108b84-005a	0.43	0.013	mg/kg	J	ERPD-FD
Benzene	SW8260B	NDD-SB-2 (0-0.5')	2108b84-009a	0.077	0.085	mg/kg	J	MDLRL
Benzene	SW8260B	NDD-SB-2 (19-19.5')	2108b84-012a	0.015	0.017	mg/kg	J	MDLRL
Benzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	6.2	0.07	mg/kg	J-	LR-SUR

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Benzene	SW8260B	NDD-SB-1 (13.5-14')	2108b84-017a	0.013	0.014	mg/kg	J	MDLRL
Bromobenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Bromodichloromethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Bromoform	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Bromomethane	SW8260B	NDD-SB-2 (19-19.5')	2108b84-012a	0.056	0.1	mg/kg	J	MDLRL
Bromomethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.42	mg/kg	UJ	LR-SUR
Carbon Disulfide	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	1.4	mg/kg	UJ	LR-SUR
Carbon tetrachloride	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Chlorobenzene	SW8260B	NDD-SB-2 (3.5-4')	2108b84-011a	0.45	1.4	mg/kg	J	MDLRL
Chlorobenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Chloroethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.28	mg/kg	UJ	LR-SUR
Chloroform	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Chloromethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.42	mg/kg	UJ	LR-SUR
cis-1,2-Dichloroethene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
cis-1,3-Dichloropropene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Dibromochloromethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Dibromomethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Dichlorodifluoromethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Di-n-butylphthalate	SW8270C	NDD-TW-4 (15-15.5')	2108b84-023a	0.33	0.37	mg/kg	J	MDLRL
Ethylbenzene	SW8260B	NDD-SB-2 (19-19.5')	2108b84-012a	0.0087	0.033	mg/kg	J	MDLRL
Ethylbenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	12	0.14	mg/kg	J-	LR-SUR
Fluorene	SW8270C	NDD-SB-2 (1.5-2')	2108B84-010A	1	1.9	mg/kg	J	MDLRL
Fluorene	SW8270C	NDD-SB-2 (3.5-4')	2108B84-011A	1.7	1.9	mg/kg	J	MDLRL
Hexachlorobutadiene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.28	mg/kg	UJ	LR-SUR
Isopropylbenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	1.8	0.14	mg/kg	J-	LR-SUR
Manganese, Total	SW6010B	NDD-TW-5 (23-23.5')	2108B84-004A	490	0.39	mg/kg	J	ERPD-FD
Manganese, Total	SW6010B	NDD-BD4	2108B84-005A	840	2.1	mg/kg	J	ERPD-FD
Mercury, Total	SW7471	NDD-TW-5 (0-0.5')	2108B84-001A	0.0068	0.032	mg/kg	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Mercury, Total	SW7471	NDD-TW-5 (1.5-2')	2108B84-002A	0.0038	0.033	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-TW-5 (18.5-19')	2108B84-003A	0.0038	0.032	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-TW-5 (30.5-31)	2108B84-008A	0.0049	0.033	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-2 (0-0.5')	2108B84-009A	0.02	0.034	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-2 (1.5-2')	2108B84-010A	0.0042	0.035	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-2 (3.5-4')	2108B84-011A	0.0025	0.031	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-1 (0-0.5')	2108B84-013A	0.013	0.034	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-1 (1.5-2')	2108B84-014A	0.0034	0.034	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-1 (5-5.5')	2108B84-015A	0.0043	0.035	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-BD3	2108B84-016A	0.0035	0.032	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-TW-3 (0-0.5')	2108B84-018A	0.0061	0.032	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-TW-3 (1.5-2')	2108B84-019A	0.0032	0.031	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-TW-4 (0-0.5')	2108B84-021A	0.0056	0.032	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-TW-4 (15-15.5')	2108B84-023A	0.0027	0.034	mg/kg	J	MDLRL
Methylene Chloride	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.42	mg/kg	UJ	LR-SUR
Methylene Chloride	SW8260B	MeOh Blank-1	2108b84-025a	0.064	0.15	mg/kg	J	MDLRL
MTBE	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
MTBE	SW8260B	NDD-TW-4 (15-15.5')	2108b84-023a	0.019	0.028	mg/kg	J	MDLRL
Naphthalene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	12	0.28	mg/kg	J-	LR-SUR
Naphthalene	SW8270C	NDD-SB-1 (5-5.5')	2108B84-015A	13	2	mg/kg	J	ERPD-FD
Naphthalene	SW8270C	NDD-BD3	2108B84-016A	7.4	1.9	mg/kg	J	ERPD-FD
Naphthalene	SW8260B	NDD-SB-1 (13.5-14')	2108b84-017a	0.017	0.054	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	3.3	0.42	mg/kg	J-	LR-SUR
n-Propylbenzene	SW8260B	NDD-TW-5 (23-23.5')	2108b84-004a	0.017	0.024	mg/kg	J	MDLRL
n-Propylbenzene	SW8260B	NDD-BD4	2108b84-005a	0.013	0.026	mg/kg	J	MDLRL
n-Propylbenzene	SW8260B	NDD-SB-2 (0-0.5')	2108b84-009a	0.11	0.17	mg/kg	J	MDLRL
n-Propylbenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	5.8	0.14	mg/kg	J-	LR-SUR
Phenanthrene	SW8270C	NDD-SB-2 (1.5-2')	2108B84-010A	1.7	1.9	mg/kg	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Phenol	SW8270C	NDD-TW-5 (18.5-19')	2108b84-003a	0.16	0.19	mg/kg	J	MDLRL
p-Isopropyltoluene	SW8260B	NDD-TW-5 (18.5-19')	2108b84-003a	0.089	0.12	mg/kg	J	MDLRL
p-Isopropyltoluene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	1.5	0.14	mg/kg	J-	LR-SUR
sec-Butylbenzene	SW8260B	NDD-TW-5 (18.5-19')	2108b84-003a	0.12	0.12	mg/kg	J	MDLRL
sec-Butylbenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	1.4	0.14	mg/kg	J-	LR-SUR
Silver, Total	SW6010B	NDD-TW-5 (0-0.5')	2108B84-001A	ND	0.5	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-TW-5 (1.5-2')	2108B84-002A	ND	0.48	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-TW-5 (18.5-19')	2108B84-003A	ND	0.49	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-TW-5 (23-23.5')	2108B84-004A	ND	0.49	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-BD4	2108B84-005A	ND	0.52	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-TW-5 (30.5-31)	2108B84-008A	ND	0.49	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-2 (0-0.5')	2108B84-009A	ND	0.5	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-2 (1.5-2')	2108B84-010A	ND	0.5	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-2 (3.5-4')	2108B84-011A	ND	0.48	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-2 (19-19.5')	2108B84-012A	ND	0.51	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-1 (0-0.5')	2108B84-013A	ND	0.48	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-1 (1.5-2')	2108B84-014A	ND	0.5	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-1 (5-5.5')	2108B84-015A	ND	0.48	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-BD3	2108B84-016A	ND	0.5	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-1 (13.5-14')	2108B84-017A	ND	0.51	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-TW-3 (0-0.5')	2108B84-018A	ND	0.49	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-TW-3 (1.5-2')	2108B84-019A	ND	0.51	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-TW-3 (33.5-34')	2108B84-020A	ND	0.48	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-TW-4 (0-0.5')	2108B84-021A	ND	0.52	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-TW-4 (1.5-2')	2108B84-022A	ND	0.49	mg/kg	UJ	LR-MS
Styrene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
tert-Butylbenzene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Tetrachloroethene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR

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Toluene	SW8260B	NDD-TW-5 (23-23.5')	2108b84-004a	0.39	0.024	mg/kg	J	ERPD-FD
Toluene	SW8260B	NDD-BD4	2108b84-005a	0.22	0.026	mg/kg	J	ERPD-FD
Toluene	SW8260B	NDD-TW-5 (30.5-31)	2108b84-008a	0.013	0.031	mg/kg	U	MDLRL, TBD
Toluene	SW8260B	NDD-SB-2 (19-19.5')	2108b84-012a	0.0084	0.033	mg/kg	U	MDLRL, TBD
Toluene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	1.1	0.14	mg/kg	J-	LR-SUR
Toluene	SW8260B	MeOh Blank-1	2108b84-025a	0.011	0.05	mg/kg	J	MDLRL
TPH DRO	SW8015	NDD-TW-5 (30.5-31)	2108B84-008A	5.5	9.2	mg/kg	J+	HR-SUR, MDLRL
TPH DRO	SW8015	NDD-SB-2 (19-19.5')	2108B84-012A	5.2	9.1	mg/kg	J+	HR-SUR, MDLRL
TPH DRO	SW8015	NDD-TW-4 (0-0.5')	2108B84-021A	8.4	9.3	mg/kg	J	MDLRL
TPH DRO	SW8015	NDD-TW-4 (1.5-2')	2108B84-022A	8.3	9.5	mg/kg	J+	HR-SUR, MDLRL
TPH GRO	SW8015	NDD-SB-2 (19-19.5')	2108b84-012a	1.8	3.3	mg/kg	J	MDLRL
trans-1,2-Dichloroethene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
trans-1,3-Dichloropropene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Trichloroethene	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Trichlorofluoromethane	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Vinyl Chloride	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	ND	0.14	mg/kg	UJ	LR-SUR
Xylenes, Total	SW8260B	NDD-SB-2 (19-19.5')	2108b84-012a	0.031	0.067	mg/kg	J	MDLRL
Xylenes, Total	SW8260B	NDD-SB-1 (5-5.5')	2108b84-015a	80	2.8	mg/kg	J-	LR-SUR

Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental
Project Name: North Drainage Ditch	Sample Matrix: Soil
Project Number: 697-096-001 Task: 0001	Sample Start Date: 08/18/2021
Date Validated: 10/08/2021	Sample End Date: 08/24/2021
Parameters Included: ▪ Volatile Organic Compounds (VOC) by Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270C ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D MOD ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015M/D ▪ Total Metals by SW-846 Method 6010B ▪ Total Mercury by SW-846 Method 7471B ▪ Cyanide by SW-846 Method 9012B	
Laboratory Project ID: 2108D42	
Data Validator: Daran O'Hollearn, Lead Project Scientist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace National of Mt. Juliet, Tennessee evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- Laboratory control samples (LCS)
- Organic system monitoring compounds (surrogates)

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks
- Equipment blanks

Tier II Data Validation Report Summary

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
NDD-SB-6 (23.5-24')	2108d42-001
NDD-SB-5 (0-0.5')	2108d42-002
NDD-SB-5 (1.5-2')	2108d42-003
NDD-BD5	2108d42-004
NDD-BD6	2108d42-005
NDD-EB7	2108D42-006
NDD-EB8	2108D42-007
NDD-SB-5 (9.5-10')	2108d42-008
NDD-SB-5 (12-12.5')	2108d42-009
NDD-SB-5 (17.5-18')	2108d42-010
NDD-EB9	2108D42-011
NDD-SB-3 (0-0.5')	2108d42-012
NDD-SB-3 (1.5-2')	2108d42-013
NDD-SB-3 (6-6.5')	2108d42-014
NDD-SB-3 (9.5-10')	2108d42-015
NDD-SB-4 (1-1.5')	2108d42-016
NDD-SB-4 (2-2.5')	2108d42-017
NDD-SB-4 (2.5-3')	2108d42-018
NDD-SB-4 (19.5-20')	2108d42-019
NDD-SB-6 (1.5-2')	2108d42-020
NDD-SB-6 (3-3.5')	2108d42-021
NDD-SB-6 (15-15.5')	2108d42-022
NDD-SB-6 (21-21.5')	2108d42-023
NDD-EB5	2108D42-024
NDD-EB6	2108D42-025
MeOH Blank 1	2108d42-026
MeOH Blank 2	2108d42-027

Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- ○ Initial and Continuing Calibrations (Items 9 and 10)
- ✓ Laboratory Blanks (Items 11 and 12)
- ⊗ MS/MSD (Items 13 and 14)
- ✓ LCS (Items 15 and 16)
- ⊗ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ✓ Equipment and Trip Blanks (Items 18 and 19)
- ⊗ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)
- ✓ Data Relationships (Item 23)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-542-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, February 2021.

Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

Qualifier	Definition
J	Estimated concentration
J+	The result is an estimated concentration, but may be biased high
UJ	Estimated reporting limit
R	Rejected, data not usable

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 3,120 data points. The data completeness calculation does not include any submitted blank sample results. One data point was rejected. The data completeness measure for this data package is calculated to be 99.97% and is acceptable.

VALIDATION CRITERIA CHECKLIST

1. Was the report free of non-conformances identified by the laboratory? Yes

Comments: The laboratory did not report non-conformances related to the analytical data for this sample set.

2. Were the data free of data qualification flags and/or notes used by the laboratory? No
If no, define.

Comments: The laboratory used the following data qualification flags with this data set.

D – Sample diluted due to matrix.

J – Analyte detected below quantitation limits.

R – %RPD outside laboratory limits

S – % Recovery outside of range due to dilution or matrix.

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.

3. Were sample CoC forms and custody procedures complete? Yes

Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. Custody seals were not present or required since the samples were delivered to the laboratory by a laboratory courier, and custody was maintained at all times.

4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable? Yes

Comments: The reporting limits for the data set were reviewed and appeared to be acceptable. The following dilutions were applied to the project samples.

Method	Sample(s)	Analyte(s)	Dilution Factor
6010B	Multiple Samples	Select Metals	2
6010B	NDD-SB-6 (23.5-24'), NDD-SB-4 (19.5-20')	Select Metals	5
8015D Mod	NDD-SB-4 (1-1.5'), NDD-SB-4 (2-2.5'), NDD-SB-4 (2.5-3')	GRO	5
8260B	NDD-SB-4 (2-2.5')	VOC	5
6010B	NDD-BD5, NDD-SB-3 (1.5-2'), NDD-SB-3 (6-6.5')	Select Metals	10
8015D Mod	NDD-BD5, NDD-SB-3 (6-6.5'), NDD-SB-6 (21-21.5')	GRO	10
8015M/D	Multiple Samples	DRO, MRO	10
8260B	Multiple Samples	VOC	10
8270C	Multiple Samples	SVOC	10
8270C	NDD-SB-6 (1.5-2')	SVOC	20
6010B	Submitted Samples	Iron	100

5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC? No

Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC, with the following exceptions.

The CoC requested mercury using Method 7470 and metals using Method 6020; however, the laboratory report states that the laboratory used Method 7471B for the mercury analyses and Method 6010B for the metals analyses. These substituted analytical methods met similar sensitivity, accuracy, and precision goals and, therefore, were acceptable replacements.

VALIDATION CRITERIA CHECKLIST	
6. Were samples received in good condition within method-specified requirements?	No
Comments: Samples were received on ice, in good condition, and with the cooler temperatures both within and outside the recommended temperature range of 4°C ± 2°C at 0.7°C and 2.9°C as noted on the Sample Log-in Check List. Samples transferred to Pace National were received in good condition with the cooler temperature within the recommended range at 3.7°C and as noted on the CoC. The cooler temperature below 2.0°C was judged as acceptable since the laboratory did not report the sample containers as broken or frozen.	
7. Were samples extracted/digested and analyzed within method-specified or technical holding times?	Yes
Comments: The samples were digested/extracted and analyzed within method-specific holding times.	
8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.	Yes
Comments: The results were reported in concentration units of micrograms per liter (µg/L) and milligrams per kilogram (mg/kg), which were acceptable for the sample matrices and the analyses requested. The analytical results for the soil samples were reported on a wet weight basis for this sample set.	
9. Did the laboratory provide any specific initial and/or continuing calibration results?	No
Comments: Initial and continuing calibration data were not included as part of this data set.	
10. If initial and/or continuing calibration results were provided, were the results within acceptable limits?	N/A
Comments: Initial and continuing calibration data were not included as part of this data set.	
11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?	Yes
Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.	
12. Were target analytes reported as not detected in the laboratory blanks?	Yes
Comments: Target analytes were reported as not detected in the laboratory blanks.	

VALIDATION CRITERIA CHECKLIST

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Batch	MS Sample Source
6010B	Metals	62279	NDD-SB-6 (23.5-24')
7471	Mercury	62410	NDD-SB-6 (23.5-24')
8015D MOD	GRO	B80948	Not Prepared
8015D MOD	GRO	B80803	NDD-SB-5 (0-0.5')
8015D MOD	GRO	B80915	Not Prepared
8015D MOD	GRO	B80995	NDD-SB-6 (1.5-2')
8015M/D	DRO	62220	Not Prepared
8015M/D	DRO	62222	NDD-SB-4 (19.5-20')
8260B	VOCs	A80803	Not Prepared
8260B	VOCs	R80878	Not Prepared
Method	Analytes	Batch	MS Sample Source
8260B	VOCs	R80915	NDD-SB-6 (23.5-24')
8260B	VOCs	R80995	NDD-SB-5 (17.5-18')
8270C	SVOCs	62216	Not Prepared
8270C	SVOCs	62772	Not Prepared
9012	Cyanide	R81402 / R3699286	Not Associated, NDD-SB-5 (17.5-18')
9012	Cyanide	R81402 / R3699848	Not Associated

Not Associated – The MS sample source was not associated with this project.
Not Prepared – Matrix spikes were not prepared for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? No

Comments: The percent recoveries and RPDs for MS/MSDs prepared from project samples were within data validation and laboratory QC limits or were not applicable because the unspiked amount was more than four times the spike added, with the following exceptions.

Method	Analyte	Batch	MS Recovery	MSD Recovery	MS/MSD QC Limits
6010B	**Antimony**	**62279**	**0%**	**0%**	**75-125%**
6010B	**Silver**	**62279**	**61.5%**	**53.0%**	**75-125%**
6010B	**Zinc**	**62279**	**Acceptable**	**139%**	**75-125%**
6010B	**Vanadium**	**62279**	**Acceptable**	**125%**	**75-125%**

Antimony and silver with MS and MSD percent recoveries that were less than lower the laboratory QC limits and data validation QC limits were not detected in the associated samples. These results were qualified as UJ due to evidence of potential low bias. For antimony with MS and MSD percent recoveries less than 30%, the non-detected antimony result for the parent sample, NDD-SB-6 (23.5-24'), was qualified R to indicate rejected (not usable) data based on evidence of extreme low bias.
Vanadium and zinc with MSD recoveries greater than the laboratory and data validation QC limits were detected in the associated samples, and the results were qualified as J+ to indicate estimated concentrations that may be biased high.

VALIDATION CRITERIA CHECKLIST

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? Yes

The LCS percent recoveries were within laboratory QC limits. LCSDs were not analyzed as part of this sample set.

17. Were surrogate recoveries within laboratory QC limits? No

Comments: Surrogate recoveries in the analyses of the submitted samples were within laboratory QC limits, with the following exceptions.

Method	Surrogate	Sample	Surrogate Recovery	QC Limits
8015M/D	**DNOP**	**NDD-SB-5 (1.5-2')**	**175%**	**70-130%**
8015M/D	DNOP	NDD-BD6	132%	70-130%
8015M/D	**DNOP**	**NDD-SB-4 (19.5-20')**	**149%**	**70-130%**
Method	Surrogate	Sample	Surrogate Recovery	QC Limits
8015M/D	DNOP	NDD-SB-6 (3-3.5')	180%	70-130%
8015M/D	DNOP	NDD-SB-6 (15-15.5')	154%	70-130%

The associated target analyte (TPH DRO) in the samples with surrogate recoveries that were greater than upper laboratory QC limits were qualified as J+ if detected in the affected samples to indicate estimated concentrations that may be biased high. Qualification was not required for non-detected analytes associated with these surrogates.

The SVOC results for multiple samples were not qualified based on the surrogate non-conformances in the Method 8270C analyses since the applied dilutions of 10 times and 20 times resulted in surrogate concentrations below routinely calibrated levels, and those results were deemed unreliable and possibly inaccurate.

The DRO and MRO results for multiple samples were not qualified based on the surrogate non-conformances in the Method 8015M/D analyses since the applied dilutions of 10 times resulted in surrogate concentrations below routinely calibrated levels, and those results were deemed unreliable and possibly inaccurate.

Qualification of sample data was not required based on surrogate non-conformances in QC samples as the environmental samples were evaluated based on their specific surrogate recoveries.

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the total number of samples. Two trip blank samples, MeOH Blank 1 and MeOH Blank 2, and five equipment blank samples, NDD-EB5, NDD-EB6, NDD-EB7, NDD-EB8, and NDD-EB9, were collected as part of this sample set.

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? No

Comments: Target analytes were reported as not detected in the trip blank and equipment blank samples, with the following exception.

Acetone was detected in the 8260B analysis of equipment blank sample NDD-EB5 at 5.0 µg/L. Acetone was not detected in the associated samples, and the results did not require qualification.

VALIDATION CRITERIA CHECKLIST	
20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit?	Yes
Comments: The number of field duplicates collected was equal to at least 10% of the number of samples. • Sample NDD-BD5 was collected as a field duplicate of sample NDD-SB-3 (6-6.5'). • Sample NDD-BD6 was collected as a field duplicate of sample NDD-SB-5 (9.5-10').	
21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)?	No
Comment: As indicated in the Field Duplicate Summary Tables at the end of this report, field duplicate RPD values were within data validation QC limits of 0-30% for water samples, with the following exceptions. Duplicate pair NDD-SB-3 (6-6.5') / NDD-BD5: **The RPD values for multiple analytes exceeded the data validation limit of 50%, which was evidence of poor precision. These analyte results were qualified as J for samples NDD-SB-3 (6-6.5') and NDD-BD5.**	
22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits?	Yes
Comments: Laboratory duplicates were prepared for the analysis of cyanide in batch R81402 / R3699286 from a sample not associated with this data set and sample NDD-SB-5 (17.5-18'), and for cyanide in batch R81402 / R3699848 from samples not associated with this data set. The RPD for the laboratory duplicate prepared from a project sample was not applicable since the results for one or both measurements were within 5 times the reporting limit. The RPD values for laboratory duplicate samples prepared from non-project samples were evaluated and considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.	
23. Were the following data relationships realistic and acceptable?	
• Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270), and the results were in agreement?	Yes
Comments: Analytical results for 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, hexachlorobutadiene, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene were reported by both Method 8260B and 8270C. The results for these analytes were reported as not detected by one or more methods, and/or one or both results were less than five times the applicable reporting limits. Qualification of data was not required	
• Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results?	N/A
Comments: Only total metals were analyzed as part of this data set.	

