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

October 20, 2022

Mr. Rick Shean, Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87505-6303

RE: Response to Approval with Modifications
Well Installation and Abandonment Report
Western Refining Southwest LLC
(D/B/A Marathon Gallup Refinery)
EPA ID# NMD000333211
HWB-WRG-21-017

Dear Mr. Shean:

Attached please find the response to comments contained in the New Mexico Environment Department (NMED) Approval with Modifications letter dated August 22, 2022. A timeline of the Well Installation and Abandonment Report (Report) is provided below.

- Report, submitted November 15, 2021
- Approval with Modifications, received January 24, 2022
- Response to Approval with Modifications, submitted April 15, 2022
- Approval with Modifications, received August 25, 2022

Two hard copies and an electronic version of the revised Report are included. A redline-strikeout version in electronic format is also included.

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
A subsidiary of Marathon Petroleum Corporation
I-40 Exit 39
Jamestown, NM 87347

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,

Western Refining Southwest LLC, DBA Marathon Gallup Refinery

Ruth A Cade

Ruth Cade
Vice-President

Enclosures

cc: D. Cobrain, NMED HWB
L. Andress, NMED HWB
L. Barr, NMOCD
K. Luka, Marathon Petroleum Corporation
M. Bracey, Marathon Petroleum Corporation
J. Moore, Marathon Gallup Refinery
H. Jones, Trihydro Corporation

ATTACHMENT A

RESPONSE TO COMMENTS

New Mexico Environment Department (NMED) to Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Comment Letter "Approval with Modifications Well Installation and Abandonment Report" (August 22, 2022)

NMED Comments	Refinery Responses
Comment 1:	**Response 1:**
In the response to NMED's Approval with Modifications Comments 2, the Permittee states, "[t]o date, the adjacent property owners have been unresponsive to the Refinery's attempts for communication. Recently, the Refinery learned that the property was sold in late 2021. The Refinery's effort to contact the new property owners is ongoing." Offsite monitoring wells that are located west of well OW-1 and northeast well OW-30 are essential to plume delineation. Provide a memorandum that summarizes correspondence between two parties for NMED's records no later than December 31, 2022.	Comment acknowledged.
Comment 2:	**Response 2:**
In the response to Comment 4 of NMED's Approval with Modifications, the Permittee states, "[b]oring OW-69 was drilled to assess previously detected elevated concentrations of chloride and sulfate northwest of EP-2 and monitoring well GWM-1 and east of EP-2 by drilling to the Chinle/Alluvium aquifer interface." The statement is not completely accurate. Boring OW-69 was originally advanced to delineate the extent of separate phase hydrocarbon (SPH) that was detected in well GWM-1. Due to the location of well GWM-1, it was possible that the SPH detected in well GWM-1 may have originated from the aeration lagoons. Therefore, NMED recommended the installation of a monitoring well downgradient from well GWM-1 halfway between the eastern perimeter of pond EP-2 and the aeration lagoons to evaluate the extent of SPH. Revise the statement and provide replacement pages.	The text in the Executive Summary and Section 4.0 (Summary and Conclusions) was revised for accuracy to state, "Boring OW-69 was drilled to delineate the extent of the SPH that was detected in GWM-1. It is located downgradient of GWM-1 and halfway between the eastern perimeter of pond EP-2 and the aeration lagoons to evaluate the extent of SPH. A well was to be installed in the upper sand (alluvium) aquifer at this location; however, groundwater was not encountered in boring OW-69 in the upper sand (alluvium) or Chinle formation. Therefore, no well was installed. Based on the boring log for OW-69 (Appendix A), no olfactory or visual evidence of SPH was observed. In addition, soil analytical data did not show the presence of TPH, VOC, or SVOC constituents. Analytical results indicated that total metals concentrations were below the ISSLs and RSSLs. Based on the analytical data, the SPH extent has been delineated."

New Mexico Environment Department (NMED) to Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Comment Letter "Approval with Modifications Well Installation and Abandonment Report" (August 22, 2022)

NMED Comments	Refinery Responses
Comment 3:	**Response 3:**
In the response to Comment 7 of NMED's Approval with Modifications, the Permittee states, "[t]here were some groundwater analytes that had detection limits that exceeded the applicable standards. Groundwater analytes included: 1,2,3-Trichloropropane, 1,2-Dibromo-3-Chloropropane, 1,2-Dibromoethane, Hexachlorobutadiene, 2,6-Dinitrotoluene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Bis(2-chloroethyl)ether, Dibenzo(a,h)anthracene, Hexachlorobenzene, Hexachlorocyclopentadiene, |ndeno(1,2,3- cd)pyrene, N-Nitrosodimethylamine, N-Nitrosodi-npropylamine, total beryllium, total cadmium, and TPH-ORO. 1-Methylnapthalene had a standard exceedance that was evaluated to be undetected at the reported concentration in data validation, resulting in a non-detect standard exceedance. Vinyl chloride also had one non-detect standard exceedance. It should be noted that standard exceedances, even if a non-detection, are considered data quality exceptions. Therefore, those values cannot evaluate compliance for those constituents." If data quality exceptions are identified in the SWMUs and/or AOCs where long-term monitoring and for remedial activities are required, the Permittee may continue to utilize the same analytical method for tracking contamination at the sites. However, if the Permittee plans to request Corrective Action Complete (CAC) status within the next three years, the Permittee must contract a laboratory for a method that can meet the criteria for all data used to establish compliance with the screening levels. No revision required.	This comment is acknowledged.

ATTACHMENT B

REDLINE/STRIKEOUT

REVISED WELL INSTALLATION AND ABANDONMENT REPORT

(ELECTRONIC COPY)

Well Installation and Abandonment Report



Western Refining Southwest, LLC
(D/B/A Marathon Gallup Refinery)
Gallup, New Mexico

EPA ID# NMD000333211

REVISED OCTOBER 20, 2022
REVISED APRIL 15, 2022
NOVEMBER 9, 2021



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Executive Summary

Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery (Refinery) proposed the installation of 13 wells: 6 existing wells were abandoned and replaced due to submerged well screens, and 7 new wells were planned to aid in evaluation of the separate phase hydrocarbon (SPH) and dissolved-phase plumes. However, 4 of the 7 new wells were not installed. Groundwater was not encountered during drilling in two of the on-site borings, and property access was not granted for the two off-site monitoring wells (west of monitoring well OW-1 and northeast of monitoring well OW-30). In summary, six wells were abandoned, and nine wells were installed.

The objectives and the key findings of the well installation activities are described below.

- Replacement monitoring wells MKTF-01R, MKTF-02R, MKTF-04R, MKTF-17R, MKTF-18R, and RW-2R were installed such that the well screens are appropriately positioned to allow SPH, if present, to enter the well. These data will be used to further delineate the SPH plume. Soil samples were collected from within the borings at the zone with the highest total organic vapor (TOV) reading and at the bottom of the boring. Total petroleum hydrocarbon – gasoline range organics (TPH-GRO) was detected in each soil sample at or near the zone with the highest TOV reading exceeding the residential and industrial soil screening levels (RSSL and ISSL, respectively), with the exception of MKTF-02R and MKTF-04R. MKTF-02R and MKTF-04R sample concentrations only exceeded the RSSL. The other target soil analytes were below the ISSLs and RSSLs. Groundwater was collected from the replacement wells except for well RW-2R, which had SPH. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. The samples had detections of VOCs indicative of gasoline and chlorinated VOCs above groundwater cleanup and/or screening standards. SVOCs above groundwater standards were limited to naphthalene and 1-methylnaphthalene. Total barium, cobalt, iron, lead, and manganese were detected above standards in most samples. Dissolved metal detections primarily consisted of barium, cobalt, and manganese. General chemistry detections above standards were primarily TPH-DRO and TPH-GRO. Chloride was detected above standards in two wells; sulfate and TPH-ORO were detected in one well above standards.
- Monitoring well OW-66 was installed between monitoring wells OW-13 and OW-29 to further evaluate groundwater flow direction in the area. Soil samples were collected at the zone with the highest TOV reading and at the bottom of the boring. TPH-GRO in soil was detected at or near the zone with the highest TOV reading, exceeding the RSSL and ISSL. The other target soil analytes were below the ISSLs and RSSLs. A groundwater sample was collected from the well. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. The samples had detections of VOCs indicative of gasoline and chlorinated VOCs above groundwater standards. SVOCs above groundwater standards were limited to 1-methylnaphthalene,

2-methylnaphthalene, and naphthalene. Total and dissolved cobalt and manganese and total nickel were detected in the sample above standards. General chemistry data exceedances above standards included chloride, TPH-DRO, and TPH-GRO exceeded the applicable standards.

- Boring OW-13A was drilled to assess the dissolved-phase methyl tert butyl ether (MTBE) in the groundwater in the vicinity of monitoring well OW-13. The well was to be installed at the upper sand (alluvium)/Chinle interface and not in the Chinle formation. Groundwater was not encountered in boring OW-13A in either the upper sand (alluvium) or Chinle formation. Therefore, no well was installed. Based on the boring log for OW-13A (Appendix A), no olfactory or visual evidence of SPH was observed. In addition, soil analytical data did not show the presence of TPH, VOC, or SVOC constituents, including MTBE. Analytical results indicated that total metals concentrations were below the ISSLs and RSSLs.
- Monitoring wells OW-67 and OW-68 were installed in the upper sand (alluvium) aquifer to assess previously detected elevated concentrations of chloride and sulfate observed at monitoring well SMW-2 that may be attributable to evaporation pond (EP) 2 by installing the wells at depths corresponding to the base of EP-2. The investigation indicates that the source of sulfate and chloride is not EP-2. TPH-GRO was detected in monitoring well OW-66 soil exceeding the RSSL and ISSL. Soil samples collected from OW-67 and OW-68 did not show the presence of TPH, VOC, or SVOC constituents and metals data were below the ISSLs and RSSLs. Groundwater was collected from the monitoring wells. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. No VOCs or SVOCs were detected above applicable standards. Total and dissolved cobalt, and manganese were detected in the sample above standards. Total fluoride exceeded the standard in monitoring well OW-68. General chemistry data exceedances above standards included chloride, sulfate, TPH-DRO, and TPH-GRO exceeded the applicable standards. TPH-ORO was also detected above the standard in monitoring well OW-68.
- Boring OW-69 was drilled to delineate the extent of the SPH that was detected in GWM-1. It is located downgradient of GWM-1 and halfway between the eastern perimeter of pond EP-2 and the aeration lagoons to evaluate the extent of SPH~~assess previously detected elevated concentrations of chloride and sulfate northwest of EP-2 and monitoring well GWM-1 and east of EP-2 by drilling to the Chinle/Alluvium aquifer interface~~. The well was to be installed in the upper sand (alluvium) aquifer. Groundwater was not encountered in boring OW-69 in the upper sand (alluvium) or Chinle formation. Therefore, no well was installed. Based on the boring log for OW-69 (Appendix A), no olfactory or visual evidence of SPH was observed. In addition, soil analytical data did not show the presence of TPH, VOC, or SVOC constituents. Analytical results indicated that total metals concentrations were below the ISSLs and RSSLs. Based on the analytical data, the SPH extent has been delineated.

- Two proposed monitoring wells, located off site of the Refinery property, were not installed. The off-site monitoring wells will be installed after site access is obtained from the property owners.

1.0 Introduction and Background

The Western Refining Southwest LLC, Marathon Gallup Refinery (Refinery) is located on 810 acres approximately 17 miles east of Gallup, New Mexico, along the north side of Interstate Highway I-40 in McKinley County. The physical address is I 40, Exit #39 Jamestown, New Mexico 87347. Figure 1-1 presents the Refinery location as well as regional features.

1.1 Background

The Refinery has been indefinitely idled since April 2020. Historically, the Refinery generally processed crude oil transported to the facility by pipeline or tanker truck. Various process units were operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, alkylation, sulfur recovery, merox treater, and hydrotreating. Refinery operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

1.2 Scope and Objectives

In 2018 and 2019, the New Mexico Environment Department (NMED) requested 13 monitoring wells to be installed at the Refinery. Six existing monitoring wells were to be abandoned and replaced due to submerged well screens. An additional seven new monitoring wells were to be installed to aid in evaluation of the separate phase hydrocarbon (SPH) and dissolved-phase plumes. The proposed locations and NMED objectives for the 13 monitoring wells are summarized in Table 1-1.

The project objectives were to:

- Abandon and replace monitoring wells MKTF-01, MKTF-02, MKTF-04, MKTF-17, MKTF-18, and RW-2 to monitor for the presence of SPH.
- Install one monitoring well in the Chinle aquifer to further evaluate groundwater flow direction between monitoring wells OW-13 and OW-29 in the upper sand (alluvium)/Chinle interface.
- Install one shallow monitoring well in the upper sand (alluvium)/Chinle interface to assess the dissolved-phase methyl tert butyl ether (MTBE) plume in the groundwater in the vicinity of deep monitoring well OW-13.
- Install three shallow monitoring wells in the upper sand (alluvium) aquifer to assess elevated detections of chloride and sulfate northwest of evaporation pond (EP) 2 and monitoring well GWM-1 and east of EP-2.
- Install one off-site monitoring well in the Sonsela aquifer west of monitoring well OW-1 to act as a sentinel monitoring well to monitor for potential MTBE migration.

- Install one off-site monitoring well in the upper sand (alluvium)/Chinle interface northeast of monitoring well OW-30 to delineate the potential MTBE plume in this area.

1.3 Deviations from the Scope of Work

The scope of work proposed 13 monitoring wells for installation. However, 4 of the 13 monitoring wells were not installed. Groundwater was not encountered during drilling in two of the borings: the shallow monitoring well adjacent to OW-13 and the monitoring well east of EP-2. In addition, property access was not granted for the two proposed off-site monitoring wells (west of monitoring well OW-1 and northeast of monitoring well OW-30). The off-site monitoring wells will be installed after site access is obtained by the property owners. In summary, six wells were abandoned, and nine wells were installed.

1.4 Document Organization

This report provides the monitoring well installation and data. It is organized by the following sections and topics.

- Section 2 provides a discussion on the drilling and sample collection.
- Section 3 presents the soil and groundwater sample information and data discussion.
- Section 4 discusses the summary and conclusions.



2.0 Well Installation Activities

This section provides information pertaining to the drilling and sampling activities. The drilling and well installation field work was completed between July 19, 2021, and August 16, 2021. Groundwater sampling was conducted on September 17, 2021.

Information regarding the well installation, soil sample collection, and soil analytical results for monitoring wells OW-67, OW-68, and boring OW-69 was provided in the "Investigation Report, SMW-1 and GWM-1 Areas" (Western 2021) submitted to NMED on September 30, 2021. Iron and manganese soil data were not available for the September report and are included in Section 3.0. Groundwater information collected from monitoring wells OW-67 and OW-68 is also presented in Section 3.0 of this report.

2.1 Pre-investigation Activities

Subsurface utility locates were conducted in a two-step process. A subsurface geophysical survey was conducted for each of the 11 proposed monitoring well locations. After the geophysical survey, v-trenches were air-knifed to a depth of approximately 5 feet below ground surface (ft bgs). The monitoring well locations shown on Figure 2-1 reflect location changes due to subsurface conflicts detected through the use of the geophysical survey and/or access issues with the hollow stem auger rig. One location, RW-2R, was moved due to observed utilities in the v-trench excavation. The location was moved and advanced to a depth of 5 ft bgs with no conflicts at the new location.

2.2 Drilling

Drilling and soil sampling activities were completed using a hollow-stem auger with split spoon sampler. Soil was collected continuously from borings OW-66, OW-67, OW-68, and OW-69. Soil was collected at approximately 5 ft intervals for the replacement and shallower completed monitoring wells (OW-13A, MKTF-01R, MKTF-02R, MKTF-04R, MKTF-17R, MKTF-18R, and RW-2R). New monitoring well locations and abandoned wells are shown on Figure 2-1. Current monitoring well locations as of December 2021 are shown on Figure 2-2.

Borings were logged by a field geologist, working under the supervision of a senior geologist, using the Unified Soil Classification System (USCS). The boring logs and well construction information, if applicable, are provided in Appendix A. Well construction details are summarized in Table 2-1. During drilling, field screening for total organic volatiles (TOV) was conducted with a photoionization detector (PID) on approximate 2-ft intervals. TOV readings are included on the attached logs.

2.3 Soil Borings

Groundwater was not encountered in two of the proposed monitoring well locations, OW-13A and OW-69 (Figure 2-1). Using the auger as a tremie pipe, the borings were abandoned by hydrating bentonite chips in 5-ft increments from total depth to ground surface.

Boring OW-13A was advanced to a depth of 25.5 ft bgs. Bedrock (siltstone) was observed at a depth of approximately 13 feet ft bgs. The rig was advanced to a total depth of 25.5 ft bgs, with no observable saturated interval in the upper sand (alluvium) or the Chinle formation. Because the well was to be installed at the upper sand (alluvium)/Chinle interface and not in the Chinle formation, the boring was not advanced past 25.5 ft and no monitoring well was installed. TOV was measured at 0 parts per million (ppm) throughout the boring except at 15 ft bgs where the TOV was 4.1 ppm.

Boring OW-69 was advanced to a depth of 26 ft bgs. Bedrock (mudstone) was observed at a depth of approximately 10 ft bgs to the bottom of the boring. The rig was advanced to a total depth of 26 ft bgs, with no observable saturated interval in the upper sand (alluvium) or Chinle formation. Because the well was to be installed in the upper sand (alluvium) and not in the Chinle formation, the boring was not advanced past 26 ft bgs and no monitoring well was installed. TOV concentrations ranged from 0 ppm at 25 ft bgs to 2.4 ppm at 5 ft bgs.

2.4 Well Installation

The nine monitoring wells installed were constructed using blank 2-inch schedule 40 polyvinyl chloride (PVC) casing and 2-inch schedule 40 PVC 0.01-inch slot screen. Silica sand was emplaced from the bottom of the borehole to approximately 2 feet (ft) above the top of the screen. The remaining annular space was filled with bentonite to 1 ft bgs followed by concrete to surface. Specific monitoring well construction information is provided below and summarized in Table 2-1:

- Monitoring well OW-66. The total depth of the boring was 26 ft bgs. TOV concentrations were less than 1 ppm from 0 to 14 ft bgs. TOV ranged from 1,150 ppm at 25 ft bgs to 1,891 ppm at 17 ft bgs. Water was encountered at 14 ft bgs. The screened interval was installed from 10 to 25 ft bgs, with sand from 8 to 26 ft bgs. A sanitary seal consisting of bentonite was then placed from 1 to 8 ft bgs, above which concrete was placed to surface. The well was completed with an approximately 3 ft tall 4-inch diameter aboveground steel monument with two crash bollards.
- Monitoring well OW-67. The total depth of the boring was 26 ft bgs. TOV concentrations ranged from 0 to 1.9 ppm, which was measured at 17 ft bgs. Water was encountered at 12.4 ft bgs. The screened interval was installed from 10 to 25 ft bgs, with sand from 8 to 26 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 8 ft bgs, above which concrete was placed to surface. The well was completed with an approximately 3 ft tall 4-inch diameter aboveground steel monument with a crash bollard.
- Monitoring well OW-68. The total depth of the boring was 26 ft bgs. TOV concentrations ranged from 0.8 at 2 ft bgs to 4.4 ppm at 23 ft bgs. Water was encountered at 21 ft bgs. The screened interval was installed from 5 to 25 ft bgs, with sand from 3 to 26 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 2 to 3 ft bgs, above which concrete was placed to surface. The well was completed with a flush mounted well box.
- Replacement monitoring well MKTF-01R. The total depth of the boring was 19 ft bgs. TOV concentrations ranged from 2.7 ppm at 17 ft bgs to 803 ppm at 5 ft bgs. Water was

encountered at 4 ft bgs during drilling; the depth to water (DTW) in June 2021 was 6.12 ft bgs. The screened interval was installed from 3 to 18 ft bgs, with sand 2 to 19 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 2 ft bgs, above which concrete was placed to surface. The well was completed with a flush-mounted well box.

- Replacement well MKTF-02R. The total depth of the boring was 19 ft bgs. Water was not encountered in the boring; however, a hydrocarbon odor was noted from ground surface to approximately 5 ft bgs, where the highest TOV reading was recorded (1,140 ppm). The DTW in June 2021 was 8.02 ft bgs. Because groundwater has historically been measured in MKTF-02, the replacement well was completed. The screened interval was installed from 3 to 18 ft bgs, with sand from 2 to 19 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 2 ft bgs, above which concrete was placed to surface. The well was completed with a flush mounted well box and a bollard.
- Replacement well MKTF-04R. The total depth of the boring was 20 ft bgs. TOV concentrations ranged from 0 to 405.9 ppm, measured at 9 ft bgs. Water was encountered at 8 ft bgs during drilling; the DTW in June 2021 was 9.22 ft bgs. The screened interval was installed 4 to 19 ft bgs, with sand 3 to 20 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 3 ft bgs, above which was placed concrete to surface. The well was completed with a flush mounted well box.
- Replacement well MKTF-17R. The total depth of the boring was 21 ft bgs. TOV concentrations ranged from 0 ppm at 21 ft bgs to 2,676 ppm at 5 ft bgs. Water was encountered at 6.5 ft bgs during drilling; the DTW in June 2021 was 15.15 ft bgs. The screened interval was from 5 to 20 ft bgs, with sand from 3 to 21 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 3 ft bgs, above which was placed concrete to surface. The well was completed with a flush mounted well box and a bollard.
- Replacement well MKTF-18R. The total depth of the boring was 26 ft bgs. TOV concentrations ranged from 3 ppm at 19 ft bgs to 1,554 ppm at 8 ft bgs. Water was encountered at 9.5 ft bgs during drilling; the DTW in June 2021 was 9.21 ft bgs. The screened interval was from 5 to 25 ft bgs, with sand from 3 to 26 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 3 ft bgs, above which was placed concrete to surface. The well was completed with a flush mounted well box.
- Replacement well RW-2R. The total depth of the boring was 33 ft bgs. TOV concentrations ranged from 51.1 ppm at 10 ft bgs to 1,348 ppm at 30 ft bgs. Water was encountered at 16.5 ft bgs during drilling; the DTW in June 2021 was 23.86 ft bgs. The screened interval was from 11.5 to 31.5 ft bgs, with sand from 9.5 to 33 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 6.5 to 9.5 ft bgs, above which was placed concrete to surface. The well was completed with an approximately 3 ft tall 6-inch diameter aboveground steel monument.

2.5 Well Abandonment

Because wells MKTF-01, MKTF-02, MKTF-04, MKTF-17, MKTF-18, and RW-2 were not correctly constructed (i.e., the tops of the well screens were submerged below the water table surface and therefore could not monitor for the presence of SPH), they were abandoned after the replacement wells were installed. The above ground pipes were cut off at below ground surface. The total depth of the existing wells was measured, and a stinger pipe was placed to the bottom of the well. Cement was then tremied through the stinger pipe, filling the well from the bottom up. The concrete pads were destroyed and removed.

In the Comment 3 of the letter "Approval with Modifications, Hydrocarbon Seep Interim Measures 2021 Second Quarter Status Report" dated September 14, 2021, NMED stated, "Existing Wells MKTF-1, MKTF-2, MKTF-4, MKTF-17, and MKTF-18 must not be plugged and abandoned; they must be preserved at this time." However, the wells were abandoned in July 2021 and August 2021, in accordance with previous correspondence, before the September 2021 letter was received. The replacement wells will provide enhanced information (the ability to monitor for SPH) in addition to providing equivalent dissolved constituent data while reducing the liability of maintaining duplicative shallow groundwater wells.

2.6 Well Development

The depth to water and total depth were measured at the nine monitoring wells prior to well development. SPH was not detected in the wells except for RW-2R (apparent SPH thickness of 2.67 feet). For monitoring wells OW-67 and OW-68, 10 casing volumes were bailed from each well. Additional groundwater was then removed until the field parameters equilibrated. A YSI multiprobe meter was used to collect measurements (conductivity, pH, temperature, dissolved oxygen, and salinity). The remaining seven monitoring wells went dry during bailing the 10 casing volumes; therefore, groundwater measurements were collected during purging and sampling on September 17, 2021. Well development field forms are included as Appendix B.

2.7 Elevation Survey

The nine monitoring wells were surveyed after completion by a licensed New Mexico land surveyor. The two borings (OW-13A and OW-69) were logged with a hand-held global positioning system device. The elevations will be submitted in the 2021 annual groundwater report.

2.8 Investigation Derived Waste

Soil generated during drilling was drummed and transferred to the 90-day storage pad and samples collected. The labeled drums will be shipped off site to an appropriate disposal facility after data are received. Water generated during development, purging, and sampling activities was placed into a labeled drum for processing by the Refinery.



3.0 Sample Collection and Analytical Results

This section presents soil and groundwater sample collection and data results. Soil results are summarized in Tables 3-1 through 3-4. Groundwater results are summarized in Tables 3-5 through 3-10.

3.1 Sample Collection and Analysis

Samples were collected for analysis following procedures outlined in the approved work plans, "Work Plan 2015 Annual Groundwater Report Comments", dated October 2018, and revised June & October 2019 (DiSorbo 2019a) and "Work Plan SMW-2 and GWM-1 Areas" dated August 2018 and revised August 2019 (DiSorbo 2019b). The monitoring well installations followed their respective work plans.

3.1.1 Soil Sampling

Soil samples were collected in two separate events, July 19 to July 22, 2021, and August 13 to August 16, 2021. Two soil samples from each boring were selected for analysis, one at the depth with the highest PID reading and one at the bottom of the boring. Samples were collected as follows:

- MKTF-01R at 6 ft bgs and 18 ft bgs
- MKTF-02R at 6 ft bgs and 18 ft bgs
- MKTF-04R at 8.2 to 8.7 ft bgs and 19.5 to 20 ft bgs
- MKTF-17R at 6.5 to 7 ft bgs and 20.5 to 21 ft bgs
- MKTF-18R at 9.5 to 10 ft bgs and 25.5 to 26 ft bgs
- OW-13A at 14 ft bgs and 25.5 ft bgs
- OW-66 at 18 ft bgs and 25 ft bgs
- OW-67 at 17 ft bgs and 26 ft bgs
- OW-68 at 22 ft bgs and 26 ft bgs
- OW-69 at 6 ft bgs and 26 ft bgs
- RW-2R at 16.5 to 17 ft bgs and 32.5 to 33 ft bgs

Duplicates were collected at MKTF-17R (20.5 to 21 ft bgs) and RW-2R (16.5 to 17 ft bgs). Soil samples were submitted for analysis of:

- Total Petroleum hydrocarbons, gasoline range organics (TPH-GRO) by Environmental Protection Agency (EPA) Method 8015M/D
- TPH, diesel range organics (TPH-DRO) by EPA Method 8015D
- TPH, motor oil range organics (TPH-MRO) by EPA Method 8015D

- Volatile Organic Compounds (VOCs) including fuel oxygenates by EPA Method 8260B
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270
- Resource Conservation Recovery Act (RCRA) Metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver, and iron and manganese by EPA Method 6010B

3.1.2 Soil Sample Results

TPH and benzene, toluene, ethylbenzene, and xylenes (BTEX) data are presented in Table 3-1; VOC data are presented in Table 3-2; SVOC data are presented in Table 3-3; and metals data are presented in Table 3-4. Data were compared to the 2019 NMED Residential and Industrial Soil Screening Levels (RSSLs and ISSLs, respectively) (NMED 2019). None of the soil samples exceed RSSLs or ISSLs for TPH-DRO, TPH-MRO, BTEX, MTBE, VOCs, SVOCs, or metals. TPH GRO exceeded the screening levels in several borings. TPH-GRO data are summarized below.

- MKTF-01R. The sample collected at 6 ft bgs had an estimated TPH-GRO concentration of an estimated concentration (J) 1,100 milligrams per kilogram (mg/kg), exceeding the RSSL and ISSL (100 mg/kg and 500 mg/kg, respectively). The sample collected at the bottom of the boring (18 ft bgs) did not exceed the RSSL or ISSL.
- MKTF-02R. The sample collected at 6 ft bgs had an estimated TPH-GRO concentration of 260 J mg/kg, exceeding the RSSL (100 mg/kg) and not exceeding the ISSL. The sample collected at the bottom of the boring (18 ft bgs) did not exceed the RSSL or ISSL.
- MKTF-04R. The sample collected at 8.2 to 8.7 ft bgs had a TPH-GRO concentration of 300 mg/kg, exceeding the RSSL (100 mg/kg) and not exceeding the ISSL. The sample collected at the bottom of the boring (19.5 to 20 ft bgs) did not exceed the RSSL or ISSL.
- MKTF-17R. The sample collected at 6.5 to 7 ft bgs had a TPH-GRO concentration of 2,100 mg/kg, exceeding RSSL and ISSL (100 mg/kg and 500 mg/kg, respectively). The sample collected at the bottom of the boring (20.5 to 21 ft bgs) did not exceed the RSSL or ISSL.
- MKTF-18R. The sample collected at 9.5 to 10 ft bgs had a TPH-GRO concentration of 2,400 mg/kg, exceeding the RSSL and ISSL (100 mg/kg and 500 mg/kg, respectively. The sample collected at the bottom of the boring (25.5 to 26 ft bgs) did not exceed the RSSL or ISSL.
- OW-13A. Neither sample exceeded the RSSL or ISSL.
- OW-66. The sample collected at 18 ft bgs had a TPH-GRO concentration of 1,800 mg/kg, exceeding the RSSL and ISSL (100 mg/kg and 500 mg/kg, respectively). The sample collected at the bottom of the boring (26 ft bgs) did not exceed the RSSL or ISSL.
- OW-67. Neither sample exceeded the RSSL or ISSL.
- OW-68. Neither sample exceeded the RSSL or ISSL.

- OW-69. Neither sample exceeded the RSSL or ISSL.
- RW-2R. The sampled collected at 16 to 17 ft had a TPH-GRO concentration of 1,900 mg/kg, exceeding the RSSL and ISSL (100 mg/kg and 500 mg/kg, respectively). The sample collected at the bottom of the boring (32.5 to 33 ft bgs) did not exceed the RSSL or ISSL.

Iron and manganese results were inadvertently left off the analyte list for OW-67, OW-68, and OW-69 (Western 2021). Those data are included in this report. As indicated above, the samples were below RSSLs and ISSLs.

Soil laboratory reports are included as Appendix C.

3.2 Groundwater Sampling and Results

Samples were collected for analysis following procedures outlined in the approved work plans, "Work Plan 2015 Annual Groundwater Report Comments" dated October 2018 and revised June & October 2019 (DiSorbo 2019a) and "Work Plan SMW-2 and GWM-1 Areas" dated August 2018 and revised August 2019 (DiSorbo 2019b).