FIELD DUPLICATE SUMMARY

Client Sample ID: NDD-SB-3 (6-6.5') Field Duplicate Sample ID: NDD-BD5				
Analyte	**Method**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
Barium, Total	SW6010B	620 mg/kg	980 mg/kg	45.0%
Beryllium, Total	SW6010B	0.98 mg/kg	1.0 mg/kg	2.0%
Chromium, Total	SW6010B	6.7 mg/kg	10 mg/kg	39.5%
Cobalt, Total	SW6010B	5.4 mg/kg	4.5 mg/kg	18.2%
Iron, Total	SW6010B	12,000 mg/kg	16,000 mg/kg	28.6%
Lead, Total	**SW6010B**	**1.8 mg/kg**	**3.2 mg/kg**	**56.0%**
Manganese, Total	**SW6010B**	**380 mg/kg**	**660 mg/kg**	**53.8%**
Nickel, Total	SW6010B	9.5 mg/kg	9.2 mg/kg	3.2%
Vanadium, Total	**SW6010B**	**11 mg/kg**	**19 mg/kg**	**53.3%**
Zinc, Total	SW6010B	17 mg/kg	16 mg/kg	6.1%
Mercury, Total	SW7471	0.0064 mg/kg	0.0077 mg/kg	18.4% +/-RL
TPH DRO	SW8015	1,500 mg/kg	1,600 mg/kg	6.5%
TPH GRO	**SW8015**	**210 mg/kg**	**440 mg/kg**	**70.8%**
1,2,4-Trimethylbenzene	**SW8260B**	**2.8 mg/kg**	**7.2 mg/kg**	**88.0%**
1,3,5-Trimethylbenzene	**SW8260B**	**0.84 mg/kg**	**2.1 mg/kg**	**85.7%**
1-Methylnaphthalene	SW8260B	0.77 mg/kg	2.1 mg/kg	92.7% +/-RL
2-Hexanone	SW8260B	0.48 mg/kg	ND (2.8) mg/kg	DL
2-Methylnaphthalene	**SW8260B**	**1.2 mg/kg**	**3.2 mg/kg**	**90.9%**
4-Methyl-2-Pentanone	SW8260B	1.8 mg/kg	ND (2.8) mg/kg	DL
Benzene	SW8260B	0.65 mg/kg	0.95 mg/kg	37.5%
Bromodichloromethane	SW8260B	0.091 mg/kg	ND (0.28) mg/kg	DL
Chlorobenzene	SW8260B	0.051 mg/kg	ND (0.28) mg/kg	DL
Ethylbenzene	**SW8260B**	**0.79 mg/kg**	**1.9 mg/kg**	**82.5%**
Isopropylbenzene	SW8260B	0.14 mg/kg	0.28 mg/kg	66.7% +/-RL
Naphthalene	**SW8260B**	**0.65 mg/kg**	**1.5 mg/kg**	**79.1%**
n-Butylbenzene	SW8260B	0.33 mg/kg	0.69 mg/kg	70.6% +/-RL
n-Propylbenzene	**SW8260B**	**0.41 mg/kg**	**0.98 mg/kg**	**82.0%**
p-Isopropyltoluene	SW8260B	0.085 mg/kg	0.26 mg/kg	101.4% +/-RL
Toluene	SW8260B	0.061 mg/kg	0.13 mg/kg	72.3% +/-RL
Xylenes, Total	**SW8260B**	**4.8 mg/kg**	**12 mg/kg**	**85.7%**
1-Methylnaphthalene	SW8270C	4.6 mg/kg	4.5 mg/kg	2.2%
2-Methylnaphthalene	SW8270C	6.7 mg/kg	6.6 mg/kg	1.5%
Naphthalene	SW8270C	2.7 mg/kg	2.6 mg/kg	3.8% +/-RL

Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.

DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL).

+/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required.

The RPD values for multiple analytes exceeded the data validation limit of 50%, which was evidence of poor precision. These analyte results were qualified as J for samples NDD-SB-3 (6-6.5') and NDD-BD5.

Client Sample ID: NDD-SB-5 (9.5-10') Field Duplicate Sample ID: NDD-BD6				
Analyte	**Method**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
Barium, Total	SW6010B	350 mg/kg	280 mg/kg	22.2%
Beryllium, Total	SW6010B	0.85 mg/kg	0.92 mg/kg	7.9%
Chromium, Total	SW6010B	9.1 mg/kg	9.7 mg/kg	6.4%
Cobalt, Total	SW6010B	4.6 mg/kg	4.7 mg/kg	2.2%
Iron, Total	SW6010B	13,000 mg/kg	13,000 mg/kg	0.0%
Lead, Total	SW6010B	2.2 mg/kg	2.2 mg/kg	0.0%
Manganese, Total	SW6010B	420 mg/kg	470 mg/kg	11.2%
Nickel, Total	SW6010B	7.9 mg/kg	8.8 mg/kg	10.8%
Vanadium, Total	SW6010B	19 mg/kg	21 mg/kg	10.0%
Zinc, Total	SW6010B	15 mg/kg	16 mg/kg	6.5%
Mercury, Total	SW7471	ND (0.031 mg/kg)	0.0042 mg/kg	DL
TPH GRO	SW8015	ND (2.4 mg/kg)	0.76 mg/kg	DL

Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.

DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL).

DATA QUALIFICATION SUMMARY

Abbreviation	Reason
ERPD-FD	High field duplicate RPD.
HR-MS	The MS and/or MSD percent recovery was greater than the upper acceptable limit indicating possible matrix interference.
HR-SUR	The surrogate percent recovery was greater than the upper acceptable limit indicating a possible high bias.
LR-MS	The MS and/or MSD percent recovery was less than the lower acceptable limit indicating possible matrix interference.
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,2,4-Trimethylbenzene	SW8260B	NDD-BD5	2108d42-004a	7.2	0.28	mg/kg	J	ERPD-FD
1,2,4-Trimethylbenzene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	2.8	0.28	mg/kg	J	ERPD-FD
1,2,4-Trimethylbenzene	SW8260B	NDD-SB-5 (12-12.5')	2108d42-009a	0.0045	0.026	mg/kg	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	NDD-SB-4 (19.5-20')	2108d42-019a	0.0065	0.031	mg/kg	J	MDLRL
1,2-Dichloroethane	SW8260B	NDD-SB-3 (9.5-10')	2108d42-015a	0.016	0.033	mg/kg	J	MDLRL
1,2-Dichloroethane	SW8260B	NDD-SB-4 (19.5-20')	2108d42-019a	0.017	0.031	mg/kg	J	MDLRL
1,3,5-Trimethylbenzene	SW8260B	NDD-BD5	2108d42-004a	2.1	0.28	mg/kg	J	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.84	0.28	mg/kg	J	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	NDD-SB-6 (21-21.5')	2108d42-023a	0.24	0.29	mg/kg	J	MDLRL
1-Methylnaphthalene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.77	1.1	mg/kg	J	MDLRL
1-Methylnaphthalene	SW8260B	NDD-SB-4 (2-2.5')	2108d42-017a	0.51	0.6	mg/kg	J	MDLRL
2-Butanone	SW8260B	NDD-SB-5 (0-0.5')	2108d42-002a	0.16	0.36	mg/kg	J	MDLRL
2-Hexanone	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.48	2.8	mg/kg	J	MDLRL
2-Hexanone	SW8260B	NDD-SB-4 (19.5-20')	2108d42-019a	0.022	0.31	mg/kg	J	MDLRL
2-Hexanone	SW8260B	NDD-SB-6 (21-21.5')	2108d42-023a	0.98	2.9	mg/kg	J	MDLRL
2-Methylnaphthalene	SW8260B	NDD-BD5	2108d42-004a	3.2	1.1	mg/kg	J	ERPD-FD
2-Methylnaphthalene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	1.2	1.1	mg/kg	J	ERPD-FD

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
2-Methylnaphthalene	SW8260B	NDD-SB-6 (23.5-24')	2108d42-001a	0.034	0.11	mg/kg	J	MDLRL
2-Methylnaphthalene	SW8260B	NDD-SB-4 (19.5-20')	2108d42-019a	0.039	0.12	mg/kg	J	MDLRL
4-Methyl-2-Pentanone	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	1.8	2.8	mg/kg	J	MDLRL
4-Methyl-2-Pentanone	SW8260B	NDD-SB-6 (21-21.5')	2108d42-023a	0.37	2.9	mg/kg	J	MDLRL
Acetone	SW8260B	NDD-EB5	2108D42-024A	5.0	10	µg/L	J	MDLRL
Antimony, Total	SW6010B	NDD-SB-6 (23.5-24')	2108D42-001A	ND	12	mg/kg	R	LR-MS
Antimony, Total	SW6010B	NDD-SB-5 (0-0.5')	2108D42-002A	ND	5.0	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-5 (1.5-2')	2108D42-003A	ND	5.0	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-BD5	2108D42-004A	ND	4.9	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-BD6	2108D42-005A	ND	5.0	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-5 (9.5-10')	2108D42-008A	ND	4.9	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-5 (12-12.5')	2108D42-009A	ND	2.5	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-5 (17.5-18')	2108D42-010A	ND	2.5	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-3 (0-0.5')	2108D42-012A	ND	4.9	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-3 (1.5-2')	2108D42-013A	ND	5.0	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-3 (6-6.5')	2108D42-014A	ND	4.9	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-3 (9.5-10')	2108D42-015A	ND	5.0	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-4 (1-1.5')	2108D42-016A	ND	2.4	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-4 (2-2.5')	2108D42-017A	ND	4.9	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-4 (2.5-3')	2108D42-018A	ND	2.5	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-4 (19.5-20')	2108D42-019A	ND	2.4	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-6 (1.5-2')	2108D42-020A	ND	5.0	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-6 (3-3.5')	2108D42-021A	ND	4.9	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-6 (15-15.5')	2108D42-022A	ND	4.9	mg/kg	UJ	LR-MS
Antimony, Total	SW6010B	NDD-SB-6 (21-21.5')	2108D42-023A	ND	5.0	mg/kg	UJ	LR-MS
Bromodichloromethane	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.091	0.28	mg/kg	J	MDLRL
Bromomethane	SW8260B	NDD-SB-6 (1.5-2')	2108d42-020a	0.045	0.081	mg/kg	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Chlorobenzene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.051	0.28	mg/kg	J	MDLRL
Chlorobenzene	SW8260B	NDD-SB-4 (1-1.5')	2108d42-016a	0.068	0.31	mg/kg	J	MDLRL
Chlorobenzene	SW8260B	NDD-SB-4 (2.5-3')	2108d42-018a	0.097	0.31	mg/kg	J	MDLRL
Chloroethane	SW8260B	NDD-SB-4 (1-1.5')	2108d42-016a	0.16	0.62	mg/kg	J	MDLRL
Chloroform	SW8260B	NDD-SB-4 (2-2.5')	2108d42-017a	0.12	0.15	mg/kg	J	MDLRL
Chloroform	SW8260B	NDD-SB-6 (21-21.5')	2108d42-023a	0.15	0.29	mg/kg	J	MDLRL
Di-n-butylphthalate	SW8270C	NDD-SB-5 (17.5-18')	2108D42-010A	0.29	0.39	mg/kg	J	MDLRL
Ethylbenzene	SW8260B	NDD-BD5	2108d42-004a	1.9	0.28	mg/kg	J	ERPD-FD
Ethylbenzene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.79	0.28	mg/kg	J	ERPD-FD
Isopropylbenzene	SW8260B	NDD-BD5	2108d42-004a	0.28	0.28	mg/kg	J	MDLRL
Isopropylbenzene	SW8260B	NDD-SB-5 (12-12.5')	2108d42-009a	0.012	0.026	mg/kg	J	MDLRL
Isopropylbenzene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.14	0.28	mg/kg	J	MDLRL
Isopropylbenzene	SW8260B	NDD-SB-4 (2-2.5')	2108d42-017a	0.072	0.15	mg/kg	J	MDLRL
Lead, Total	SW6010B	NDD-BD5	2108D42-004A	3.2	0.59	mg/kg	J	ERPD-FD
Lead, Total	SW6010B	NDD-SB-3 (6-6.5')	2108D42-014A	1.8	0.59	mg/kg	J	ERPD-FD
Manganese, Total	SW6010B	NDD-BD5	2108D42-004A	660	2.0	mg/kg	J	ERPD-FD
Manganese, Total	SW6010B	NDD-SB-3 (6-6.5')	2108D42-014A	380	0.39	mg/kg	J	ERPD-FD
Mercury, Total	SW7471	NDD-SB-5 (0-0.5')	2108D42-002A	0.0078	0.035	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-5 (1.5-2')	2108D42-003A	0.0067	0.034	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-BD5	2108D42-004A	0.0077	0.031	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-BD6	2108D42-005A	0.0042	0.035	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-5 (12-12.5')	2108D42-009A	0.0042	0.031	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-3 (0-0.5')	2108D42-012A	0.023	0.033	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-3 (1.5-2')	2108D42-013A	0.011	0.033	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-3 (6-6.5')	2108D42-014A	0.0064	0.036	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-4 (2-2.5')	2108D42-017A	0.0068	0.035	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-4 (2.5-3')	2108D42-018A	0.018	0.032	mg/kg	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Mercury, Total	SW7471	NDD-SB-6 (3-3.5')	2108D42-021A	0.012	0.033	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-6 (15-15.5')	2108D42-022A	0.0029	0.031	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-SB-6 (21-21.5')	2108D42-023A	0.0038	0.033	mg/kg	J	MDLRL
Naphthalene	SW8260B	NDD-BD5	2108d42-004a	1.5	0.57	mg/kg	J	ERPD-FD
Naphthalene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.65	0.56	mg/kg	J	ERPD-FD
Naphthalene	SW8260B	NDD-SB-4 (19.5-20')	2108d42-019a	0.022	0.062	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-SB-6 (23.5-24')	2108d42-001a	0.0074	0.081	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-BD5	2108d42-004a	0.69	0.85	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-SB-5 (12-12.5')	2108d42-009a	0.009	0.079	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.33	0.84	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-SB-4 (1-1.5')	2108d42-016a	0.71	0.93	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-SB-4 (2-2.5')	2108d42-017a	0.13	0.45	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-SB-6 (21-21.5')	2108d42-023a	0.12	0.88	mg/kg	J	MDLRL
n-Propylbenzene	SW8260B	NDD-BD5	2108d42-004a	0.98	0.28	mg/kg	J	ERPD-FD
n-Propylbenzene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.41	0.28	mg/kg	J	ERPD-FD
n-Propylbenzene	SW8260B	NDD-SB-6 (23.5-24')	2108d42-001a	0.018	0.027	mg/kg	J	MDLRL
n-Propylbenzene	SW8260B	NDD-SB-5 (12-12.5')	2108d42-009a	0.012	0.026	mg/kg	J	MDLRL
n-Propylbenzene	SW8260B	NDD-SB-4 (19.5-20')	2108d42-019a	0.0066	0.031	mg/kg	J	MDLRL
n-Propylbenzene	SW8260B	NDD-SB-6 (21-21.5')	2108d42-023a	0.12	0.29	mg/kg	J	MDLRL
p-Isopropyltoluene	SW8260B	NDD-BD5	2108d42-004a	0.26	0.28	mg/kg	J	MDLRL
p-Isopropyltoluene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.085	0.28	mg/kg	J	MDLRL
p-Isopropyltoluene	SW8260B	NDD-SB-4 (2-2.5')	2108d42-017a	0.074	0.15	mg/kg	J	MDLRL
Silver, Total	SW6010B	NDD-SB-6 (23.5-24')	2108D42-001A	ND	1.2	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-5 (0-0.5')	2108D42-002A	ND	0.50	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-5 (1.5-2')	2108D42-003A	ND	0.50	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-BD5	2108D42-004A	ND	0.49	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-BD6	2108D42-005A	ND	0.50	mg/kg	UJ	LR-MS

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Silver, Total	SW6010B	NDD-SB-5 (9.5-10')	2108D42-008A	ND	0.49	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-5 (12-12.5')	2108D42-009A	ND	0.25	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-5 (17.5-18')	2108D42-010A	ND	0.25	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-3 (0-0.5')	2108D42-012A	ND	0.49	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-3 (1.5-2')	2108D42-013A	ND	0.50	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-3 (6-6.5')	2108D42-014A	ND	0.49	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-3 (9.5-10')	2108D42-015A	ND	0.50	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-4 (1-1.5')	2108D42-016A	ND	0.24	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-4 (2-2.5')	2108D42-017A	ND	0.49	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-4 (2.5-3')	2108D42-018A	ND	0.25	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-4 (19.5-20')	2108D42-019A	ND	0.24	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-6 (1.5-2')	2108D42-020A	ND	0.50	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-6 (3-3.5')	2108D42-021A	ND	0.49	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-6 (15-15.5')	2108D42-022A	ND	0.49	mg/kg	UJ	LR-MS
Silver, Total	SW6010B	NDD-SB-6 (21-21.5')	2108D42-023A	ND	0.50	mg/kg	UJ	LR-MS
Toluene	SW8260B	NDD-BD5	2108d42-004a	0.13	0.28	mg/kg	J	MDLRL
Toluene	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	0.061	0.28	mg/kg	J	MDLRL
TPH DRO	SW8015	NDD-SB-5 (1.5-2')	2108D42-003A	5.3	9.7	mg/kg	J+	HR-SUR, MDLRL
TPH DRO	SW8015	NDD-SB-4 (19.5-20')	2108D42-019A	6.3	9.2	mg/kg	J+	HR-SUR, MDLRL
TPH GRO	SW8015	NDD-BD5	2108d42-004a	440	28	mg/kg	J	ERPD-FD
TPH GRO	SW8015	NDD-SB-3 (6-6.5')	2108d42-014a	210	28	mg/kg	J	ERPD-FD
TPH GRO	SW8015	NDD-BD6	2108d42-005a	0.76	2.5	mg/kg	J	MDLRL
TPH GRO	SW8015	NDD-SB-5 (12-12.5')	2108d42-009a	2.1	2.6	mg/kg	J	MDLRL
Vanadium, Total	SW6010B	NDD-SB-6 (23.5-24')	2108D42-001A	17	12	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-5 (0-0.5')	2108D42-002A	37	5.0	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-5 (1.5-2')	2108D42-003A	27	5.0	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-BD6	2108D42-005A	21	5.0	mg/kg	J+	HR-MS

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Vanadium, Total	SW6010B	NDD-SB-5 (9.5-10')	2108D42-008A	19	4.9	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-5 (12-12.5')	2108D42-009A	20	5.0	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-5 (17.5-18')	2108D42-010A	38	5.0	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-3 (0-0.5')	2108D42-012A	25	4.9	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-3 (1.5-2')	2108D42-013A	22	5.0	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-3 (9.5-10')	2108D42-015A	13	5.0	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-4 (1-1.5')	2108D42-016A	32	4.9	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-4 (2-2.5')	2108D42-017A	24	4.9	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-4 (2.5-3')	2108D42-018A	21	5.0	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-4 (19.5-20')	2108D42-019A	15	4.9	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-6 (1.5-2')	2108D42-020A	34	5.0	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-6 (3-3.5')	2108D42-021A	23	4.9	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-6 (15-15.5')	2108D42-022A	17	4.9	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-SB-6 (21-21.5')	2108D42-023A	15	5.0	mg/kg	J+	HR-MS
Vanadium, Total	SW6010B	NDD-BD5	2108D42-004A	19	4.9	mg/kg	J+	ERPD-FD, HR-MS
Vanadium, Total	SW6010B	NDD-SB-3 (6-6.5')	2108D42-014A	11	4.9	mg/kg	J+	ERPD-FD, HR-MS
Xylenes, Total	SW8260B	NDD-BD5	2108d42-004a	12	0.57	mg/kg	J	ERPD-FD
Xylenes, Total	SW8260B	NDD-SB-3 (6-6.5')	2108d42-014a	4.8	0.56	mg/kg	J	ERPD-FD
Xylenes, Total	SW8260B	NDD-SB-4 (19.5-20')	2108d42-019a	0.017	0.062	mg/kg	J	MDLRL
Zinc, Total	SW6010B	NDD-SB-6 (23.5-24')	2108D42-001A	19	12	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-5 (0-0.5')	2108D42-002A	40	5.0	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-5 (1.5-2')	2108D42-003A	24	5.0	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-BD5	2108D42-004A	16	4.9	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-BD6	2108D42-005A	16	5.0	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-5 (9.5-10')	2108D42-008A	15	4.9	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-5 (12-12.5')	2108D42-009A	17	5.0	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-5 (17.5-18')	2108D42-010A	36	5.0	mg/kg	J+	HR-MS

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Zinc, Total	SW6010B	NDD-SB-3 (0-0.5')	2108D42-012A	21	4.9	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-3 (1.5-2')	2108D42-013A	18	5.0	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-3 (6-6.5')	2108D42-014A	17	4.9	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-3 (9.5-10')	2108D42-015A	20	5.0	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-4 (1-1.5')	2108D42-016A	56	4.9	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-4 (2-2.5')	2108D42-017A	26	4.9	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-4 (2.5-3')	2108D42-018A	15	5.0	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-4 (19.5-20')	2108D42-019A	24	12	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-6 (1.5-2')	2108D42-020A	42	5.0	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-6 (3-3.5')	2108D42-021A	18	4.9	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-6 (15-15.5')	2108D42-022A	13	4.9	mg/kg	J+	HR-MS
Zinc, Total	SW6010B	NDD-SB-6 (21-21.5')	2108D42-023A	9.8	5.0	mg/kg	J+	HR-MS

Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental
Project Name: Western Refining SW, North Drainage Ditch	Sample Matrix: Soil
Project Number: 697-096-001 Task: 0002	Sample Start Date: 08/12/2021
Date Validated: 10/07/2021	Sample End Date: 08/13/2021
Parameters Included: ▪ Volatile Organic Compounds (VOC) by Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270C ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D MOD ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015M/D ▪ Total Metals by SW-846 Method 6010B ▪ Total Mercury by SW-846 Method 7471 ▪ Cyanide by Environmental Protection Agency (EPA) Method 335.4 9012	
Laboratory Project ID: 2108785	
Data Validator: Charles Ballek, Senior Chemist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Anatek Labs, Inc. in Moscow, Idaho, evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- Laboratory control samples (LCS)
- Organic system monitoring compounds (surrogates)

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks
- Equipment blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS percent recoveries against method-specific requirements.