3.2.1 Groundwater Sampling

Samples were collected from eight of the nine new monitoring wells on September 17, 2021: MKTF-01R, MKTF-02R, MKTF-04R, MKTF-17R, MKTF-18R, OW-66, OW-67, and OW-68. Replacement well RW-2R was not sampled due to the presence of SPH. A duplicate sample was collected from MKTF-18R. Groundwater samples were submitted for analysis of:

- TPH-GRO by EPA Method 8015D
- TPH-DRO by EPA Method 8015D
- TPH-MRO by EPA Method 8015D
- VOCs (including fuel oxygenates) by EPA Method 8260B
- SVOCs by EPA Method 8270C and 8270SIM
- Total Metals: barium, beryllium, cadmium, calcium, chromium, cobalt, iron, magnesium, manganese, nickel, potassium, silver, sodium, vanadium, and zinc by EPA Method 200.7; antimony, arsenic, lead, and selenium by EPA Method 200.8; and mercury by EPA Method 245.1
- Dissolved Metals: barium, beryllium, cadmium, chromium, cobalt, iron, manganese, nickel, silver, vanadium, and zinc by EPA Method 200.7; antimony, arsenic, lead, and selenium by EPA Method 200.8; and mercury by EPA Method 245.1
- Anions: fluoride, chloride, nitrate-nitrogen (as N), nitrite-nitrogen (as N), and sulfate by EPA Method 300.0



- Alkalinity: bicarbonate (as CaCO3), carbonate (as CaCO3), and total alkalinity (as CaCO3) by method SM2320B

3.2.2 Fluid Level Measurements

Fluid levels were measured during well development and sample collection. The data are provided in Table 2-1. Observable SPH thickness was measured in replacement well RW-2R at 2.67 ft. Replacement well RW-2R was not sampled for analytical parameters.

3.2.3 Groundwater Analytical Results

Groundwater was analyzed for VOCs (Table 3-5), SVOCs (Table 3-6), total and dissolved metals (Table 3-7 and 3-8, respectively), and general chemistry (Table 3-9). Field parameters collected during sample collection are provided in Table 3-10. Laboratory data and the data validation report are provided in Appendices C and D, respectively. Data were compared to applicable cleanup levels as indicated on Tables 3-5 through 3-9.

VOCs

A summary of the groundwater data exceeding applicable VOC cleanup levels is provided below.

- MKTF-01R. VOC results from MKTF-01R showed estimated (J) concentrations of 1,2,4-trimethylbenzene (310 J micrograms per liter [ug/L]), 1-methyl naphthalene (28 J ug/L), benzene (7,100 J ug/L), and naphthalene (52 J ug/L). Vinyl chloride and xylenes were detected at 22 ug/L and 850 ug/L, respectively.
- MKTF-02R. VOC results from MKTF-02R showed estimated concentrations of benzene (29 J ug/L). Other VOCs detected above standards include 1,1,2-trichloroethane (7.9 ug/L), 1,1-dichloroethane (110 ug/L), 1,1-dichloroethene (280 ug/L), 1,2-dichloroethane (67 ug/L), and trichloroethene (23 ug/L).
- MKTF-04R. VOC results from MKTF-04R showed estimated concentrations of 1,2,4-trimethylbenzene (160 J ug/L), 1-methylnaphthalene (48 J ug/L), 2-methylnaphthalene (59 J ug/L), benzene (1,100 J ug/L), MTBE (1,600 J ug/L), and naphthalene (81 J ug/L). Other VOC results detected above standards include 1,1-dichloroethane (35 ug/L) and 1,1-dichloroethene (45 ug/L).
- MKTF-17R. VOC results from MKTF-17R showed estimated concentrations of 1,2,4-trimethylbenzene (430 J ug/L), 1,3,5-trimethylbenzene (120 J ug/L), 1-methylnaphthalene (27 J ug/L), benzene (1,600 J ug/L), MTBE (3,900 J ug/L), naphthalene (72 J ug/L), and toluene (5,400 J ug/L). Other VOC results detected above standards included xylenes (2,700 ug/L).
- MKTF-18R. VOC results from MKTF-18R showed estimated concentrations of 1,1-dichloroethane (32 J ug/L), 1,2,4-trimethylbenzene (780 J ug/L), 1-methylnaphthalene (200 J ug/L), 2-methylnaphthalene (300 J ug/L), benzene (3,700 J ug/L), MTBE (200 J ug/L), naphthalene (77 J ug/L), and toluene (1,800 J ug/L).

- OW-66. VOC results from OW-66 showed estimated concentrations of 1,2,4-trimethylbenzene (1,300 J ug/L), 1,3,5-trimethylbenzene (350 J ug/L), 2-methylnaphthalene (61 J ug/L), benzene (12,000 J ug/L), bromodichloromethane (2.1 J ug/L), chloromethane (28 J ug/L), dibromochloromethane (6.2 J ug/L), ethylbenzene (720 J ug/L), MTBE (680 J ug/L), and toluene (9,200 J ug/L). Other VOCs include naphthalene (130 ug/L) and xylenes (6,200 ug/L).
- OW-67. No VOCs were detected above applicable standards.
- OW-68. No VOCs were detected above applicable standards.

SVOCs

A summary of the groundwater data exceeding applicable SVOC cleanup levels is provided below.

- MKTF-01R. No SVOCs were detected above applicable standards.
- MKTF-02R. No SVOCs were detected above applicable standards.
- MKTF-04R. No SVOCs were detected above applicable standards..
- MKTF-17R. SVOC results from MKTF-17R showed estimated concentrations of 1-methylnaphthalene (15 J ug/L) and naphthalene (38 J ug/L).
- MKTF-18R. SVOC results from MKTF-18R showed estimated concentrations of 1-methylnaphthalene (27 J ug/L) and naphthalene (87 J ug/L).
- OW-66. SVOC results from OW-66 showed estimated concentrations of 1-methylnaphthalene (33 J ug/L) and 2-methylnaphthalene (51 J ug/L). Other SVOCs detected above standards include naphthalene (110 ug/L).
- OW-67. No SVOCs were detected above applicable standards.
- OW-68. No SVOCs were detected above applicable standards.

Total Metals

A summary of the groundwater data exceeding applicable metals cleanup levels is provided below.

- MKTF-01R. Total metals exceeding standards included barium (5,400 ug/L), cobalt (12 ug/L), and manganese (3,400 ug/L).
- MKTF-02R. No total metals were detected above applicable standards.
- MKTF-04R. Total metals exceeding standards included cobalt (9 ug/L) and manganese (2,700 ug/L).
- MKTF-17R. Total metals exceeding standards included manganese (3,400 ug/L).
- MKTF-18R. Total metals results from MKTF-18R showed estimated concentrations of iron (17,000 J ug/L), lead (46 J ug/L), and manganese (2,900 J ug/L). Other total metals exceeding standards included barium (2,000 ug/L) and cobalt (15 ug/L).

- OW-66. Total metals results from OW-66 showed estimated concentrations of nickel (380 J ug/L). Other total metals exceeding standards included cobalt (10 ug/L) and manganese (2,600 ug/L).
- OW-67. Total metals results from OW-67 showed estimated concentrations of cobalt (29 J ug/L). Other total metals exceeding standards included manganese (8,000 ug/L).
- OW-68. Total metals exceeding standards included cobalt (100 ug/L), fluoride (6,400 ug/L), and manganese (11,000 ug/L).

Dissolved Metals

A summary of the groundwater data exceeding applicable metals cleanup levels is provided below.

- MKTF-01R. Dissolved metals results from MKTF-01R showed estimated concentrations of arsenic (6.6 J ug/L). Other dissolved metals exceeding standards included barium (4,700 ug/L), cobalt (8 ug/L), and manganese (3,100 ug/L).
- MKTF-02R. No dissolved metals exceeded applicable standards.
- MKTF-04R. Dissolved metals results from MKTF-04R showed estimated concentrations of arsenic (3.6 J ug/L). Other dissolved metals exceeding standards included manganese (2,400 ug/L).
- MKTF-17R. Dissolved metals results from MKTF-17R showed estimated concentrations of arsenic (4.6 J ug/L). Other dissolved metals exceeding standards included manganese (2,800 ug/L).
- MKTF-18R. Dissolved metals results from MKTF-18R showed estimated concentrations of arsenic (2.6 J ug/L). Other dissolved metals exceeding standards included cobalt (8.8 ug/L).
- OW-66. Dissolved metals results from OW-66 showed estimated concentrations of arsenic (3.7 J ug/L). Other dissolved metals exceeding standards included cobalt (8.4 ug/L) and manganese (2,400 ug/L).
- OW-67. Dissolved metals results from OW-67 showed estimated concentrations of arsenic (2.3 J ug/L). Other dissolved metals exceeding standards included cobalt (11 ug/L) and manganese (7,400 ug/L).
- OW-68. Dissolved metals results from OW-68 showed estimated concentrations of arsenic (5.5 J ug/L). Other dissolved metals exceeding standards included cobalt (79 ug/L) and manganese (9,600 ug/L).

General Chemistry

A summary of the groundwater general chemistry data exceeding applicable cleanup levels is provided below.

- MKTF-01R. TPH-DRO, TPH-GRO, and TPH-ORO exceeded applicable standards at 2,200 ug/L, 5,200 ug/L, and 96 ug/L, respectively.
- MKTF-02R. Chloride, TPH-DRO, and TPH-GRO exceeded applicable standards at 1,800,000 ug/L, 220 ug/L, and 560 ug/L, respectively. Sulfate had an estimated concentration exceeding standards of 710,000 J ug/L.
- MKTF-04R. Chloride, TPH-DRO, and TPH-GRO exceeded applicable standards at 1,200,000 ug/L, 1,200 ug/L, and 19,000 ug/L, respectively.
- MKTF-17R. TPH-DRO and TPH-GRO exceeded applicable standards at 1,800 ug/L and 29,000 ug/L, respectively.
- MKTF-18R. TPH-DRO and TPH-GRO had estimated concentrations exceeding standards of 2,600 J ug/L and 5,000 J ug/L, respectively.
- OW-66. Chloride, TPH-DRO, and TPH-GRO exceeded applicable standards at 320,000 ug/L, 4,000 ug/L, and 69,000 ug/L, respectively.
- OW-67. Chloride, TPH-DRO, and TPH-GRO exceeded applicable standards at 4,900,000 ug/L, 560 ug/L, and 410 ug/L, respectively. Sulfate had an estimated concentration exceeding standards of 760,000 J ug/L.
- OW-68. Chloride, TPH-DRO, TPH-GRO, and TPH-ORO exceeded applicable standards at 5,100,000 ug/L, 1,100 ug/L, 1,700 ug/L, and 120 ug/L, respectively. Sulfate had an estimated concentration exceeding standards of 800,000 J ug/L.



4.0 Summary and Conclusions

The Refinery proposed the installation of 13 monitoring wells: 6 existing wells were to be abandoned and replaced due to submerged well screens. 7 new monitoring wells were planned to be installed to aid in evaluation of the SPH and dissolved-phase plumes. However, 4 of the 7 new monitoring wells were not installed for the following reasons; groundwater was not encountered during drilling in two of the borings, the shallow monitoring well adjacent to OW-13 (boring OW-13A) and the monitoring well east of EP-2 (boring OW-69), and, property access was not granted for the two off-site monitoring wells (west of monitoring well OW-1 and northeast of monitoring well OW-30). In summary, six wells were abandoned, and nine wells were installed.

The objectives presented in Section 1.2 were met and the key findings are described below.

- Replacement wells MKTF-01R, MKTF-02R, MKTF-04R, MKTF-17R, MKTF-18R, and RW-2R were installed such that the well screens are appropriately positioned to allow SPH, if present, to enter the well. Soil samples were collected at the zone with the highest TOV reading and at the bottom of the boring. TPH-GRO was detected in each soil sample at or near the zone with the highest TOV reading exceeding the RSSL and ISSL, with the exception of MKTF-02R and MKTF-04R where samples only exceeded the RSSL. The other target soil analytes were below the ISSLs and RSSLs. Groundwater was collected from the replacement wells except for well RW-2R, which had SPH. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. The samples had detections of VOCs indicative of gasoline and chlorinated VOCs above groundwater standards. SVOCs above groundwater standards were limited to naphthalene and 1-methylnaphthalene. Total barium, cobalt, iron, lead, and manganese were detected above standards in most samples. Dissolved metal detections primarily consisted of barium, cobalt, and manganese. General chemistry detections above standards were primarily TPH-DRO and TPH-GRO. Chloride was detected above standards in two wells; sulfate and TPH-ORO were detected in one well above standards.
- Monitoring well OW-66 was installed between monitoring wells OW-13 and OW-29 to further evaluate groundwater flow direction in the area. Soil samples were collected at the zone with the highest TOV reading and at the bottom of the boring. TPH-GRO in soil was detected at or near the zone with the highest TOV reading, exceeding the RSSL and ISSL. The other target soil analytes were below the ISSLs and RSSLs. A groundwater sample was collected from the well. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. The samples had detections of VOCs indicative of gasoline and chlorinated VOCs above groundwater standards. SVOCs above groundwater standards were limited to 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene. Total and dissolved cobalt and manganese and total

nickel were detected in the sample above standards. General chemistry data exceedances above standards included chloride, TPH-DRO, and TPH-GRO exceeded the applicable standards.

- There were some groundwater analytes that had detection limits that exceeded the applicable standards. Groundwater analytes included: 1,2,3-Trichloropropane, 1,2-Dibromo-3-Chloropropane, 1,2-Dibromoethane, Hexachlorobutadiene, 2,6-Dinitrotoluene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Bis(2-chloroethyl)ether, Dibenzo(a,h)anthracene, Hexachlorobenzene, Hexachlorocyclopentadiene, Indeno(1,2,3-cd)pyrene, N-Nitrosodimethylamine, N-Nitrosodi-n-propylamine, total beryllium, total cadmium, and TPH-ORO. 1-Methylnapthalene had a standard exceedance that was evaluated to be undetected at the reported concentration in data validation, resulting in a non-detect standard exceedance. Vinyl chloride also had one non-detect standard exceedance. It should be noted that standard exceedances, even if a non-detection, are considered data quality exceptions. Therefore, those values cannot evaluate compliance for those constituents.
- Boring OW-13A was installed to assess the dissolved-phase MTBE in the groundwater in the vicinity of the deep monitoring well OW-13. Groundwater was not encountered in boring OW-13A and, therefore, no well was installed. Based on the boring log for OW-13A (Appendix A), no olfactory or visual evidence of SPH was observed. In addition, soil analytical data did not show the presence of TPH, VOC, or SVOC constituents, including MTBE. Analytical results indicate that total metals concentrations were below the ISSLs and RSSLs.
- Monitoring wells OW-67 and OW-68 were installed in the upper sand (alluvium) aquifer to assess elevated detections of chloride and sulfate observed at monitoring well SMW-2 that may be attributable to EP-2 by installing the wells at depths corresponding to the base of EP-2. The investigation indicates that the source of sulfate and chloride is not EP-2. ~~Boring OW-69 was drilled to assess previously detected elevated concentrations of chloride and sulfate northwest of EP-2 and monitoring well GWM-1 and east of EP-2 by drilling to the Chinle/Alluvium aquifer interface.~~ TPH-GRO was detected in monitoring well OW-66 exceeding the RSSL and ISSL. Soil samples collected from borings OW-67 and OW-68 did not show the presence of TOC, VOC, or SVOC constituents, and metals concentrations were below the ISSLs and RSSLs. Groundwater was collected from the monitoring wells. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. No VOCs or SVOCs were detected above applicable standards. Total and dissolved cobalt, and manganese were detected in the sample above standards. Total fluoride exceeded the standard in monitoring well OW-68. General chemistry data exceedances above standards included chloride, sulfate, TPH-DRO, and TPH-GRO exceeded the applicable standards. TPH-ORO was also detected above the standard in monitoring well OW-68.
- Boring OW-69 was drilled to delineate the extent of the SPH that was detected in GWM-1. It is located downgradient of GWM-1 and halfway between the eastern perimeter of pond EP-2 and

the aeration lagoons to evaluate the extent of SPH. A well was to be installed in the upper sand (alluvium) aquifer at this location; however, groundwater was not encountered in boring OW-69 in the upper sand (alluvium) or Chinle formation. Therefore, no well was installed. Based on the boring log for OW-69 (Appendix A), no olfactory or visual evidence of SPH was observed. In addition, soil analytical data did not show the presence of TPH, VOC, or SVOC constituents. Analytical results indicated that total metals concentrations were below the ISSLs and RSSLs. Based on the soil analytical data, the SPH extent has been delineated.

- Two proposed monitoring wells, located off site of the Refinery property, were not installed. The off-site monitoring wells will be installed after access is obtained from the property owners.

5.0 References

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ATTACHMENT C

REVISED WELL INSTALLATION AND ABANDONMENT REPORT

(TWO HARD COPIES AND ELECTRONIC COPY)

Well Installation and Abandonment Report



Western Refining Southwest, LLC
(D/B/A Marathon Gallup Refinery)
Gallup, New Mexico

EPA ID# NMD000333211

REVISED OCTOBER 20, 2022
REVISED APRIL 15, 2022
NOVEMBER 9, 2021

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Executive Summary

Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery (Refinery) proposed the installation of 13 wells: 6 existing wells were abandoned and replaced due to submerged well screens, and 7 new wells were planned to aid in evaluation of the separate phase hydrocarbon (SPH) and dissolved-phase plumes. However, 4 of the 7 new wells were not installed. Groundwater was not encountered during drilling in two of the on-site borings, and property access was not granted for the two off-site monitoring wells (west of monitoring well OW-1 and northeast of monitoring well OW-30). In summary, six wells were abandoned, and nine wells were installed.

The objectives and the key findings of the well installation activities are described below.

- Replacement monitoring wells MKTF-01R, MKTF-02R, MKTF-04R, MKTF-17R, MKTF-18R, and RW-2R were installed such that the well screens are appropriately positioned to allow SPH, if present, to enter the well. These data will be used to further delineate the SPH plume. Soil samples were collected from within the borings at the zone with the highest total organic vapor (TOV) reading and at the bottom of the boring. Total petroleum hydrocarbon – gasoline range organics (TPH-GRO) was detected in each soil sample at or near the zone with the highest TOV reading exceeding the residential and industrial soil screening levels (RSSL and ISSL, respectively), with the exception of MKTF-02R and MKTF-04R. MKTF-02R and MKTF-04R sample concentrations only exceeded the RSSL. The other target soil analytes were below the ISSLs and RSSLs. Groundwater was collected from the replacement wells except for well RW-2R, which had SPH. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. The samples had detections of VOCs indicative of gasoline and chlorinated VOCs above groundwater cleanup and/or screening standards. SVOCs above groundwater standards were limited to naphthalene and 1-methylnaphthalene. Total barium, cobalt, iron, lead, and manganese were detected above standards in most samples. Dissolved metal detections primarily consisted of barium, cobalt, and manganese. General chemistry detections above standards were primarily TPH-DRO and TPH-GRO. Chloride was detected above standards in two wells; sulfate and TPH-ORO were detected in one well above standards.
- Monitoring well OW-66 was installed between monitoring wells OW-13 and OW-29 to further evaluate groundwater flow direction in the area. Soil samples were collected at the zone with the highest TOV reading and at the bottom of the boring. TPH-GRO in soil was detected at or near the zone with the highest TOV reading, exceeding the RSSL and ISSL. The other target soil analytes were below the ISSLs and RSSLs. A groundwater sample was collected from the well. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. The samples had detections of VOCs indicative of gasoline and chlorinated VOCs above groundwater standards. SVOCs above groundwater standards were limited to 1-methylnaphthalene,



2-methylnaphthalene, and naphthalene. Total and dissolved cobalt and manganese and total nickel were detected in the sample above standards. General chemistry data exceedances above standards included chloride, TPH-DRO, and TPH-GRO exceeded the applicable standards.

- Boring OW-13A was drilled to assess the dissolved-phase methyl tert butyl ether (MTBE) in the groundwater in the vicinity of monitoring well OW-13. The well was to be installed at the upper sand (alluvium)/Chinle interface and not in the Chinle formation. Groundwater was not encountered in boring OW-13A in either the upper sand (alluvium) or Chinle formation. Therefore, no well was installed. Based on the boring log for OW-13A (Appendix A), no olfactory or visual evidence of SPH was observed. In addition, soil analytical data did not show the presence of TPH, VOC, or SVOC constituents, including MTBE. Analytical results indicated that total metals concentrations were below the ISSLs and RSSLs.
- Monitoring wells OW-67 and OW-68 were installed in the upper sand (alluvium) aquifer to assess previously detected elevated concentrations of chloride and sulfate observed at monitoring well SMW-2 that may be attributable to evaporation pond (EP) 2 by installing the wells at depths corresponding to the base of EP-2. The investigation indicates that the source of sulfate and chloride is not EP-2. TPH-GRO was detected in monitoring well OW-66 soil exceeding the RSSL and ISSL. Soil samples collected from OW-67 and OW-68 did not show the presence of TPH, VOC, or SVOC constituents and metals data were below the ISSLs and RSSLs. Groundwater was collected from the monitoring wells. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. No VOCs or SVOCs were detected above applicable standards. Total and dissolved cobalt, and manganese were detected in the sample above standards. Total fluoride exceeded the standard in monitoring well OW-68. General chemistry data exceedances above standards included chloride, sulfate, TPH-DRO, and TPH-GRO exceeded the applicable standards. TPH-ORO was also detected above the standard in monitoring well OW-68.
- Boring OW-69 was drilled to delineate the extent of the SPH that was detected in GWM-1. It is located downgradient of GWM-1 and halfway between the eastern perimeter of pond EP-2 and the aeration lagoons to evaluate the extent of SPH. The well was to be installed in the upper sand (alluvium) aquifer. Groundwater was not encountered in boring OW-69 in the upper sand (alluvium) or Chinle formation. Therefore, no well was installed. Based on the boring log for OW-69 (Appendix A), no olfactory or visual evidence of SPH was observed. In addition, soil analytical data did not show the presence of TPH, VOC, or SVOC constituents. Analytical results indicated that total metals concentrations were below the ISSLs and RSSLs. Based on the analytical data, the SPH extent has been delineated.



- Two proposed monitoring wells, located off site of the Refinery property, were not installed. The off-site monitoring wells will be installed after site access is obtained from the property owners.



1.0 Introduction and Background

The Western Refining Southwest LLC, Marathon Gallup Refinery (Refinery) is located on 810 acres approximately 17 miles east of Gallup, New Mexico, along the north side of Interstate Highway I-40 in McKinley County. The physical address is I 40, Exit #39 Jamestown, New Mexico 87347. Figure 1-1 presents the Refinery location as well as regional features.

1.1 Background

The Refinery has been indefinitely idled since April 2020. Historically, the Refinery generally processed crude oil transported to the facility by pipeline or tanker truck. Various process units were operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, alkylation, sulfur recovery, merox treater, and hydrotreating. Refinery operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

1.2 Scope and Objectives

In 2018 and 2019, the New Mexico Environment Department (NMED) requested 13 monitoring wells to be installed at the Refinery. Six existing monitoring wells were to be abandoned and replaced due to submerged well screens. An additional seven new monitoring wells were to be installed to aid in evaluation of the separate phase hydrocarbon (SPH) and dissolved-phase plumes. The proposed locations and NMED objectives for the 13 monitoring wells are summarized in Table 1-1.

The project objectives were to:

- Abandon and replace monitoring wells MKTF-01, MKTF-02, MKTF-04, MKTF-17, MKTF-18, and RW-2 to monitor for the presence of SPH.
- Install one monitoring well in the Chinle aquifer to further evaluate groundwater flow direction between monitoring wells OW-13 and OW-29 in the upper sand (alluvium)/Chinle interface.
- Install one shallow monitoring well in the upper sand (alluvium)/Chinle interface to assess the dissolved-phase methyl tert butyl ether (MTBE) plume in the groundwater in the vicinity of deep monitoring well OW-13.
- Install three shallow monitoring wells in the upper sand (alluvium) aquifer to assess elevated detections of chloride and sulfate northwest of evaporation pond (EP) 2 and monitoring well GWM-1 and east of EP-2.
- Install one off-site monitoring well in the Sonsela aquifer west of monitoring well OW-1 to act as a sentinel monitoring well to monitor for potential MTBE migration.
- Install one off-site monitoring well in the upper sand (alluvium)/Chinle interface northeast of monitoring well OW-30 to delineate the potential MTBE plume in this area.

1.3 Deviations from the Scope of Work

The scope of work proposed 13 monitoring wells for installation. However, 4 of the 13 monitoring wells were not installed. Groundwater was not encountered during drilling in two of the borings: the shallow monitoring well adjacent to OW-13 and the monitoring well east of EP-2. In addition, property access was not granted for the two proposed off-site monitoring wells (west of monitoring well OW-1 and northeast of monitoring well OW-30). The off-site monitoring wells will be installed after site access is obtained by the property owners. In summary, six wells were abandoned, and nine wells were installed.

1.4 Document Organization

This report provides the monitoring well installation and data. It is organized by the following sections and topics.

- Section 2 provides a discussion on the drilling and sample collection.
- Section 3 presents the soil and groundwater sample information and data discussion.
- Section 4 discusses the summary and conclusions.

2.0 Well Installation Activities

This section provides information pertaining to the drilling and sampling activities. The drilling and well installation field work was completed between July 19, 2021, and August 16, 2021. Groundwater sampling was conducted on September 17, 2021.

Information regarding the well installation, soil sample collection, and soil analytical results for monitoring wells OW-67, OW-68, and boring OW-69 was provided in the "Investigation Report, SMW-1 and GWM-1 Areas" (Western 2021) submitted to NMED on September 30, 2021. Iron and manganese soil data were not available for the September report and are included in Section 3.0. Groundwater information collected from monitoring wells OW-67 and OW-68 is also presented in Section 3.0 of this report.

2.1 Pre-investigation Activities

Subsurface utility locates were conducted in a two-step process. A subsurface geophysical survey was conducted for each of the 11 proposed monitoring well locations. After the geophysical survey, v-trenches were air-knifed to a depth of approximately 5 feet below ground surface (ft bgs). The monitoring well locations shown on Figure 2-1 reflect location changes due to subsurface conflicts detected through the use of the geophysical survey and/or access issues with the hollow stem auger rig. One location, RW-2R, was moved due to observed utilities in the v-trench excavation. The location was moved and advanced to a depth of 5 ft bgs with no conflicts at the new location.

2.2 Drilling

Drilling and soil sampling activities were completed using a hollow-stem auger with split spoon sampler. Soil was collected continuously from borings OW-66, OW-67, OW-68, and OW-69. Soil was collected at approximately 5 ft intervals for the replacement and shallower completed monitoring wells (OW-13A, MKTF-01R, MKTF-02R, MKTF-04R, MKTF-17R, MKTF-18R, and RW-2R). New monitoring well locations and abandoned wells are shown on Figure 2-1. Current monitoring well locations as of December 2021 are shown on Figure 2-2.

Borings were logged by a field geologist, working under the supervision of a senior geologist, using the Unified Soil Classification System (USCS). The boring logs and well construction information, if applicable, are provided in Appendix A. Well construction details are summarized in Table 2-1. During drilling, field screening for total organic volatiles (TOV) was conducted with a photoionization detector (PID) on approximate 2-ft intervals. TOV readings are included on the attached logs.

2.3 Soil Borings

Groundwater was not encountered in two of the proposed monitoring well locations, OW-13A and OW-69 (Figure 2-1). Using the auger as a tremie pipe, the borings were abandoned by hydrating bentonite chips in 5-ft increments from total depth to ground surface.

Boring OW-13A was advanced to a depth of 25.5 ft bgs. Bedrock (siltstone) was observed at a depth of approximately 13 feet ft bgs. The rig was advanced to a total depth of 25.5 ft bgs, with no observable saturated interval in the upper sand (alluvium) or the Chinle formation. Because the well was to be installed at the upper sand (alluvium)/Chinle interface and not in the Chinle formation, the boring was not advanced past 25.5 ft and no monitoring well was installed. TOV was measured at 0 parts per million (ppm) throughout the boring except at 15 ft bgs where the TOV was 4.1 ppm.

Boring OW-69 was advanced to a depth of 26 ft bgs. Bedrock (mudstone) was observed at a depth of approximately 10 ft bgs to the bottom of the boring. The rig was advanced to a total depth of 26 ft bgs, with no observable saturated interval in the upper sand (alluvium) or Chinle formation. Because the well was to be installed in the upper sand (alluvium) and not in the Chinle formation, the boring was not advanced past 26 ft bgs and no monitoring well was installed. TOV concentrations ranged from 0 ppm at 25 ft bgs to 2.4 ppm at 5 ft bgs.

2.4 Well Installation

The nine monitoring wells installed were constructed using blank 2-inch schedule 40 polyvinyl chloride (PVC) casing and 2-inch schedule 40 PVC 0.01-inch slot screen. Silica sand was emplaced from the bottom of the borehole to approximately 2 feet (ft) above the top of the screen. The remaining annular space was filled with bentonite to 1 ft bgs followed by concrete to surface. Specific monitoring well construction information is provided below and summarized in Table 2-1:

- Monitoring well OW-66. The total depth of the boring was 26 ft bgs. TOV concentrations were less than 1 ppm from 0 to 14 ft bgs. TOV ranged from 1,150 ppm at 25 ft bgs to 1,891 ppm at 17 ft bgs. Water was encountered at 14 ft bgs. The screened interval was installed from 10 to 25 ft bgs, with sand from 8 to 26 ft bgs. A sanitary seal consisting of bentonite was then placed from 1 to 8 ft bgs, above which concrete was placed to surface. The well was completed with an approximately 3 ft tall 4-inch diameter aboveground steel monument with two crash bollards.
- Monitoring well OW-67. The total depth of the boring was 26 ft bgs. TOV concentrations ranged from 0 to 1.9 ppm, which was measured at 17 ft bgs. Water was encountered at 12.4 ft bgs. The screened interval was installed from 10 to 25 ft bgs, with sand from 8 to 26 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 8 ft bgs, above which concrete was placed to surface. The well was completed with an approximately 3 ft tall 4-inch diameter aboveground steel monument with a crash bollard.
- Monitoring well OW-68. The total depth of the boring was 26 ft bgs. TOV concentrations ranged from 0.8 at 2 ft bgs to 4.4 ppm at 23 ft bgs. Water was encountered at 21 ft bgs. The screened interval was installed from 5 to 25 ft bgs, with sand from 3 to 26 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 2 to 3 ft bgs, above which concrete was placed to surface. The well was completed with a flush mounted well box.
- Replacement monitoring well MKTF-01R. The total depth of the boring was 19 ft bgs. TOV concentrations ranged from 2.7 ppm at 17 ft bgs to 803 ppm at 5 ft bgs. Water was

encountered at 4 ft bgs during drilling; the depth to water (DTW) in June 2021 was 6.12 ft bgs. The screened interval was installed from 3 to 18 ft bgs, with sand 2 to 19 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 2 ft bgs, above which concrete was placed to surface. The well was completed with a flush-mounted well box.