Tier II Data Validation Report Summary

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
NDD-TW-1 (0-0.5')	2108785-001
NDD-TW-1 (1.5-2')	2108785-002
NDD-TW-1 (26.5-27')	2108785-003
NDD-TW-1 (34-34.5')	2108785-004
NDD-TW-2 (0-0.5')	2108785-005
NDD-TW-2 (1.5-2')	2108785-006
NDD-BD-1	2108785-007
NDD-EB1	2108785-008
NDD-EB2	2108785-009
NDD-TW-2 (5.5-6')	2108785-010
NDD-TW-2 (30.5-31')	2108785-011
NDD-TW-2 (33.5-34')	2108785-012
MeOH Blank	2108785-013

Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- ○ Initial and Continuing Calibrations (Items 9 and 10)
- ✓ Laboratory Blanks (Items 11 and 12)
- ✓ MS/MSD (Items 13 and 14)
- ⊗ LCS (Items 15 and 16)
- ✓ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ✓ Trip and Equipment Blanks (Items 18 and 19)
- ✓ Field Duplicates (Items 20 and 21)
- ○ Laboratory Duplicates (Item 22)
- ✓ Data Relationships (Item 23)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-542-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, February 2021.

Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

Qualifier	Definition
J	Estimated concentration
J-	The result is an estimated concentration, but may be biased low
UJ	Estimated reporting limit

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 1,560 data points. The data completeness calculation does not include any submitted blank sample results. Data points were not rejected. The data completeness measure for this data package is calculated to be 100% and is acceptable.

VALIDATION CRITERIA CHECKLIST	
1. Was the report free of non-conformances identified by the laboratory?	Yes
Comments: The laboratory did not identify analytical non-conformances related to this data set.	
2. Were the data free of data qualification flags and/or notes used by the laboratory? If no, define.	No
Comments: The laboratory used the following data qualification flags with this data set. J – Analyte detected below quantitation limits D – Sample diluted due to matrix. S – % Recovery outside of range due to dilution or matrix. B – Analyte detected in the associated Method Blank	
3. Were sample CoC forms and custody procedures complete?	Yes
Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. Custody seals were not present or required since the samples were delivered to the laboratory by field personnel, and custody was maintained at all times.	
4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable?	Yes
Comments: The reporting limits for the data set were reviewed and appeared to be acceptable. The following dilutions were applied to the project samples. Method 8270C: Sample NDD-TW-1 (0-0.5') was diluted by a factor of 20 times for the analysis of SVOC target analytes. Method 6010B: Dilutions of 2 to 200 times were applied to select submitted samples for the analysis of total metals.	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?	No
Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC. The CoC indicated requests for metals by Method 6020 and mercury by Method 7470. The analyses by Method 6010B and Method 7471B, respectively, met the project accuracy and precision goals and were acceptable replacements. The analytical method for cyanide was not identified on the CoC and the use of EPA Method 335.4 and the equivalent SW-846 Method 9012 was appropriate.	
6. Were samples received in good condition within method-specified requirements?	No
Comments: Samples were received at Hall Environmental on ice, in good condition, and with the cooler temperature within the recommended temperature range of 4°C ± 2°C at 4.8°C as noted on the *Sample Log-in Check List*. Portions of the samples transferred to Anatek Labs were received intact and with the cooler temperature outside the recommended range at 1.1°C as noted on the Sample Receipt and Preservation Form. The cooler temperature below 2.0°C was judged as acceptable since the laboratory did not report the sample containers as broken or frozen.	
7. Were samples extracted/digested and analyzed within method-specified or technical holding times?	Yes
Comments: The samples were digested/extracted and analyzed within method-specific holding times.	
8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.	Yes
Comments: The results were reported in concentration units of milligrams per kilogram (mg/kg), which were acceptable for the sample matrix and the analyses requested. The cyanide results for the soil samples were reported on a dry weight basis. The other results for the soil samples were reported on a wet weight basis. The equipment blank results were reported in the appropriate units of micrograms per liter (µg/L).	

VALIDATION CRITERIA CHECKLIST

9. Did the laboratory provide any specific initial and/or continuing calibration results? No

Comments: Initial and continuing calibration data were not included as part of this data set.

10. If initial and/or continuing calibration results were provided, were the results within acceptable limits? N/A

Comments: Initial and continuing calibration data were not included as part of this data set.

11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.

12. Were target analytes reported as not detected in the laboratory blanks? No

Comments: Target analytes were reported as not detected in the laboratory blanks, with the following exception.

Iron was detected in the method blank for Method 6010B batch 62196 at a concentration of 3.2 mg/kg. Iron was detected in the associated samples in this batch at concentrations greater than 10 times the blank level, and qualification of results was not required.

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Batch	MS Sample Source
8260B	VOCs	A80682	Not Prepared
8260B	VOCs	62009	Not Prepared
8260B	VOCs	B80573	Not Prepared
8270C	SVOCs	62082	Not Prepared
8270C	SVOCs	62128	NDD-TW-1 (34-34.5*)
8015D MOD	GRO	B80682	Not Prepared
8015D MOD	GRO	62009	Not Prepared
8015M/D	DRO	62022	NDD-TW-1 (0-0.5')
6010B	Metals	62196	Not Prepared
7471	Mercury	62296	NDD-TW-1 (1.5-2')
9012	Cyanide	R81419	NDD-TW-1 (0-0.5')

Not Prepared – Matrix spikes were not prepared for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? Yes

Comments: The percent recoveries and RPDs for the MS/MSDs prepared from project samples were within laboratory and data validation QC limits.

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.

VALIDATION CRITERIA CHECKLIST

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? No

Comments: The LCS percent recoveries were within laboratory QC limits, with the following exception.

The reported recovery for mercury in the LCS for Method 7471 batch 62296 was outside the acceptance limits of 70-130% at 59.5%. Detections of mercury in the associated samples were qualified J-, and the associated non-detect results were assigned UJ qualifiers due to evidence of potential low bias.

LCSDs were not analyzed as part of this data set.

17. Were surrogate recoveries within laboratory QC limits? No

Comments: Surrogate recoveries in the analyses of the submitted samples were within laboratory QC limits, with the following exceptions.

The recovery of the Method 8015D surrogate DNOP in the analysis of sample NDD-TW-2 (0-0.5') was outside the laboratory acceptance range of 70-130% at 133%. The associated target analytes were not detected in this sample, and qualification of the results was not required based on the evidence of potential high bias.

The SVOC results for sample NDD-TW-1 (0-0.5') were not qualified based on the surrogate non-conformances in the Method 8270C analysis since the applied dilution of 20 times resulted in surrogate concentrations below routinely calibrated levels, and those results were deemed unreliable and possibly inaccurate.

Qualification of sample data was not required based on surrogate non-conformances in QC samples as the environmental samples were evaluated based on their specific surrogate recoveries.

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the total number of samples. One trip blank sample, MeOH Blank, and two equipment blank samples, NDD-EB1 and NDD-EB2, were collected as part of this sample set.

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? No

Comments: Target analytes were reported as not detected in the trip blank and equipment blank samples, with the following exceptions.

Blank Sample ID	Method	Analyte	Concentration
NDD-EB1	8260B	2-Butanone	6.7 µg/L
NDD-EB1	8260B	Acetone	20 µg/L
NDD-EB2	8260B	Acetone	3.9 µg/L
MeOH Blank	8260B	2-Hexanone	0.032 mg/kg

The identified analytes were not detected in the associated samples, and qualification of results was not required based on the trip blank and equipment blank detections.

20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of field duplicates collected was equal to at least 10% of the number of samples.

• Sample NDD-BD-1 was collected as a field duplicate of sample NDD-TW-1(34-34.5).

VALIDATION CRITERIA CHECKLIST

21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)? Yes

Comment: As indicated in the Field Duplicate Summary Tables at the end of this report, field duplicate RPD values were within data validation QC limits of 0-50% for soil samples.

22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits? N/A

Comments: Laboratory duplicates were not prepared for the analyses in this data set.

23. Were the following data relationships realistic and acceptable?

- Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270), and the results were in agreement? Yes

Comments: Analytical results for 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1-methylnaphthalene, 2-methylnaphthalene, hexachlorobutadiene, and naphthalene were reported by both Method 8260B and Method 8270C for the submitted samples. The results for these analytes were reported as not detected by both methods, with the following exceptions.

Sample	Analyte	Method 8260B (mg/kg)	Method 8270C (mg/kg)	Reporting Limits (8260/8270)	RPD
NDD-TW-2 (5.5-6')	1-Methylnaphthalene	0.16	ND	0.10 / 0.19	----
NDD-TW-2 (5.5-6')	2-Methylnaphthalene	0.025	ND	0.10 / 0.19	----
NDD-TW-2 (5.5-6')	Naphthalene	0.33	0.10	0.051 / 0.19	107.0% ◄
NDD-TW-2 (30.5-31')	Naphthalene	0.015	ND	0.064 / 0.19	----

◄ – one or both results were within 5 times the applicable reporting limit.

----- – RPD could not be calculated.

The differences between the results reported for Method 8260B and Method 8270C were evaluated to be within the measurement uncertainty of the analytical methods at concentrations near or below the reporting limits. Qualification of results was not required.

- Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results? N/A

Comments: Only total metals were analyzed as part of this data set.

FIELD DUPLICATE SUMMARY

Client Sample ID: NDD-TW-1(34-34.5) Field Duplicate Sample ID: NDD-BD-1				
Analyte	**Method**	**Laboratory Result (mg/kg)**	**Duplicate Result (mg/kg)**	**Relative Percent Difference (RPD)**
Arsenic, Total	SW6010B	1.8	ND (4.9)	DL
Barium, Total	SW6010B	130	120	8.0%
Beryllium, Total	SW6010B	1.2	1.5	22.2%
Chromium, Total	SW6010B	13	17	26.7%
Cobalt, Total	SW6010B	6.1	7.5	20.6%
Iron, Total	SW6010B	21,000	26,000	21.3%
Lead, Total	SW6010B	4.7	3.4	32.1%
Manganese, Total	SW6010B	350	400	13.3%
Nickel, Total	SW6010B	15	18	18.2%
Vanadium, Total	SW6010B	16	24	40.0%
Zinc, Total	SW6010B	21	28	28.6%
TPH-DRO	SW8015	4.8	ND (9.4)	DL
TPH-GRO	SW8015	ND (3.6)	1.1	DL

Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.

DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL).