- Replacement well MKTF-02R. The total depth of the boring was 19 ft bgs. Water was not encountered in the boring; however, a hydrocarbon odor was noted from ground surface to approximately 5 ft bgs, where the highest TOV reading was recorded (1,140 ppm). The DTW in June 2021 was 8.02 ft bgs. Because groundwater has historically been measured in MKTF-02, the replacement well was completed. The screened interval was installed from 3 to 18 ft bgs, with sand from 2 to 19 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 2 ft bgs, above which concrete was placed to surface. The well was completed with a flush mounted well box and a bollard.
- Replacement well MKTF-04R. The total depth of the boring was 20 ft bgs. TOV concentrations ranged from 0 to 405.9 ppm, measured at 9 ft bgs. Water was encountered at 8 ft bgs during drilling; the DTW in June 2021 was 9.22 ft bgs. The screened interval was installed 4 to 19 ft bgs, with sand 3 to 20 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 3 ft bgs, above which was placed concrete to surface. The well was completed with a flush mounted well box.
- Replacement well MKTF-17R. The total depth of the boring was 21 ft bgs. TOV concentrations ranged from 0 ppm at 21 ft bgs to 2,676 ppm at 5 ft bgs. Water was encountered at 6.5 ft bgs during drilling; the DTW in June 2021 was 15.15 ft bgs. The screened interval was from 5 to 20 ft bgs, with sand from 3 to 21 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 3 ft bgs, above which was placed concrete to surface. The well was completed with a flush mounted well box and a bollard.
- Replacement well MKTF-18R. The total depth of the boring was 26 ft bgs. TOV concentrations ranged from 3 ppm at 19 ft bgs to 1,554 ppm at 8 ft bgs. Water was encountered at 9.5 ft bgs during drilling; the DTW in June 2021 was 9.21 ft bgs. The screened interval was from 5 to 25 ft bgs, with sand from 3 to 26 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 1 to 3 ft bgs, above which was placed concrete to surface. The well was completed with a flush mounted well box.
- Replacement well RW-2R. The total depth of the boring was 33 ft bgs. TOV concentrations ranged from 51.1 ppm at 10 ft bgs to 1,348 ppm at 30 ft bgs. Water was encountered at 16.5 ft bgs during drilling; the DTW in June 2021 was 23.86 ft bgs. The screened interval was from 11.5 to 31.5 ft bgs, with sand from 9.5 to 33 ft bgs. A sanitary seal consisting of hydrated bentonite was then placed from 6.5 to 9.5 ft bgs, above which was placed concrete to surface. The well was completed with an approximately 3 ft tall 6-inch diameter aboveground steel monument.

2.5 Well Abandonment

Because wells MKTF-01, MKTF-02, MKTF-04, MKTF-17, MKTF-18, and RW-2 were not correctly constructed (i.e., the tops of the well screens were submerged below the water table surface and therefore could not monitor for the presence of SPH), they were abandoned after the replacement wells were installed. The above ground pipes were cut off at below ground surface. The total depth of the existing wells was measured, and a stinger pipe was placed to the bottom of the well. Cement was then tremied through the stinger pipe, filling the well from the bottom up. The concrete pads were destroyed and removed.

In the Comment 3 of the letter "Approval with Modifications, Hydrocarbon Seep Interim Measures 2021 Second Quarter Status Report" dated September 14, 2021, NMED stated, "Existing Wells MKTF-1, MKTF-2, MKTF-4, MKTF-17, and MKTF-18 must not be plugged and abandoned; they must be preserved at this time." However, the wells were abandoned in July 2021 and August 2021, in accordance with previous correspondence, before the September 2021 letter was received. The replacement wells will provide enhanced information (the ability to monitor for SPH) in addition to providing equivalent dissolved constituent data while reducing the liability of maintaining duplicative shallow groundwater wells.

2.6 Well Development

The depth to water and total depth were measured at the nine monitoring wells prior to well development. SPH was not detected in the wells except for RW-2R (apparent SPH thickness of 2.67 feet). For monitoring wells OW-67 and OW-68, 10 casing volumes were bailed from each well. Additional groundwater was then removed until the field parameters equilibrated. A YSI multiprobe meter was used to collect measurements (conductivity, pH, temperature, dissolved oxygen, and salinity). The remaining seven monitoring wells went dry during bailing the 10 casing volumes; therefore, groundwater measurements were collected during purging and sampling on September 17, 2021. Well development field forms are included as Appendix B.

2.7 Elevation Survey

The nine monitoring wells were surveyed after completion by a licensed New Mexico land surveyor. The two borings (OW-13A and OW-69) were logged with a hand-held global positioning system device. The elevations will be submitted in the 2021 annual groundwater report.

2.8 Investigation Derived Waste

Soil generated during drilling was drummed and transferred to the 90-day storage pad and samples collected. The labeled drums will be shipped off site to an appropriate disposal facility after data are received. Water generated during development, purging, and sampling activities was placed into a labeled drum for processing by the Refinery.

3.0 Sample Collection and Analytical Results

This section presents soil and groundwater sample collection and data results. Soil results are summarized in Tables 3-1 through 3-4. Groundwater results are summarized in Tables 3-5 through 3-10.

3.1 Sample Collection and Analysis

Samples were collected for analysis following procedures outlined in the approved work plans, "Work Plan 2015 Annual Groundwater Report Comments", dated October 2018, and revised June & October 2019 (DiSorbo 2019a) and "Work Plan SMW-2 and GWM-1 Areas" dated August 2018 and revised August 2019 (DiSorbo 2019b). The monitoring well installations followed their respective work plans.

3.1.1 Soil Sampling

Soil samples were collected in two separate events, July 19 to July 22, 2021, and August 13 to August 16, 2021. Two soil samples from each boring were selected for analysis, one at the depth with the highest PID reading and one at the bottom of the boring. Samples were collected as follows:

- MKTF-01R at 6 ft bgs and 18 ft bgs
- MKTF-02R at 6 ft bgs and 18 ft bgs
- MKTF-04R at 8.2 to 8.7 ft bgs and 19.5 to 20 ft bgs
- MKTF-17R at 6.5 to 7 ft bgs and 20.5 to 21 ft bgs
- MKTF-18R at 9.5 to 10 ft bgs and 25.5 to 26 ft bgs
- OW-13A at 14 ft bgs and 25.5 ft bgs
- OW-66 at 18 ft bgs and 25 ft bgs
- OW-67 at 17 ft bgs and 26 ft bgs
- OW-68 at 22 ft bgs and 26 ft bgs
- OW-69 at 6 ft bgs and 26 ft bgs
- RW-2R at 16.5 to 17 ft bgs and 32.5 to 33 ft bgs

Duplicates were collected at MKTF-17R (20.5 to 21 ft bgs) and RW-2R (16.5 to 17 ft bgs). Soil samples were submitted for analysis of:

- Total Petroleum hydrocarbons, gasoline range organics (TPH-GRO) by Environmental Protection Agency (EPA) Method 8015M/D
- TPH, diesel range organics (TPH-DRO) by EPA Method 8015D
- TPH, motor oil range organics (TPH-MRO) by EPA Method 8015D

- Volatile Organic Compounds (VOCs) including fuel oxygenates by EPA Method 8260B
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270
- Resource Conservation Recovery Act (RCRA) Metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver, and iron and manganese by EPA Method 6010B

3.1.2 Soil Sample Results

TPH and benzene, toluene, ethylbenzene, and xylenes (BTEX) data are presented in Table 3-1; VOC data are presented in Table 3-2; SVOC data are presented in Table 3-3; and metals data are presented in Table 3-4. Data were compared to the 2019 NMED Residential and Industrial Soil Screening Levels (RSSLs and ISSLs, respectively) (NMED 2019). None of the soil samples exceed RSSLs or ISSLs for TPH-DRO, TPH-MRO, BTEX, MTBE, VOCs, SVOCs, or metals. TPH GRO exceeded the screening levels in several borings. TPH-GRO data are summarized below.

- MKTF-01R. The sample collected at 6 ft bgs had an estimated TPH-GRO concentration of an estimated concentration (J) 1,100 milligrams per kilogram (mg/kg), exceeding the RSSL and ISSL (100 mg/kg and 500 mg/kg, respectively). The sample collected at the bottom of the boring (18 ft bgs) did not exceed the RSSL or ISSL.
- MKTF-02R. The sample collected at 6 ft bgs had an estimated TPH-GRO concentration of 260 J mg/kg, exceeding the RSSL (100 mg/kg) and not exceeding the ISSL. The sample collected at the bottom of the boring (18 ft bgs) did not exceed the RSSL or ISSL.
- MKTF-04R. The sample collected at 8.2 to 8.7 ft bgs had a TPH-GRO concentration of 300 mg/kg, exceeding the RSSL (100 mg/kg) and not exceeding the ISSL. The sample collected at the bottom of the boring (19.5 to 20 ft bgs) did not exceed the RSSL or ISSL.
- MKTF-17R. The sample collected at 6.5 to 7 ft bgs had a TPH-GRO concentration of 2,100 mg/kg, exceeding RSSL and ISSL (100 mg/kg and 500 mg/kg, respectively). The sample collected at the bottom of the boring (20.5 to 21 ft bgs) did not exceed the RSSL or ISSL.
- MKTF-18R. The sample collected at 9.5 to 10 ft bgs had a TPH-GRO concentration of 2,400 mg/kg, exceeding the RSSL and ISSL (100 mg/kg and 500 mg/kg, respectively. The sample collected at the bottom of the boring (25.5 to 26 ft bgs) did not exceed the RSSL or ISSL.
- OW-13A. Neither sample exceeded the RSSL or ISSL.
- OW-66. The sample collected at 18 ft bgs had a TPH-GRO concentration of 1,800 mg/kg, exceeding the RSSL and ISSL (100 mg/kg and 500 mg/kg, respectively). The sample collected at the bottom of the boring (26 ft bgs) did not exceed the RSSL or ISSL.
- OW-67. Neither sample exceeded the RSSL or ISSL.
- OW-68. Neither sample exceeded the RSSL or ISSL.

- OW-69. Neither sample exceeded the RSSL or ISSL.
- RW-2R. The sampled collected at 16 to 17 ft had a TPH-GRO concentration of 1,900 mg/kg, exceeding the RSSL and ISSL (100 mg/kg and 500 mg/kg, respectively). The sample collected at the bottom of the boring (32.5 to 33 ft bgs) did not exceed the RSSL or ISSL.

Iron and manganese results were inadvertently left off the analyte list for OW-67, OW-68, and OW-69 (Western 2021). Those data are included in this report. As indicated above, the samples were below RSSLs and ISSLs.

Soil laboratory reports are included as Appendix C.

3.2 Groundwater Sampling and Results

Samples were collected for analysis following procedures outlined in the approved work plans, "Work Plan 2015 Annual Groundwater Report Comments" dated October 2018 and revised June & October 2019 (DiSorbo 2019a) and "Work Plan SMW-2 and GWM-1 Areas" dated August 2018 and revised August 2019 (DiSorbo 2019b).

3.2.1 Groundwater Sampling

Samples were collected from eight of the nine new monitoring wells on September 17, 2021: MKTF-01R, MKTF-02R, MKTF-04R, MKTF-17R, MKTF-18R, OW-66, OW-67, and OW-68. Replacement well RW-2R was not sampled due to the presence of SPH. A duplicate sample was collected from MKTF-18R. Groundwater samples were submitted for analysis of:

- TPH-GRO by EPA Method 8015D
- TPH-DRO by EPA Method 8015D
- TPH-MRO by EPA Method 8015D
- VOCs (including fuel oxygenates) by EPA Method 8260B
- SVOCs by EPA Method 8270C and 8270SIM
- Total Metals: barium, beryllium, cadmium, calcium, chromium, cobalt, iron, magnesium, manganese, nickel, potassium, silver, sodium, vanadium, and zinc by EPA Method 200.7; antimony, arsenic, lead, and selenium by EPA Method 200.8; and mercury by EPA Method 245.1
- Dissolved Metals: barium, beryllium, cadmium, chromium, cobalt, iron, manganese, nickel, silver, vanadium, and zinc by EPA Method 200.7; antimony, arsenic, lead, and selenium by EPA Method 200.8; and mercury by EPA Method 245.1
- Anions: fluoride, chloride, nitrate-nitrogen (as N), nitrite-nitrogen (as N), and sulfate by EPA Method 300.0



- Alkalinity: bicarbonate (as CaCO3), carbonate (as CaCO3), and total alkalinity (as CaCO3) by method SM2320B

3.2.2 Fluid Level Measurements

Fluid levels were measured during well development and sample collection. The data are provided in Table 2-1. Observable SPH thickness was measured in replacement well RW-2R at 2.67 ft. Replacement well RW-2R was not sampled for analytical parameters.

3.2.3 Groundwater Analytical Results

Groundwater was analyzed for VOCs (Table 3-5), SVOCs (Table 3-6), total and dissolved metals (Table 3-7 and 3-8, respectively), and general chemistry (Table 3-9). Field parameters collected during sample collection are provided in Table 3-10. Laboratory data and the data validation report are provided in Appendices C and D, respectively. Data were compared to applicable cleanup levels as indicated on Tables 3-5 through 3-9.

VOCs

A summary of the groundwater data exceeding applicable VOC cleanup levels is provided below.

- MKTF-01R. VOC results from MKTF-01R showed estimated (J) concentrations of 1,2,4-trimethylbenzene (310 J micrograms per liter [ug/L]), 1-methyl naphthalene (28 J ug/L), benzene (7,100 J ug/L), and naphthalene (52 J ug/L). Vinyl chloride and xylenes were detected at 22 ug/L and 850 ug/L, respectively.
- MKTF-02R. VOC results from MKTF-02R showed estimated concentrations of benzene (29 J ug/L). Other VOCs detected above standards include 1,1,2-trichloroethane (7.9 ug/L), 1,1-dichloroethane (110 ug/L), 1,1-dichloroethene (280 ug/L), 1,2-dichloroethane (67 ug/L), and trichloroethene (23 ug/L).
- MKTF-04R. VOC results from MKTF-04R showed estimated concentrations of 1,2,4-trimethylbenzene (160 J ug/L), 1-methylnaphthalene (48 J ug/L), 2-methylnaphthalene (59 J ug/L), benzene (1,100 J ug/L), MTBE (1,600 J ug/L), and naphthalene (81 J ug/L). Other VOC results detected above standards include 1,1-dichloroethane (35 ug/L) and 1,1-dichloroethene (45 ug/L).
- MKTF-17R. VOC results from MKTF-17R showed estimated concentrations of 1,2,4-trimethylbenzene (430 J ug/L), 1,3,5-trimethylbenzene (120 J ug/L), 1-methylnaphthalene (27 J ug/L), benzene (1,600 J ug/L), MTBE (3,900 J ug/L), naphthalene (72 J ug/L), and toluene (5,400 J ug/L). Other VOC results detected above standards included xylenes (2,700 ug/L).
- MKTF-18R. VOC results from MKTF-18R showed estimated concentrations of 1,1-dichloroethane (32 J ug/L), 1,2,4-trimethylbenzene (780 J ug/L), 1-methylnaphthalene (200 J ug/L), 2-methylnaphthalene (300 J ug/L), benzene (3,700 J ug/L), MTBE (200 J ug/L), naphthalene (77 J ug/L), and toluene (1,800 J ug/L).

- OW-66. VOC results from OW-66 showed estimated concentrations of 1,2,4-trimethylbenzene (1,300 J ug/L), 1,3,5-trimethylbenzene (350 J ug/L), 2-methylnaphthalene (61 J ug/L), benzene (12,000 J ug/L), bromodichloromethane (2.1 J ug/L), chloromethane (28 J ug/L), dibromochloromethane (6.2 J ug/L), ethylbenzene (720 J ug/L), MTBE (680 J ug/L), and toluene (9,200 J ug/L). Other VOCs include naphthalene (130 ug/L) and xylenes (6,200 ug/L).
- OW-67. No VOCs were detected above applicable standards.
- OW-68. No VOCs were detected above applicable standards.

SVOCs

A summary of the groundwater data exceeding applicable SVOC cleanup levels is provided below.

- MKTF-01R. No SVOCs were detected above applicable standards.
- MKTF-02R. No SVOCs were detected above applicable standards.
- MKTF-04R. No SVOCs were detected above applicable standards..
- MKTF-17R. SVOC results from MKTF-17R showed estimated concentrations of 1-methylnaphthalene (15 J ug/L) and naphthalene (38 J ug/L).
- MKTF-18R. SVOC results from MKTF-18R showed estimated concentrations of 1-methylnaphthalene (27 J ug/L) and naphthalene (87 J ug/L).
- OW-66. SVOC results from OW-66 showed estimated concentrations of 1-methylnaphthalene (33 J ug/L) and 2-methylnaphthalene (51 J ug/L). Other SVOCs detected above standards include naphthalene (110 ug/L).
- OW-67. No SVOCs were detected above applicable standards.
- OW-68. No SVOCs were detected above applicable standards.

Total Metals

A summary of the groundwater data exceeding applicable metals cleanup levels is provided below.

- MKTF-01R. Total metals exceeding standards included barium (5,400 ug/L), cobalt (12 ug/L), and manganese (3,400 ug/L).
- MKTF-02R. No total metals were detected above applicable standards.
- MKTF-04R. Total metals exceeding standards included cobalt (9 ug/L) and manganese (2,700 ug/L).
- MKTF-17R. Total metals exceeding standards included manganese (3,400 ug/L).
- MKTF-18R. Total metals results from MKTF-18R showed estimated concentrations of iron (17,000 J ug/L), lead (46 J ug/L), and manganese (2,900 J ug/L). Other total metals exceeding standards included barium (2,000 ug/L) and cobalt (15 ug/L).

- OW-66. Total metals results from OW-66 showed estimated concentrations of nickel (380 J ug/L). Other total metals exceeding standards included cobalt (10 ug/L) and manganese (2,600 ug/L).
- OW-67. Total metals results from OW-67 showed estimated concentrations of cobalt (29 J ug/L). Other total metals exceeding standards included manganese (8,000 ug/L).
- OW-68. Total metals exceeding standards included cobalt (100 ug/L), fluoride (6,400 ug/L), and manganese (11,000 ug/L).

Dissolved Metals

A summary of the groundwater data exceeding applicable metals cleanup levels is provided below.

- MKTF-01R. Dissolved metals results from MKTF-01R showed estimated concentrations of arsenic (6.6 J ug/L). Other dissolved metals exceeding standards included barium (4,700 ug/L), cobalt (8 ug/L), and manganese (3,100 ug/L).
- MKTF-02R. No dissolved metals exceeded applicable standards.
- MKTF-04R. Dissolved metals results from MKTF-04R showed estimated concentrations of arsenic (3.6 J ug/L). Other dissolved metals exceeding standards included manganese (2,400 ug/L).
- MKTF-17R. Dissolved metals results from MKTF-17R showed estimated concentrations of arsenic (4.6 J ug/L). Other dissolved metals exceeding standards included manganese (2,800 ug/L).
- MKTF-18R. Dissolved metals results from MKTF-18R showed estimated concentrations of arsenic (2.6 J ug/L). Other dissolved metals exceeding standards included cobalt (8.8 ug/L).
- OW-66. Dissolved metals results from OW-66 showed estimated concentrations of arsenic (3.7 J ug/L). Other dissolved metals exceeding standards included cobalt (8.4 ug/L) and manganese (2,400 ug/L).
- OW-67. Dissolved metals results from OW-67 showed estimated concentrations of arsenic (2.3 J ug/L). Other dissolved metals exceeding standards included cobalt (11 ug/L) and manganese (7,400 ug/L).
- OW-68. Dissolved metals results from OW-68 showed estimated concentrations of arsenic (5.5 J ug/L). Other dissolved metals exceeding standards included cobalt (79 ug/L) and manganese (9,600 ug/L).

General Chemistry

A summary of the groundwater general chemistry data exceeding applicable cleanup levels is provided below.

- MKTF-01R. TPH-DRO, TPH-GRO, and TPH-ORO exceeded applicable standards at 2,200 ug/L, 5,200 ug/L, and 96 ug/L, respectively.
- MKTF-02R. Chloride, TPH-DRO, and TPH-GRO exceeded applicable standards at 1,800,000 ug/L, 220 ug/L, and 560 ug/L, respectively. Sulfate had an estimated concentration exceeding standards of 710,000 J ug/L.
- MKTF-04R. Chloride, TPH-DRO, and TPH-GRO exceeded applicable standards at 1,200,000 ug/L, 1,200 ug/L, and 19,000 ug/L, respectively.
- MKTF-17R. TPH-DRO and TPH-GRO exceeded applicable standards at 1,800 ug/L and 29,000 ug/L, respectively.
- MKTF-18R. TPH-DRO and TPH-GRO had estimated concentrations exceeding standards of 2,600 J ug/L and 5,000 J ug/L, respectively.
- OW-66. Chloride, TPH-DRO, and TPH-GRO exceeded applicable standards at 320,000 ug/L, 4,000 ug/L, and 69,000 ug/L, respectively.
- OW-67. Chloride, TPH-DRO, and TPH-GRO exceeded applicable standards at 4,900,000 ug/L, 560 ug/L, and 410 ug/L, respectively. Sulfate had an estimated concentration exceeding standards of 760,000 J ug/L.
- OW-68. Chloride, TPH-DRO, TPH-GRO, and TPH-ORO exceeded applicable standards at 5,100,000 ug/L, 1,100 ug/L, 1,700 ug/L, and 120 ug/L, respectively. Sulfate had an estimated concentration exceeding standards of 800,000 J ug/L.



4.0 Summary and Conclusions

The Refinery proposed the installation of 13 monitoring wells: 6 existing wells were to be abandoned and replaced due to submerged well screens. 7 new monitoring wells were planned to be installed to aid in evaluation of the SPH and dissolved-phase plumes. However, 4 of the 7 new monitoring wells were not installed for the following reasons; groundwater was not encountered during drilling in two of the borings, the shallow monitoring well adjacent to OW-13 (boring OW-13A) and the monitoring well east of EP-2 (boring OW-69), and, property access was not granted for the two off-site monitoring wells (west of monitoring well OW-1 and northeast of monitoring well OW-30). In summary, six wells were abandoned, and nine wells were installed.

The objectives presented in Section 1.2 were met and the key findings are described below.

- Replacement wells MKTF-01R, MKTF-02R, MKTF-04R, MKTF-17R, MKTF-18R, and RW-2R were installed such that the well screens are appropriately positioned to allow SPH, if present, to enter the well. Soil samples were collected at the zone with the highest TOV reading and at the bottom of the boring. TPH-GRO was detected in each soil sample at or near the zone with the highest TOV reading exceeding the RSSL and ISSL, with the exception of MKTF-02R and MKTF-04R where samples only exceeded the RSSL. The other target soil analytes were below the ISSLs and RSSLs. Groundwater was collected from the replacement wells except for well RW-2R, which had SPH. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. The samples had detections of VOCs indicative of gasoline and chlorinated VOCs above groundwater standards. SVOCs above groundwater standards were limited to naphthalene and 1-methylnaphthalene. Total barium, cobalt, iron, lead, and manganese were detected above standards in most samples. Dissolved metal detections primarily consisted of barium, cobalt, and manganese. General chemistry detections above standards were primarily TPH-DRO and TPH-GRO. Chloride was detected above standards in two wells; sulfate and TPH-ORO were detected in one well above standards.
- Monitoring well OW-66 was installed between monitoring wells OW-13 and OW-29 to further evaluate groundwater flow direction in the area. Soil samples were collected at the zone with the highest TOV reading and at the bottom of the boring. TPH-GRO in soil was detected at or near the zone with the highest TOV reading, exceeding the RSSL and ISSL. The other target soil analytes were below the ISSLs and RSSLs. A groundwater sample was collected from the well. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. The samples had detections of VOCs indicative of gasoline and chlorinated VOCs above groundwater standards. SVOCs above groundwater standards were limited to 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene. Total and dissolved cobalt and manganese and total

nickel were detected in the sample above standards. General chemistry data exceedances above standards included chloride, TPH-DRO, and TPH-GRO exceeded the applicable standards.

- There were some groundwater analytes that had detection limits that exceeded the applicable standards. Groundwater analytes included: 1,2,3-Trichloropropane, 1,2-Dibromo-3-Chloropropane, 1,2-Dibromoethane, Hexachlorobutadiene, 2,6-Dinitrotoluene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Bis(2-chloroethyl)ether, Dibenzo(a,h)anthracene, Hexachlorobenzene, Hexachlorocyclopentadiene, Indeno(1,2,3-cd)pyrene, N-Nitrosodimethylamine, N-Nitrosodi-n-propylamine, total beryllium, total cadmium, and TPH-ORO. 1-Methylnapthalene had a standard exceedance that was evaluated to be undetected at the reported concentration in data validation, resulting in a non-detect standard exceedance. Vinyl chloride also had one non-detect standard exceedance. It should be noted that standard exceedances, even if a non-detection, are considered data quality exceptions. Therefore, those values cannot evaluate compliance for those constituents.
- Boring OW-13A was installed to assess the dissolved-phase MTBE in the groundwater in the vicinity of the deep monitoring well OW-13. Groundwater was not encountered in boring OW-13A and, therefore, no well was installed. Based on the boring log for OW-13A (Appendix A), no olfactory or visual evidence of SPH was observed. In addition, soil analytical data did not show the presence of TPH, VOC, or SVOC constituents, including MTBE. Analytical results indicate that total metals concentrations were below the ISSLs and RSSLs.
- Monitoring wells OW-67 and OW-68 were installed in the upper sand (alluvium) aquifer to assess elevated detections of chloride and sulfate observed at monitoring well SMW-2 that may be attributable to EP-2 by installing the wells at depths corresponding to the base of EP-2. The investigation indicates that the source of sulfate and chloride is not EP-2. TPH-GRO was detected in monitoring well OW-66 exceeding the RSSL and ISSL. Soil samples collected from borings OW-67 and OW-68 did not show the presence of TOC, VOC, or SVOC constituents, and metals concentrations were below the ISSLs and RSSLs. Groundwater was collected from the monitoring wells. VOCs, SVOCs, total and dissolved metals, and general chemistry analytes were detected in the wells; however, several of the detections were an estimated or "J" concentration. No VOCs or SVOCs were detected above applicable standards. Total and dissolved cobalt, and manganese were detected in the sample above standards. Total fluoride exceeded the standard in monitoring well OW-68. General chemistry data exceedances above standards included chloride, sulfate, TPH-DRO, and TPH-GRO exceeded the applicable standards. TPH-ORO was also detected above the standard in monitoring well OW-68.
- Boring OW-69 was drilled to delineate the extent of the SPH that was detected in GWM-1. It is located downgradient of GWM-1 and halfway between the eastern perimeter of pond EP-2 and the aeration lagoons to evaluate the extent of SPH. A well was to be installed in the upper sand (alluvium) aquifer at this location; however, groundwater was not encountered in boring OW-69

in the upper sand (alluvium) or Chinle formation. Therefore, no well was installed. Based on the boring log for OW-69 (Appendix A), no olfactory or visual evidence of SPH was observed. In addition, soil analytical data did not show the presence of TPH, VOC, or SVOC constituents. Analytical results indicated that total metals concentrations were below the ISSLs and RSSLs. Based on the soil analytical data, the SPH extent has been delineated.

- Two proposed monitoring wells, located off site of the Refinery property, were not installed. The off-site monitoring wells will be installed after access is obtained from the property owners.



5.0 References

DiSorbo Environmental Consulting Firm (DiSorbo). 2019a. Work Plan 2015 Annual Groundwater Report Comments, Revised. October.

DiSorbo. 2019b. Work Plan SMW-2 and GWM-1 Areas, Gallup Refinery, Marathon Petroleum Company, Gallup, New Mexico, EPA ID# NMD000333211, Revised. August.

New Mexico Environment Department (NMED). 2019. Risk Assessment Guidance for Investigations and Remediation, Volume I, Soil Screening Guidance for Human Health Risk Assessments, Revision 2. June 19.

United States Environmental Protection Agency (USEPA). 2021. Regional Soil Screening Levels. September. Available from: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.