DATA QUALIFICATION SUMMARY

Abbreviation	Reason
LR-LCS	The LCS and/or LCSD percent recovery was less than the lower acceptable limit indicating a possible low bias.
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
2-Butanone	SW8260B	NDD-EB1	2108785-008a	6.7	10	µg/L	J	MDLRL
2-Hexanone	SW8260B	MeOH Blank	2108785-013a	0.032	0.5	mg/kg	J	MDLRL
2-Methylnaphthalene	SW8260B	NDD-TW-2 (5.5-6')	2108785-010a	0.025	0.1	mg/kg	J	MDLRL
Acetone	SW8260B	NDD-EB2	2108785-009a	3.9	10	µg/L	J	MDLRL
Arsenic, Total	SW6010B	NDD-TW-1 (34-34.5')	2108785-004A	1.8	2.5	mg/kg	J	MDLRL
Chloroethane	SW8260B	NDD-TW-2 (5.5-6')	2108785-010a	0.019	0.051	mg/kg	J	MDLRL
Chloroform	SW8260B	NDD-TW-2 (5.5-6')	2108785-010a	0.0066	0.026	mg/kg	J	MDLRL
Mercury, Total	SW7471	NDD-TW-1 (0-0.5')	2108785-001A	0.0049	0.034	mg/kg	J-	LR-LCS, MDLRL
Mercury, Total	SW7471	NDD-TW-1 (1.5-2')	2108785-002A	ND	0.036	mg/kg	UJ	LR-LCS
Mercury, Total	SW7471	NDD-TW-1 (26.5-27')	2108785-003A	ND	0.031	mg/kg	UJ	LR-LCS
Mercury, Total	SW7471	NDD-TW-1 (34-34.5')	2108785-004A	ND	0.034	mg/kg	UJ	LR-LCS
Mercury, Total	SW7471	NDD-TW-2 (0-0.5')	2108785-005A	0.0051	0.034	mg/kg	J-	LR-LCS, MDLRL
Mercury, Total	SW7471	NDD-TW-2 (1.5-2')	2108785-006A	ND	0.033	mg/kg	UJ	LR-LCS
Mercury, Total	SW7471	NDD-BD-1	2108785-007A	ND	0.033	mg/kg	UJ	LR-LCS
Mercury, Total	SW7471	NDD-TW-2 (5.5-6')	2108785-010A	0.022	0.035	mg/kg	J-	LR-LCS, MDLRL
Mercury, Total	SW7471	NDD-TW-2 (30.5-31')	2108785-011A	ND	0.034	mg/kg	UJ	LR-LCS
Mercury, Total	SW7471	NDD-TW-2 (33.5-34')	2108785-012A	ND	0.036	mg/kg	UJ	LR-LCS
Naphthalene	SW8270C	NDD-TW-2 (5.5-6')	2108785-010a	0.1	0.19	mg/kg	J	MDLRL
Naphthalene	SW8260B	NDD-TW-2 (30.5-31')	2108785-011a	0.015	0.064	mg/kg	J	MDLRL
n-Butylbenzene	SW8260B	NDD-TW-2 (5.5-6')	2108785-010a	0.06	0.077	mg/kg	J	MDLRL
p-Isopropyltoluene	SW8260B	NDD-TW-2 (1.5-2')	2108785-006a	0.012	0.029	mg/kg	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
p-Isopropyltoluene	SW8260B	NDD-TW-2 (5.5-6')	2108785-010a	0.015	0.026	mg/kg	J	MDLRL
TPH DRO	SW8015	NDD-TW-1 (34-34.5')	2108785-004A	4.8	9.6	mg/kg	J	MDLRL
TPH DRO	SW8015	NDD-TW-2 (30.5-31')	2108785-011A	4.9	9.6	mg/kg	J	MDLRL
TPH GRO	SW8015	NDD-TW-2 (1.5-2')	2108785-006a	1	2.9	mg/kg	J	MDLRL
TPH GRO	SW8015	NDD-BD-1	2108785-007a	1.1	3.8	mg/kg	J	MDLRL
TPH GRO	SW8015	NDD-TW-2 (30.5-31')	2108785-011a	0.99	3.2	mg/kg	J	MDLRL
TPH GRO	SW8015	NDD-TW-2 (33.5-34')	2108785-012a	1.1	3.7	mg/kg	J	MDLRL

Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental
Project Name: Western Refining SW, North Drainage Ditch	Sample Matrix: Aqueous
Project Number: 697-096-001 Task: 0002	Sample Start Date: 09/09/2021
Date Validated: 10/20/2021	Sample End Date: 09/09/2021
Parameters Included: ▪ Volatile Organic Compounds (VOC) by Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270C ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D MOD ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015M/D ▪ Total Metals by SW-846 Method 6020 ▪ Total Mercury by SW-846 Method 7470 ▪ Anions by Environmental Protection Agency (EPA) Method 300.0 ▪ Cyanide by EPA Method 335.4	
Laboratory Project ID: 2109522	
Data Validator: Charles Ballek, Senior Chemist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace Analytical in Mt. Juliet, Tennessee, evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs
- Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- LCS/LCSD samples
- Organic system monitoring compounds (surrogates)

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Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks
- Field blanks
- Equipment blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS/LCSD percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
EB-09092021	2109522-001
NDD-TW-05	2109522-002
NDD-TW-02	2109522-003
FB-09092021	2109522-004
DUP-09092021	2109522-005
Trip Blank	2109522-006

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The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- ○ Initial and Continuing Calibrations (Items 9 and 10)
- ✓ Laboratory Blanks (Items 11 and 12)
- ✓ MS/MSD (Items 13 and 14)
- ⊗ LCS/LCSD (Items 15 and 16)
- ✓ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ⊗ Field, Equipment, and Trip Blanks (Items 18 and 19)
- ✓ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)
- ✓ Data Relationships (Item 23)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-542-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, February 2021.

Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

Qualifier	Definition
J	Estimated concentration
UJ	Estimated reporting limit
U	Evaluated to be undetected at the reporting limit

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 477 data points. The data completeness calculation does not include any submitted blank sample results. Data points were not rejected. The data completeness measure for this data package is calculated to be 100% and is acceptable.

VALIDATION CRITERIA CHECKLIST	
1. Was the report free of non-conformances identified by the laboratory?	No
Comments: The laboratory identified the following analytical non-conformances related to this data set. Method 8270C: The laboratory control spike (LCS) had low recoveries for 2 compounds: 4-nitrophenol and pentachlorophenol. The LCSD, MS and MSD all had acceptable recoveries. All 8270 samples were reextracted and reanalyzed, past the holding time, and they confirmed the initial results. The initial results are reported.	
2. Were the data free of data qualification flags and/or notes used by the laboratory? If no, define.	No
Comments: The laboratory used the following data qualification flags with this data set. J – Analyte detected below quantitation limits S – % Recovery outside of range due to dilution or matrix. R – Relative Percent Difference (RPD) exceeds limit * – Value exceeds Maximum Contaminant Level J6 (Pace) – The sample matrix interfered with the ability to make any accurate determination; spike value is low.	
3. Were sample CoC forms and custody procedures complete?	Yes
Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. Custody seals were not present or required since the samples were delivered to the laboratory by a laboratory courier, and custody was maintained at all times.	
4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable?	Yes
Comments: The reporting limits for the data set were reviewed and appeared to be acceptable. The following dilutions were applied to the project samples. Method 8260B: Dilutions of 50 times were applied to samples NDD-TW-05 and DUP-09092021 for the analysis of VOCs. Method 8015D: Samples NDD-TW-05 and DUP-09092021 were diluted by a factor of 50 times for the analysis of GRO. Method 6020: Dilutions of 5 to 200 times were applied to samples NDD-TW-05, NDD-TW-02, and DUP-09092021 for the analysis of total metals. Method 300.0: Samples EB-09092021, NDD-TW-05, NDD-TW-02, and DUP-09092021 were diluted by factors of 5 to 100 times for the analysis of anions.	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?	Yes
Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC.	
6. Were samples received in good condition within method-specified requirements?	No
Comments: Samples were received at Hall Environmental on ice, in good condition, and with the cooler temperatures within the recommended temperature range of 4°C ± 2°C at 4.2°C and 5.9°C as noted on the *Sample Log-in Check List*. The laboratory noted that additional nitric acid was added to containers designated for metals analyses for samples NDD-TW-05 and DUP-09092021 to achieve the required pH less than 2. Validation action was not required. Portions of the samples transferred to Pace Analytical were received intact and with the cooler temperature within the recommended range at 2.3°C as noted on the CoC transferring the samples.	
7. Were samples extracted/digested and analyzed within method-specified or technical holding times?	Yes
Comments: The samples were digested/extracted and analyzed within method-specific holding times.	

VALIDATION CRITERIA CHECKLIST

8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil. — Yes

Comments: The results were reported in concentration units of micrograms per liter (µg/L) and milligrams per liter (mg/L), which were acceptable for the sample matrix and the analyses requested.

9. Did the laboratory provide any specific initial and/or continuing calibration results? — No

Comments: Initial and continuing calibration data were not included as part of this data set.

10. If initial and/or continuing calibration results were provided, were the results within acceptable limits? — N/A

Comments: Initial and continuing calibration data were not included as part of this data set.

11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? — Yes

Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.

12. Were target analytes reported as not detected in the laboratory blanks? — Yes

Comments: Target analytes were reported as not detected in the laboratory blanks.

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? — Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Batch	MS Sample Source
8260B	VOCs	R81276	EB-09092021
8260B	VOCs	R81312	Not Prepared
8270C	SVOCs	62559	Not Prepared
8015D MOD	GRO	R81278	NDD-TW-05
8015M/D	DRO	62607	EB-09092021
6020	Metals	62558	EB-09092021
6020	Chromium	62644	Not Prepared
7470	Mercury	62565	Not Prepared
300.0	Anions	R81214	Not Prepared
300.0	Chloride	R81311	Not Prepared
335.4	Cyanide	R81721	Not Associated

Not Prepared – Matrix spikes were not prepared for this batch.
Not Associated - The MS sample source was not associated with this project.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? — Yes

Comments: The percent recoveries and RPDs for the MS/MSDs prepared from project samples were within laboratory and data validation QC limits.

Recoveries and RPDs for MS/MSDs prepared from non-project samples were considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

VALIDATION CRITERIA CHECKLIST

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? No

Comments: The LCS and LCSD percent recoveries and LCS/LCSD RPDs were within laboratory QC limits, with the following exceptions.

Method	Analyte	Batch	LCS Recovery	LCSD Recovery	LCS/LCSD QC Limits	LCS/LCSD RPD	RPD QC Limits
8270C	**2-Chlorophenol**	**62559**	**Acceptable**	**Acceptable**	**29.3-105%**	**42%**	**35.6%**
8270C	**4-Nitrophenol**	**62559**	**3.08%**	**Acceptable**	**15-77%**	**173%**	**52.4%**
8270C	**Pentachlorophenol**	**62559**	**9.37%**	**Acceptable**	**21-111%**	**141%**	**71.6%**

2-Chlorophenol was not detected in the associated samples, and the results were assigned UJ qualifiers based on the evidence of poor precision.

4-Nitrophenol and pentachlorophenol were not detected in the associated samples, and the results were assigned UJ qualifiers due to evidence of potential low bias and poor precision.

17. Were surrogate recoveries within laboratory QC limits? No

Comments: Surrogate recoveries in the analyses of the submitted samples were within laboratory QC limits, with the following exceptions.