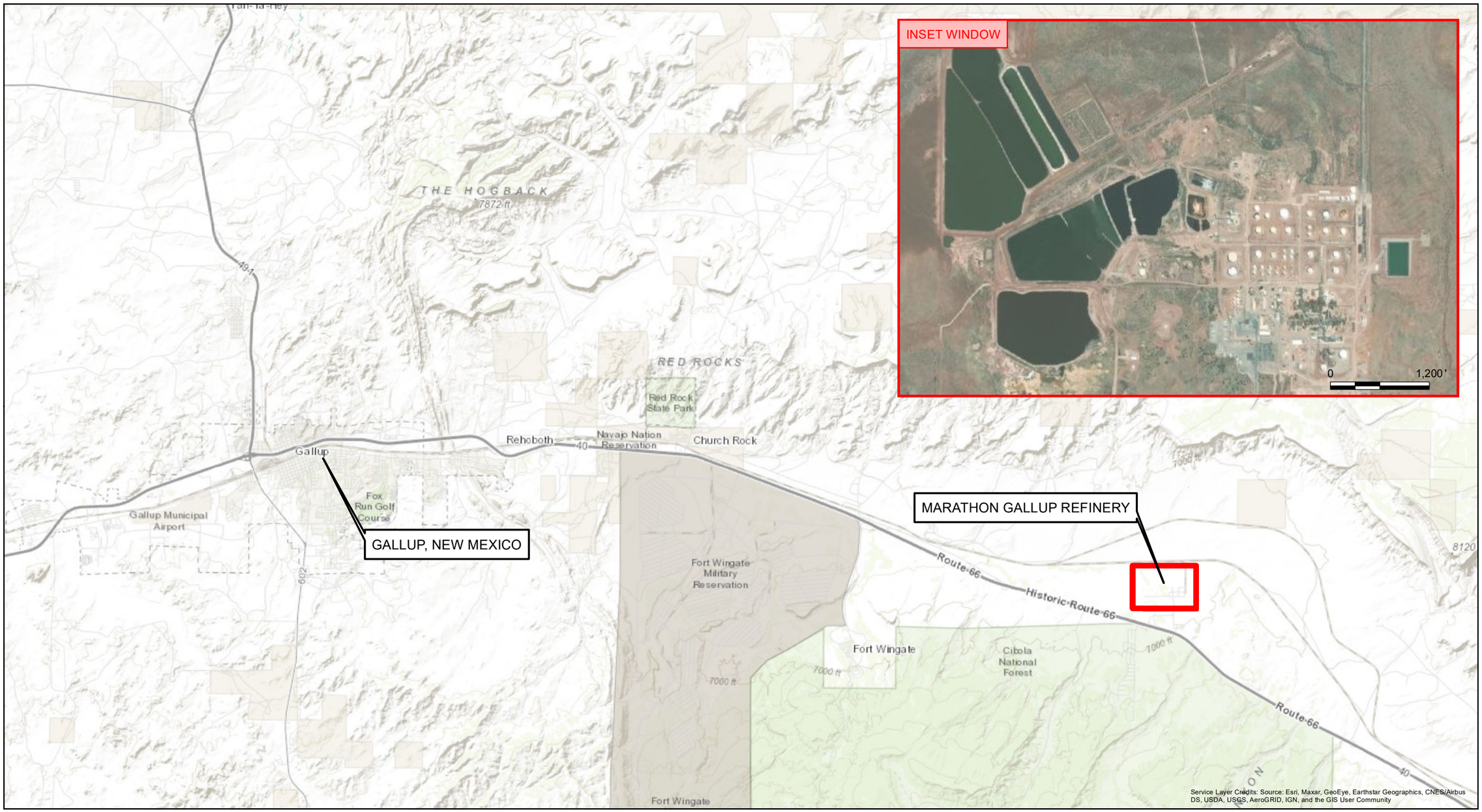
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Figures

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Received by OCD: 10/21/2022 2:38:50 PM



NOTE:

SITE LEGAL DESCRIPTION: TOWNSHIP 15 NORTH, RANGE 15 WEST, SECTION 33

N

0 2 Miles

Trihydro CORPORATION
1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 1-1

SITE LOCATION MAP

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

Drawn By: JDH	Checked By: LA	Scale: 1 " = 2 miles	Date: 10/8/21	File: 1-1_SiteLocation_Fig1-1.mxd

M:\TOM\MARATHON\GIS\GALLUP\MAPPING\SITEWIDE - FIGURES\WELLS\2021\07_REFINERY\ADDITIONALWELLSINSTALL\1-1_SITELOCATION_FIG1-1.MXD



Image Cite: DigitalGlobe © CNES (2019) Distribution Airbus DS © Microsoft Corporation, BING Imagery

EXPLANATION

OW-66	NEWLY INSTALLED MONITORING WELL AND DESIGNATION
OW-69	NEWLY INSTALLED SOIL BORING AND DESIGNATION
RW-2R	NEWLY INSTALLED RECOVERY WELL AND DESIGNATION
MKTF-01	NEWLY ABANDONED WELL AND DESIGNATION
RW-2	NEWLY ABANDONED RECOVERY WELL AND DESIGNATION

N

0 350' 700'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
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(P) 307/745.7474 (F) 307/745.7729

FIGURE 2-1

NEW WELL LOCATIONS AND ABANDONED WELLS JULY AND AUGUST 2021

WESTERN REFINING SOUTHWEST LLC MARATHON GALLUP REFINERY GALLUP, NEW MEXICO

Drawn By: REP	Checked By: BN	Scale: 1" = 350'	Date: 3/9/22	File: 697-NEWWELLS-202203

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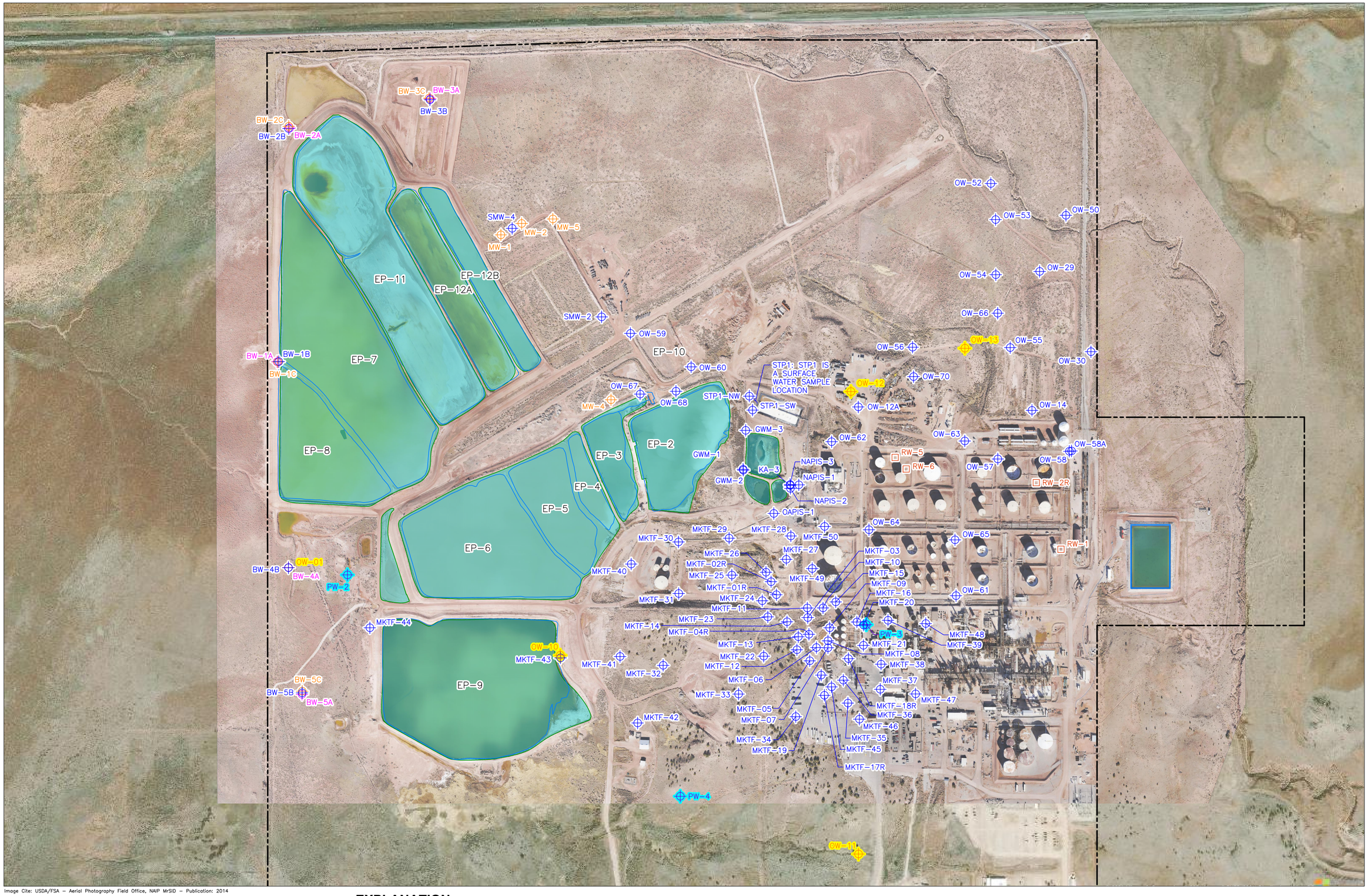


Image Cite: USDA/FSA – Aerial Photography Field Office, NAIP MrSID – Publication: 2014

EXPLANATION

SMW-2	ALLUVIAL/FLUVIAL UPPER SAND WELL AND DESIGNATION
OW-11	CHINLE/ALLUVIUM INTERFACE WELL AND DESIGNATION
OW-10	SONSELA WELL AND DESIGNATION
PW-4	RAW WATER PRODUCTION WELL AND DESIGNATION
RW-6	RECOVERY WELL AND DESIGNATION
	DEEP WELL
	PRODUCTION WELL
	SURFACE WATER

N

0 400' 800'

Trihydro CORPORATION
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FIGURE 2-2

FACILITY AND WELL LOCATIONS

WESTERN REFINING SOUTHWEST LLC
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

Drawn By: REP	Checked By: BN	Scale: 1" = 400'	Date: 3/9/22	File: 697-WELLLOCS-202203

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Tables

TABLE 1-1. WELL LIST
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well	Location	Objective	Abandon & Replace or New?	Geologic Unit	Reference
MKTF-01R	Adjacent to MKTF-01	The screens in wells MKTF-01, -02, -04, -17, and -18 have historically been or are currently (as of 2019) submerged. NMED requested replacement wells with appropriate screened intervals to delineate the SPH plume.	Abandon & Replace	Chinle-Alluvium Interface	2018. NMED. Disapproval, Annual Groundwater Monitoring Report, Gallup Refinery - 2015, Comment 40. January 31.
MKTF-02R	Adjacent to MKTF-02		Abandon & Replace	Chinle-Alluvium Interface	2018. NMED. Disapproval, Annual Groundwater Monitoring Report, Gallup Refinery - 2015, Comment 40. January 31.
MKTF-04R	Adjacent to MKTF-04		Abandon & Replace	Chinle-Alluvium Interface	2018. NMED. Disapproval, Annual Groundwater Monitoring Report, Gallup Refinery - 2015, Comment 40. January 31.
MKTF-17R	Adjacent to MKTF-17		Abandon & Replace	Chinle-Alluvium Interface	2018. NMED. Disapproval, Annual Groundwater Monitoring Report, Gallup Refinery - 2015, Comment 40. January 31.
MKTF-18R	Adjacent to MKTF-18		Abandon & Replace	Chinle-Alluvium Interface	2018. NMED. Disapproval, Annual Groundwater Monitoring Report, Gallup Refinery - 2015, Comment 40. January 31.
RW-2R	Adjacent to RW-2	The screen in well RW-2 has historically been or is currently (as of 2019) submerged. NMED requested a replacement well be installed with the appropriate screened interval to delineate the SPH plume.	Abandon & Replace	Chinle-Alluvium Interface	2019. NMED. Disapproval, Work Plan 2015 Annual Groundwater Report Comments, Western Refining Southwest, Inc., Gallup Refinery, Comment 4, January 28.
OW-66	Midway between OW-29 and OW-13	Wells OW-50 and OW-52 may be located cross-gradient relative to the piezometric groundwater flow direction and a change of flow direction from north to west may be occurring between well OW-13 (screened in the Sonsela formation) and well OW-29 (screened in the Chinle formation). NMED requested a well screened across the Chinle-Alluvium interface between well OW-13 and well OW-29 to clarify groundwater flow direction.	New	Chinle-Alluvium Interface	2018. NMED. Disapproval, Annual Groundwater Monitoring Report, Gallup Refinery - 2015, Comment 18.3. January 31.
OW-13A [1] (Not Installed)	Adjacent to OW-13 (shallow)	The MTBE plume may be migrating in a westerly direction. Although well OW-13 is appropriately located to define the west boundary of the plume, well OW-13 is screened in the Sonsela formation and not monitoring the same stratigraphic units as other monitoring wells in the area. Therefore, well OW-13 may not provide relevant information to characterize the groundwater flow direction or detect the MTBE/benzene plumes. NMED requested a well screened across the Chinle-Alluvium interface in the vicinity of OW-13 to clarify groundwater flow direction.	New	Chinle-Alluvium Interface	2018. NMED. Disapproval, Annual Groundwater Monitoring Report, Gallup Refinery - 2015, Comment 18.4. January 31.
OW-67	Near MW-4 (north boundary of EP-2)	The initial site investigation identified the Land Treatment Unit as a potential source of elevated chloride and sulfate concentrations detected in well SMW-2. The investigation report recommended additional evaluation at evaporation pond EP-2 by installing two monitoring wells.	New	Uppermost saturated interval (i.e., Upper Sand)	This area was initially identified by the New Mexico Environment Department (NMED) in comment letters regarding the 2013 and 2014 Annual Wide Ground Water Monitoring Reports as requesting additional groundwater monitoring wells and again in the a comment letter on the 2016 Annual Ground Water Monitoring Report. The *Investigation Work Plan SMW-2 and GWM-1 Areas* was approved by NMED on July 1, 2020.
OW-68	Between MW-4 and OW-60 (north boundary of EP-2)		New	Uppermost saturated interval (i.e., Upper Sand)	
OW-69 [1] (Not Installed)	Between GWM-1 and EP-2	SPH was observed in GWM-1 in 2016. Due to the location of GWM-1, a potential source of SPH is the aeration lagoons AL-1 and AL-2. NMED requested a monitoring well downgradient from well GWM-1 (halfway between the eastern perimeter of pond EP-1 and well GWM-1) to evaluate the extent of SPH in the shallow aquifer. The well would also serve as a sentinel well for the eastern perimeter of EP-2.	New	Shallow	2018. NMED. Disapproval, Annual Groundwater Monitoring Report, Gallup Refinery - 2016, Comment 9. June 4. 2019. NMED. Disapproval, Investigation Work Plan [SMW-2] and [GWM-1] Areas. February 20. The *Investigation Work Plan SMW-2 and GWM-1 Areas* was approved by NMED on July 1, 2020.
Not Installed [2]	West of OW-1	Well OW-1 has had MTBE detections below the applicable standard during 2017. NMED believes this could be the leading edge of the MTBE plume. Because there is a water supply well approximately 1-mile downgradient, MPC must ensure that no contaminants migrate further downgradient of OW-1 and off site. NMED has requested a sentinel well screened in the Sonsela formation west of OW-1 to monitor for potential MTBE migration.	New	Sonsela	2018. NMED. Disapproval, Annual Groundwater Monitoring Report, Gallup Refinery - 2015, Comment 22. January 31.
Not Installed [2]	NE of OW-30	MTBE has been detected in OW-30 at concentrations above the applicable standard since 2007. NMED noted that the data also have shown a steady increase indicating that the MTBE plume may be migrating in a northeastern direction. Since there is no monitoring well to define northeastern extent of the plume beyond the property boundary, NMED has requested a monitoring well be installed approximately 500 feet northeast of well OW-30 to delineate the potential plume. The new well should be screened across the Chinle-Alluvium interface.	New	Chinle-Alluvium Interface	2018. NMED. Disapproval, Annual Groundwater Monitoring Report, Gallup Refinery - 2015, Comment 18.2. January 31.