The recovery of the Method 8270C surrogate 2-fluorophenol in the analysis of sample NDD-TW-5 was outside the laboratory acceptance range of 15-87% at 0%. The recovery of the Method 8270C surrogate 2-fluorophenol in the analysis of sample DUP-09092021 was outside the laboratory acceptance range of 15-87% at 0%.

Since Method 8270C surrogate associations were not available from the laboratory, qualification was assigned to all of the target analytes in a given fraction (acid or base/neutral) when two or more surrogates from the same fraction (acid or base/neutral) were outside the acceptance range. This condition did not exist for the samples NDD-TW-5 and DUP-09092021, and qualification of sample data was not required.

Qualification of sample data was not required based on surrogate non-conformances in QC samples as the environmental samples were evaluated based on their specific surrogate recoveries.

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the total number of samples. One trip blank sample, Trip Blank, one field blank sample, FB-09092021, and one equipment blank sample, EB-09092021, were collected as part of this sample set.

VALIDATION CRITERIA CHECKLIST

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? No

Comments: Target analytes were reported as not detected in the trip blank and equipment blank samples, with the following exceptions.

Blank Sample ID	Method	Analyte	Concentration (µg/L)
Trip Blank	**SW8260B**	**Chloromethane**	**0.41**
FB-09092021	**SW8260B**	**2-Butanone**	**20**
FB-09092021	SW8260B	2-Hexanone	3.6
FB-09092021	SW8260B	4-Isopropyltoluene	0.44
FB-09092021	**SW8260B**	**Acetone**	**35**
FB-09092021	SW8260B	Chloromethane	0.43
EB-09092021	SW8260B	2-Butanone	8.6
EB-09092021	SW8260B	Acetone	5.9

Detections of the identified analytes in the associated samples that were less than the blank results or less than the applicable reporting limits were assigned U qualifiers. Non-detections of the identified analytes in the associated samples did not require qualification.

20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of field duplicates collected was equal to at least 10% of the number of samples.

• Sample DUP-09092021 was collected as a field duplicate of sample NDD-TW-05.

21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)? Yes

Comment: As indicated in the Field Duplicate Summary Table at the end of this report, field duplicate RPD values were within data validation QC limits of 0-30% for water samples.

22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits? N/A

Comments: Laboratory duplicates were prepared for Method 335.4 batch R81721 analyses of cyanide from samples not associated with this project. The RPD values for laboratory duplicate samples prepared from non-project samples were evaluated and considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

VALIDATION CRITERIA CHECKLIST

23. Were the following data relationships realistic and acceptable?

- Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270), and the results were in agreement? Yes

Comments: Analytical results for 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1-methylnaphthalene, 2-methylnaphthalene, hexachlorobutadiene, and naphthalene were reported by both Method 8260B and Method 8270C for the submitted samples. The results for these analytes were reported as not detected by both methods, with the following exceptions.

Sample	Analyte	Method 8260B (µg/L)	Method 8270C (µg/L)	Reporting Limits (8260/8270)	RPD
NDD-TW-05	1-Methylnaphthalene	ND	6.4	200 / 5.0	----
DUP-09092021	1-Methylnaphthalene	ND	7.4	200 / 5.0	----
NDD-TW-05	2-Methylnaphthalene	ND	10	200 / 5.0	----
DUP-09092021	2-Methylnaphthalene	ND	11	200 / 5.0	----
NDD-TW-05	Naphthalene	64	38	100 / 5.0	51.0% ◄
DUP-09092021	Naphthalene	65	45	100 / 5.0	36.4% ◄

◄ – one or both results were within 5 times the applicable reporting limit.

----- – RPD could not be calculated.

The differences between the results reported for Method 8260B and Method 8270C were evaluated to be within the measurement uncertainty of the analytical methods at concentrations near or below the reporting limits. Qualification of results was not required.

- Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results? N/A

Comments: Only total metals were analyzed as part of this data set.

FIELD DUPLICATE SUMMARY

Client Sample ID: NDD-TW-05 Field Duplicate Sample ID: DUP-09092021				
Analyte	**Method**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
1,2,4-Trimethylbenzene	SW8260B	350 µg/L	320 µg/L	9.0%
1,3,5-Trimethylbenzene	SW8260B	78 µg/L	71 µg/L	9.4% +/-RL
Benzene	SW8260B	4,800 µg/L	4,600 µg/L	4.3%
Chloromethane	SW8260B	53 µg/L	45 µg/L	16.3% +/-RL
Ethylbenzene	SW8260B	760 µg/L	710 µg/L	6.8%
MTBE	SW8260B	730 µg/L	720 µg/L	1.4%
Naphthalene	SW8260B	64 µg/L	65 µg/L	1.6% +/-RL
n-Propylbenzene	SW8260B	45 µg/L	41 µg/L	9.3% +/-RL
Toluene	SW8260B	3,500 µg/L	3,400 µg/L	2.9%
Xylenes, Total	SW8260B	3,500 µg/L	3,300 µg/L	5.9%
1-Methylnaphthalene	SW8270C	6.4 µg/L	7.4 µg/L	14.5% +/-RL
2,4-Dimethylphenol	SW8270C	7.5 µg/L	8.9 µg/L	17.1% +/-RL
2-Methylnaphthalene	SW8270C	10 µg/L	11 µg/L	9.5%
2-Methylphenol	SW8270C	9.0 µg/L	12 µg/L	28.6%
3,4-Methylphenol	SW8270C	13 µg/L	16 µg/L	20.7%
Carbazole	SW8270C	3.8 µg/L	3.9 µg/L	2.6% +/-RL
Fluorene	SW8270C	1.2 µg/L	1.1 µg/L	8.7% +/-RL
Naphthalene	SW8270C	38 µg/L	45 µg/L	16.9%
Phenanthrene	SW8270C	ND (5.0 µg/L)	1.8 µg/L	DL
Phenol	SW8270C	21 µg/L	25 µg/L	17.4%
Pyridine	SW8270C	3.1 µg/L	2.8 µg/L	10.2% +/-RL
TPH GRO	SW8015	37 mg/L	37 mg/L	0.0%
TPH DRO	SW8015	1.4 mg/L	1.5 mg/L	6.9% +/-RL
Chloride	E300	220 mg/L	220 mg/L	0.0%
Fluoride, Total	E300	0.22 mg/L	0.24 mg/L	8.7% +/-RL
Sulfate	E300	29 mg/L	31 mg/L	6.7%
Cyanide, Total	E335.4	0.00917 mg/L	0.00681 mg/L	29.5% +/-RL
Arsenic, Total	SW6020	0.018 mg/L	0.016 mg/L	11.8%
Barium, Total	SW6020	7.8 mg/L	6.9 mg/L	12.2%
Beryllium, Total	SW6020	0.010 mg/L	0.0088 mg/L	12.8% +/-RL
Chromium, Total	SW6020	0.24 mg/L	0.21 mg/L	13.3%
Cobalt, Total	SW6020	0.1 mg/L	0.09 mg/L	10.5%
Iron, Total	SW6020	120 mg/L	120 mg/L	0.0%
Lead, Total	SW6020	0.071 mg/L	0.070 mg/L	1.4%
Manganese, Total	SW6020	4.7 mg/L	4.6 mg/L	2.2%

Client Sample ID: NDD-TW-05 Field Duplicate Sample ID: DUP-09092021				
Analyte	**Method**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
Nickel, Total	SW6020	0.32 mg/L	0.31 mg/L	3.2%
Selenium, Total	SW6020	0.0077 mg/L	0.0075 mg/L	2.6% +/-RL
Vanadium, Total	SW6020	0.26 mg/L	0.24 mg/L	8.0%
Zinc, Total	SW6020	0.26 mg/L	0.23 mg/L	12.2%
Mercury, Total	SW7470	ND (0.00080 mg/L)	0.00089 mg/L	DL

Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.

DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL).

+/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required.

DATA QUALIFICATION SUMMARY

Abbreviation	Reason
LR-LCS	The LCS and/or LCSD percent recovery was less than the lower acceptable limit indicating a possible low bias.
ERPD-LCS	The LCS/LCSD RPD exceeded the upper acceptable limit indicating poor precision.
FBD	Field blank detection
TBD	Trip blank detection
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,2-Dichloroethane	SW8260B	NDD-TW-02	2109522-003a	0.39	1	µg/L	J	MDLRL
2-Butanone	SW8260B	EB-09092021	2109522-001a	8.6	10	µg/L	U	FBD, MDLRL
2-Chlorophenol	SW8270C	EB-09092021	2109522-001C	ND	5	µg/L	UJ	ERPD-LCS
2-Chlorophenol	SW8270C	NDD-TW-05	2109522-002C	ND	5	µg/L	UJ	ERPD-LCS
2-Chlorophenol	SW8270C	NDD-TW-02	2109522-003C	ND	5	µg/L	UJ	ERPD-LCS
2-Chlorophenol	SW8270C	DUP-09092021	2109522-005C	ND	5	µg/L	UJ	ERPD-LCS
2-Hexanone	SW8260B	FB-09092021	2109522-004a	3.6	10	µg/L	J	MDLRL
4-Nitrophenol	SW8270C	EB-09092021	2109522-001C	ND	5	µg/L	UJ	ERPD-LCS, LR-LCS
4-Nitrophenol	SW8270C	NDD-TW-05	2109522-002C	ND	5	µg/L	UJ	ERPD-LCS, LR-LCS
4-Nitrophenol	SW8270C	NDD-TW-02	2109522-003C	ND	5	µg/L	UJ	ERPD-LCS, LR-LCS
4-Nitrophenol	SW8270C	DUP-09092021	2109522-005C	ND	5	µg/L	UJ	ERPD-LCS, LR-LCS
Acetone	SW8260B	EB-09092021	2109522-001a	5.9	10	µg/L	U	FBD, MDLRL
Arsenic, Total	SW6020	NDD-TW-02	2109522-003E	0.0026	0.005	mg/L	J	MDLRL
Carbazole	SW8270C	NDD-TW-05	2109522-002C	3.8	5	µg/L	J	MDLRL
Carbazole	SW8270C	DUP-09092021	2109522-005C	3.9	5	µg/L	J	MDLRL
Chloromethane	SW8260B	NDD-TW-05	2109522-002a	53	150	µg/L	U	MDLRL, TBD
Chloromethane	SW8260B	FB-09092021	2109522-004a	0.43	3	µg/L	U	MDLRL, TBD
Chloromethane	SW8260B	DUP-09092021	2109522-005a	45	150	µg/L	U	MDLRL, TBD

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Chloromethane	SW8260B	Trip Blank	2109522-006a	0.41	3	µg/L	J	MDLRL
Fluorene	SW8270C	NDD-TW-05	2109522-002C	1.2	5	µg/L	J	MDLRL
Fluorene	SW8270C	DUP-09092021	2109522-005C	1.1	5	µg/L	J	MDLRL
Fluoride, Total	E300.0	NDD-TW-05	2109522-002D	0.22	0.5	mg/L	J	MDLRL
Fluoride, Total	E300.0	DUP-09092021	2109522-005D	0.24	0.5	mg/L	J	MDLRL
Naphthalene	SW8260B	NDD-TW-05	2109522-002a	64	100	µg/L	J	MDLRL
Naphthalene	SW8260B	DUP-09092021	2109522-005a	65	100	µg/L	J	MDLRL
n-Propylbenzene	SW8260B	NDD-TW-05	2109522-002a	45	50	µg/L	J	MDLRL
n-Propylbenzene	SW8260B	DUP-09092021	2109522-005a	41	50	µg/L	J	MDLRL
Pentachlorophenol	SW8270C	EB-09092021	2109522-001C	ND	20	µg/L	UJ	ERPD-LCS, LR-LCS
Pentachlorophenol	SW8270C	NDD-TW-05	2109522-002C	ND	20	µg/L	UJ	ERPD-LCS, LR-LCS
Pentachlorophenol	SW8270C	NDD-TW-02	2109522-003C	ND	20	µg/L	UJ	ERPD-LCS, LR-LCS
Pentachlorophenol	SW8270C	DUP-09092021	2109522-005C	ND	20	µg/L	UJ	ERPD-LCS, LR-LCS
Phenanthrene	SW8270C	DUP-09092021	2109522-005C	1.8	5	µg/L	J	MDLRL
p-Isopropyltoluene	SW8260B	FB-09092021	2109522-004a	0.44	1	µg/L	J	MDLRL
Pyridine	SW8270C	NDD-TW-05	2109522-002C	3.1	5	µg/L	J	MDLRL
Pyridine	SW8270C	DUP-09092021	2109522-005C	2.8	5	µg/L	J	MDLRL

Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental
Project Name: Western Refining SW, North Drainage Ditch	Sample Matrix: Aqueous
Project Number: 697-096-001 Task: 0002	Sample Start Date: 09/17/2021
Date Validated: 10/21/2021	Sample End Date: 09/17/2021
Parameters Included: ▪ Volatile Organic Compounds (VOC) by Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270C and Method 8270C with Selected Ion Monitoring (SIM) ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D MOD ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015M/D ▪ Total and Dissolved Metals by Environmental Protection Agency (EPA) Method 200.7 and Method 200.8 ▪ Total Mercury by EPA Method 245.1 ▪ Alkalinity by Standard Methods for the Examination of Water and Wastewater (SM) Method 2320B ▪ Anions by Environmental Protection Agency (EPA) Method 300.0 ▪ Cyanide by EPA Method 335.4	
Laboratory Project ID: 2109997	
Data Validator: Charles Ballek, Senior Chemist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Anatek Labs, Inc. in Moscow, Idaho, evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Matrix spike (MS) and matrix spike duplicate (MSD) pairs
- Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- LCS/LCSD samples
- Organic system monitoring compounds (surrogates)

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks

Tier II Data Validation Report Summary

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS/LCSD percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
NDD-MW-1	2109997-001
Trip Blank	2109997-002

Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- ○ Initial and Continuing Calibrations (Items 9 and 10)
- ✓ Laboratory Blanks (Items 11 and 12)
- ✓ MS/MSD (Items 13 and 14)
- ✓ LCS/LCSD (Items 15 and 16)
- ✓ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ⊗ Trip Blanks (Items 18 and 19)
- ○ Field Duplicates (Items 20 and 21)
- ○ Laboratory Duplicates (Item 22)
- ✓ Data Relationships (Item 23)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-542-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Trihydro Data Validation Variance Documentation, February 2021.

Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

Qualifier	Definition
J	Estimated concentration
U	Evaluated to be undetected at the reporting limit

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 185 data points. The data completeness calculation does not include any submitted blank sample results. Data points were not rejected. The data completeness measure for this data package is calculated to be 100% and is acceptable.

VALIDATION CRITERIA CHECKLIST	
1. Was the report free of non-conformances identified by the laboratory?	Yes
Comments: The laboratory did not identify analytical non-conformances related to this data set.	
2. Were the data free of data qualification flags and/or notes used by the laboratory? If no, define.	No
Comments: The laboratory used the following data qualification flags with this data set. J – Analyte detected below quantitation limits * – Value exceeds Maximum Contaminant Level	
3. Were sample CoC forms and custody procedures complete?	Yes
Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. Custody seals were not present or required since the samples were delivered to the laboratory by courier, and custody was maintained at all times.	
4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable?	Yes
Comments: The reporting limits for the data set were reviewed and appeared to be acceptable. The following dilutions were applied to the project samples. Method 300.0: Sample NDD-MW-1 was diluted by a factor of 5 times for the analysis of anions, except chloride that was analyzed at a dilution of 20 times. Method 200.7: A dilution factor of 5 times was applied to sample NDD-MW-1 for the analysis of dissolved sodium, and the analysis for total sodium was performed with a dilution of 10 times.	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?	Yes
Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC. The laboratory noted that project personnel cancelled the analysis for chemical oxygen demand (COD) that was indicated on the CoC. Validation action was not required.	
6. Were samples received in good condition within method-specified requirements?	No
Comments: Samples were received at Hall Environmental on ice, in good condition, and with the cooler temperatures both within and outside the recommended temperature range of 4°C ± 2°C between 1.6°C and 4.9°C as noted on the *Sample Log-in Check List*. The cooler temperatures below 2.0°C were judged as acceptable since the laboratory did not report the sample containers as broken or frozen. The laboratory noted that additional nitric acid was added to the containers designated for metals analyses for sample NDD-MW-1 to achieve the required pH less than 2. Validation action was not required. Portions of the samples transferred to Anatek Labs were received intact and with the cooler temperature within the recommended range at 4.6°C as noted on the *Sample Receipt and Preservation Form*.	
7. Were samples extracted/digested and analyzed within method-specified or technical holding times?	Yes
Comments: The samples were digested/extracted and analyzed within method-specific holding times.	
8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.	Yes
Comments: The results were reported in concentration units of micrograms per liter (µg/L) and milligrams per liter (mg/L), which were acceptable for the sample matrix and the analyses requested.	

VALIDATION CRITERIA CHECKLIST

9. Did the laboratory provide any specific initial and/or continuing calibration results? No

Comments: Initial and continuing calibration data were not included as part of this data set.

10. If initial and/or continuing calibration results were provided, were the results within acceptable limits? N/A

Comments: Initial and continuing calibration data were not included as part of this data set.

11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.

12. Were target analytes reported as not detected in the laboratory blanks? No

Comments: Target analytes were reported as not detected in the laboratory blanks, with the following exception.

Pyrene was detected in the method blank for Method 8270 batch 62703 at a concentration of 0.18 µg/L. Pyrene was not detected in the associated sample NDD-MW-1, and qualification of the result was not required based on the method blank detection.

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Batch	MS Sample Source
8260B	VOCs	R81501	Not Prepared
8270C	SVOCs	62689	Not Prepared
8270C-SIM	SVOCs	62703	Not Prepared
8015D MOD	GRO	R81501	NDD-MW-1
8015M/D	DRO	62721	Not Prepared
200.7	Total Metals	62791	Not Prepared
200.7	Dissolved Metals	B81434	Not Prepared
200.8	Total Metals	62791	NDD-MW-1
200.8	Dissolved Metals	B81621	Not Prepared
245.1	Mercury	62871	Not Prepared
300.0	Anions	R81380	Not Prepared
2320B	Alkalinity	R81457	Not Prepared
335.4	Cyanide	R82000 (BBI0811)	NDD-MW-1

Not Prepared – Matrix spikes were not prepared for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? Yes

Comments: The percent recoveries and RPDs for the MS/MSDs prepared from project samples were within laboratory and data validation QC limits.

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.

VALIDATION CRITERIA CHECKLIST	
16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits?	Yes
Comments: The LCS and LCSD percent recoveries and LCS/LCSD RPDs were within laboratory QC limits.	
17. Were surrogate recoveries within laboratory QC limits?	Yes
Comments: Surrogate recoveries in the analyses of the submitted samples were within laboratory QC limits.	
18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit?	Yes
Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the total number of samples. One trip blank sample, Trip Blank, was collected as part of this sample set.	
19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples?	No
Comments: Target analytes were reported as not detected in the trip blank sample, with the following exception. **Chloromethane was detected in the trip blank sample at a concentration of 0.44 µg/L. Chloromethane was also detected in the associated sample NDD-MW-1 at a concentration less than the applicable reporting limit, and that result was assigned a U qualifier.**	
20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit?	No
Comments: The number of field duplicates collected was not equal to at least 10% of the number of samples. Field duplicates were not collected as part of this sample set.	
21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)?	N/A
Comment: Field duplicates were not submitted as part of this sample set.	
22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits?	N/A
Comments: Laboratory duplicates were not prepared for the analytical batches in this data set.	

VALIDATION CRITERIA CHECKLIST	
23. Were the following data relationships realistic and acceptable?	
• Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270), and the results were in agreement?	Yes
Comments: Analytical results for 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1-methylnaphthalene, 2-methylnaphthalene, hexachlorobutadiene, and naphthalene were reported by both Method 8260B and Method 8270C for the submitted samples. The results for these analytes were reported as not detected by both methods.	
• Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results?	No
Comments: The reported concentrations for total metals in sample NDD-MW-1 were greater than the dissolved results, with the following exception. The reported dissolved zinc result of 0.011 mg/L was greater than the total zinc concentration of 0.0098 mg/L. The difference was within the measurement uncertainty of the analyses, and qualification of results was not required.	

DATA QUALIFICATION SUMMARY

Abbreviation	Reason
TBD	Trip blank detection
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,1-Dichloroethane	SW8260B	NDD-MW-1	2109997-001a	0.7	1	µg/L	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	NDD-MW-1	2109997-001a	0.19	1	µg/L	J	MDLRL
2-Butanone	SW8260B	NDD-MW-1	2109997-001a	3.3	10	µg/L	J	MDLRL
Carbazole	SW8270C	NDD-MW-1	2109997-001c	3.7	5	µg/L	J	MDLRL
Chloromethane	SW8260B	NDD-MW-1	2109997-001a	1.3	3	µg/L	U	MDLRL, TBD
Chloromethane	SW8260B	Trip Blank	2109997-002a	0.44	3	µg/L	J	MDLRL
Fluoride, Total	E300	NDD-MW-1	2109997-001D	0.39	0.5	mg/L	J	MDLRL
Iron, Dissolved	E 200.7	NDD-MW-1	2109997-001E	0.013	0.02	mg/L	J	MDLRL
Lead, Dissolved	E200.8	NDD-MW-1	2109997-001E	0.00022	0.0005	mg/L	J	MDLRL
Nitrogen, Nitrate	E300	NDD-MW-1	2109997-001D	0.1	0.5	mg/L	J	MDLRL
n-Propylbenzene	SW8260B	NDD-MW-1	2109997-001a	0.46	1	µg/L	J	MDLRL
Selenium, Total	E200.8	NDD-MW-1	2109997-001G	0.00053	0.001	mg/L	J	MDLRL
Zinc, Total	E 200.7	NDD-MW-1	2109997-001G	0.0098	0.01	mg/L	J	MDLRL

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
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CONDITIONS

Action 144521

CONDITIONS

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 144521
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

CONDITIONS

Created By	Condition	Condition Date
scwells	Accepted for Record Retention Purposes-Only	11/23/2022