TABLE 2-1. WELL CONSTRUCTION AND GAUGING DATA
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)	Ground Elevation Inside Steel Sleeve (ft)	Stick-up length (ft)	Well Casing Bottom Elevation (ft)	Total Well Depth (ft)	Depth to SPH (ft)	SPH Column Thickness (ft)	DTW (ft)	GW Elevation (ft)	Corrected Water Table[1] Elevation (ft)	Screened Interval Depth Top to Bottom (ft)	Stratigraphic unit in which screen exists
MKTF-01R	09/17/21	07/22/21	2	6,921.82	6,921.62	NA	-0.20	6,902.87	18.75	NM	NA	3.40	6,918.22	6918.22	3 - 18	Chinle/Alluvium Interface
MKTF-02R	09/17/21	07/22/21	2	6,920.46	6,922.93	NA	2.47	6,901.43	21.50	NM	NA	16.10	6,906.83	6906.83	3 - 18	Chinle/Alluvium Interface
MKTF-04R	09/17/21	08/16/21	2	6,938.49	6,937.96	NA	-0.53	6,918.76	19.20	NM	NA	9.60	6,928.36	6928.36	4 - 19	Chinle/Alluvium Interface
MKTF-17R	09/17/21	08/14/21	2	6,950.61	6,950.20	NA	-0.41	6,929.75	20.45	NM	NA	11.93	6,938.27	6938.27	5 - 20	Chinle/Alluvium Interface
MKTF-18R	09/17/21	08/14/21	2	6,955.29	6,954.87	NA	-0.42	6,929.32	25.55	NM	NA	9.58	6,945.29	6945.29	5 - 25	Chinle/Alluvium Interface
OW-13A	NA	Dry Hole	NA	NS	NS	NA	NA	NA	25.50	NA	NA	NA	NA	NA	NA	Chinle/Alluvium Interface
OW-66	09/17/21	07/19/21	2	6,919.80	6,922.35	NA	2.55	6,894.52	27.83	NM	NA	18.21	6,904.14	6904.14	10 - 25	Chinle/Alluvium Interface
OW-67	09/17/21	07/20/21	2	6,900.73	6,903.29	NA	2.56	6,875.54	27.75	NM	NA	12.40	6,890.89	6890.89	10 - 25	Chinle/Alluvium Interface
OW-68	09/17/21	07/21/21	2	6,888.68	6,891.51	NA	2.83	6,863.29	28.22	NM	NA	14.22	6,877.29	6877.29	5 - 26	Chinle/Alluvium Interface
OW-69	NA	Dry Hole	NA	NS	NS	NA	NA	NA	26.00	NA	NA	NA	NA	NA	NA	Chinle/Alluvium Interface
RW-2R	SPH - NA	08/13/21	4	6,931.04	6,934.21	NA	3.17	6,898.50	35.71	22.21	2.67	24.88	6,909.33	6911.47	11.5 - 31.5	Chinle/Alluvium Interface

Definitions:
NA = not applicable
DTW = depth to water
SPH = separate phase hydrocarbons
NS = Not Surveyed
NM = Not Measured
DRY = no water detected
in = inch
ft = feet

Notes:
1. Corrected Water Table Elevation applies only if SPH thickness column measurement exists. (0.8 X SPH thickness + Groundwater Elevation)
Negative number in Stick up Length column indicates well is flushmount and located at or below ground level.
Depth to Water Column - if 0.00 is indicated - means water is at top of casing (full) under artesian flow conditions.

TABLE 3-1. PETROLEUM HYDROCARBONS, BTEX, AND MTBE ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Start Depth (ft)	End Depth (ft)	Date Sampled	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)		Oil Range Organics (mg/kg)	Benzene (mg/kg)	Ethylbenzene (mg/kg)	Toluene (mg/kg)	Xylenes, Total (mg/kg)	MTBE (mg/kg)
MKTF-01R	6	6	07/22/21	26	**1100 J-**	a,b	ND(45)	7	9.6	24	42	ND(0.024)
	18	18	07/22/21	12	6.9 J-		ND(44)	0.11	0.055	0.082	0.23	0.017 J
MKTF-02R	6	6	07/22/21	41	**260 J-**	a	ND(48)	0.027	0.79	0.014 J	1.7	ND(0.03)
	18	18	07/22/21	ND(9.4)	ND(3.6) UJ		ND(47)	ND(0.018)	ND(0.036)	0.0062 J	ND(0.071)	ND(0.036)
MKTF-04R	8.2	8.7	08/16/21	75	**300**	a	ND(50)	ND(0.014)	1.9	0.0073	14	0.018
	19.5	20	08/16/21	130	0.89		ND(47)	ND(0.014)	ND(0.027)	ND(0.027)	ND(0.054)	0.063
MKTF-17R	6.5	7	08/14/21	200	**2100**	a,b	ND(50)	11	17	150	92	0.088
MKTF-17R Dup	20.5	21	08/14/21	ND(10)	1.4		ND(50)	ND(0.013)	ND(0.026)	0.005	ND(0.051)	0.021
MKTF-17R	20.5	21	08/14/21	ND(9.9)	0.75		ND(49)	ND(0.013)	ND(0.026)	0.0045	ND(0.052)	0.021
MKTF-18R	9.5	10	08/14/21	830	**2400**	a,b	ND(46)	6.1	25	98	130	0.096
	25.5	26	08/14/21	260	11		ND(47)	ND(0.025)	ND(0.049)	0.0064	ND(0.098)	0.041
OW-13A	14	14	07/19/21	ND(9.3)	ND(4.1)		ND(47)	ND(0.02)	ND(0.041)	ND(0.041)	ND(0.082)	ND(0.041)
	25.5	25.5	07/19/21	ND(9.3)	ND(3.8)		ND(47)	ND(0.019)	ND(0.038)	ND(0.038)	ND(0.076)	ND(0.038)
OW-66	18	18	07/19/21	96	**1200**	a,b	ND(43)	10	8.1	52	93	0.054J/ND(0.11)U*
	26	26	07/19/21	7.8 J	5.7		ND(49)	0.12	0.057	0.33	0.38	0.035 JB
OW-67	17	17	07/20/21	ND(9.7)	ND(2.9)		ND(49)	ND(0.014)	ND(0.029)	ND(0.029)	ND(0.057)	ND(0.029)
	26	26	07/20/21	ND(9.7)	ND(2.3)		ND(48)	ND(0.012)	ND(0.023)	ND(0.023)	ND(0.046)	ND(0.023)
OW-68	22	22	07/20/21	ND(9)	ND(2.6)		ND(45)	ND(0.013)	ND(0.026)	ND(0.026)	ND(0.051)	0.0055J/ND(0.026)U*
	26	26	07/20/21	ND(8.7)	ND(2.8)		ND(43)	ND(0.014)	ND(0.028)	ND(0.028)	ND(0.056)	0.0057J/ND(0.028)U*
OW-69	6	6	07/21/21	8.4 J	ND(3.4)		ND(47)	ND(0.017)	ND(0.034)	ND(0.034)	ND(0.068)	ND(0.034)
	26	26	07/21/21	ND(9.3)	ND(3.5)		ND(46)	ND(0.018)	ND(0.035)	ND(0.035)	ND(0.071)	ND(0.035)
RW-2R Dup	16.5	17	08/13/21	100	**1900**	a,b	ND(48)	8.2	12	38	65	ND(0.12)
RW-2R	16.5	17	08/13/21	86	**1900**	a,b	ND(48)	9.7	13	44	72	ND(0.12)
	32.5	33	08/13/21	ND(9.2)	12		ND(46)	1	0.07	0.041	0.17	0.037
[a] NMED Residential SSL	1,000			100	1,000		17.8	75.1	5,230	871	NA	
[b] NMED Industrial SSL	3,000			500	3,000		87.24	367.6	61,340	4,275	NA	

Notes:
ND - Not detected
ft - feet
mg/kg - milligrams per kilogram
Dup - duplicate sample
NA - Not applicable
BTEX - benzene, toluene, ethylbenzene, and total xylenes
MTBE - methyl tert butyl ether
a. NMED Residential SSL - New Mexico Environment Department Residential Soil Screening Level, June 2019
b. NMED Industrial SSL - New Mexico Environment Department Industrial Soil Screening Level, June 2019
Results bolded exceeded the screening level
J- - Estimated concentration, possibly biased low
J - Estimated concentration
UJ - Estimated reporting limit
U - Evaluated to be undetected at the reported concentration
JB - Estimated concentration due to blank contamination
* - 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 3-2. VOC ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Start Depth (ft)	End Depth (ft)	Date Sampled	Acetone (mg/kg)	n-Butylbenzene (mg/kg)	sec-Butylbenzene (mg/kg)	Chloroethane (mg/kg)	Chloroform (mg/kg)	Chloromethane (mg/kg)	1,1-Dichloroethane (mg/kg)	1,2-Dichloroethane (mg/kg)	1,1-Dichloroethene (mg/kg)
MKTF-01R	6	6	07/22/21	ND(0.36)	2.3	0.61	ND(0.048)	ND(0.024)	ND(0.072)	ND(0.024)	ND(0.024)	ND(0.024)
	18	18	07/22/21	ND(0.4)	0.011 J	ND(0.027)	0.016 J	ND(0.027)	ND(0.081)	0.016 J	ND(0.027)	0.01 J
MKTF-02R	6	6	07/22/21	ND(0.44)	0.88	0.24	0.046 J	ND(0.03)	ND(0.089)	0.021 J	ND(0.03)	ND(0.03)
	18	18	07/22/21	ND(0.53)	ND(0.11)	ND(0.036)	ND(0.071)	0.015 J	ND(0.11)	ND(0.036)	0.014 J	ND(0.036)
MKTF-04R	8.2	8.7	08/16/21	ND(0.41)	1.1	0.44	ND(0.054)	ND(0.027)	ND(0.081)	ND(0.027)	ND(0.027)	ND(0.027)
	19.5	20	08/16/21	ND(0.41)	ND(0.081)	ND(0.027)	ND(0.054)	ND(0.027)	ND(0.081)	0.014	ND(0.027)	0.014
MKTF-17R	6.5	7	08/14/21	ND(1.9)	1.9	0.7	ND(0.26)	ND(0.13)	ND(0.38)	ND(0.13)	ND(0.13)	ND(0.13)
MKTF-17R Dup	20.5	21	08/14/21	ND(0.38)	ND(0.077)	ND(0.026)	ND(0.051)	ND(0.026)	ND(0.077)	ND(0.026)	ND(0.026)	ND(0.026)
MKTF-17R	20.5	21	08/14/21	ND(0.39)	ND(0.078)	ND(0.026)	ND(0.052)	ND(0.026)	ND(0.078)	ND(0.026)	ND(0.026)	ND(0.026)
MKTF-18R	9.5	10	08/14/21	ND(2.3)	4.3	1.7	ND(0.3)	ND(0.15)	0.41	ND(0.15)	ND(0.15)	ND(0.15)
	25.5	26	08/14/21	ND(0.74)	0.036	ND(0.049)	ND(0.098)	ND(0.049)	ND(0.15)	ND(0.049)	ND(0.049)	ND(0.049)
OW-13A	14	14	07/19/21	0.11 J	ND(0.12)	ND(0.041)	ND(0.082)	ND(0.041)	ND(0.12)	ND(0.041)	ND(0.041)	ND(0.041)
	25.5	25.5	07/19/21	ND(0.57)	ND(0.11)	ND(0.038)	ND(0.076)	ND(0.038)	ND(0.11)	ND(0.038)	ND(0.038)	ND(0.038)
OW-66	18	18	07/19/21	0.37 J	1.2	0.41	ND(0.22)	ND(0.11)	0.11 J	ND(0.11)	ND(0.11)	ND(0.11)
	26	26	07/19/21	ND(0.36)	ND(0.072)	ND(0.024)	0.017 J	ND(0.024)	ND(0.072)	ND(0.024)	ND(0.024)	ND(0.024)
OW-67	17	17	07/20/21	ND(0.43)	ND(0.086)	ND(0.029)	ND(0.057)	ND(0.029)	ND(0.086)	ND(0.029)	ND(0.029)	ND(0.029)
	26	26	07/20/21	ND(0.35)	ND(0.069)	ND(0.023)	ND(0.046)	ND(0.023)	ND(0.069)	ND(0.023)	ND(0.023)	ND(0.023)
OW-68	22	22	07/20/21	0.074 J	ND(0.077)	ND(0.026)	ND(0.051)	ND(0.026)	ND(0.077)	ND(0.026)	ND(0.026)	ND(0.026)
	26	26	07/20/21	0.075 J	ND(0.084)	ND(0.028)	ND(0.056)	ND(0.028)	ND(0.084)	ND(0.028)	ND(0.028)	ND(0.028)
OW-69	6	6	07/21/21	ND(0.51)	ND(0.1)	ND(0.034)	ND(0.068)	ND(0.034)	ND(0.1)	ND(0.034)	ND(0.034)	ND(0.034)
	26	26	07/21/21	ND(0.53)	ND(0.11)	ND(0.035)	ND(0.071)	ND(0.035)	ND(0.11)	ND(0.035)	ND(0.035)	ND(0.035)
RW-2R Dup	16.5	17	08/13/21	ND(1.8)	1.6	1.5	ND(0.23)	ND(0.12)	0.17	ND(0.12)	ND(0.12)	ND(0.12)
RW-2R	16.5	17	08/13/21	ND(1.8)	1.6	1.6	ND(0.24)	ND(0.12)	0.19	ND(0.12)	ND(0.12)	ND(0.12)
	32.5	33	08/13/21	0.27	0.0092	ND(0.031)	ND(0.061)	0.0088	ND(0.092)	ND(0.031)	ND(0.031)	ND(0.031)
NMED Residential SSL	66,300	NA	NA		19,000	5.9			41.1	78.6	8.32	440
NMED Industrial SSL	960,100	NA	NA		89,540	28.66			200.8	383.3	40.67	2,255

Notes:
ND - Not detected
ft - feet
mg/kg - milligrams per kilogram
Dup - duplicate sample
NA - Not applicable
VOC - volatile organic compounds
All Other VOCs - VOCs analyzed that were non-detect are included in the lab reports
NMED Residential SSL - New Mexico Environment Department Residential Soil Screening Level, June 2019
NMED Industrial SSL - New Mexico Environment Department Industrial Soil Screening Level, June 2019
J - Estimated concentration
U - Evaluated to be undetected at the reported concentration
JB - Estimated concentration due to blank contamination
* - 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 3-2. VOC ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Start Depth (ft)	End Depth (ft)	Date Sampled	2,2-Dichloropropane (mg/kg)	Cis-1,3-dichloro-propene (mg/kg)	Isopropylbenzene (mg/kg)	p-Isopropyltoluene (mg/kg)	4-Methyl-2-Pentanone (mg/kg)	1-Methyl-naphthalene (mg/kg)	2-Methyl-naphthalene (mg/kg)	Naphthalene (mg/kg)	n-Propylbenzene (mg/kg)
MKTF-01R	6	6	07/22/21	0.021 J	0.0072 J	1.1	0.24	0.13 J	2	3.3	1.2	5.3
	18	18	07/22/21	ND(0.054)	ND(0.027)	0.0068 J	ND(0.027)	ND(0.27)	ND(0.11)	ND(0.11)	0.013 J	0.023 J
MKTF-02R	6	6	07/22/21	ND(0.059)	ND(0.03)	0.24	0.17	ND(0.3)	0.94	0.28	0.68	1.2
	18	18	07/22/21	ND(0.071)	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.36)	ND(0.14)	ND(0.14)	ND(0.071)	ND(0.036)
MKTF-04R	8.2	8.7	08/16/21	ND(0.054)	ND(0.027)	0.63	0.2	ND(0.27)	0.75	1.5	1.5	3.5
	19.5	20	08/16/21	ND(0.054)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.27)	ND(0.11)	ND(0.11)	ND(0.054)	ND(0.027)
MKTF-17R	6.5	7	08/14/21	0.036	ND(0.13)	1.7	0.18	ND(1.3)	0.97	2.2	3.6	6.2
MKTF-17R Dup	20.5	21	08/14/21	ND(0.051)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.26)	ND(0.1)	ND(0.1)	ND(0.051)	ND(0.026)
MKTF-17R	20.5	21	08/14/21	ND(0.052)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.26)	ND(0.1)	ND(0.1)	ND(0.052)	ND(0.026)
MKTF-18R	9.5	10	08/14/21	ND(0.3)	ND(0.15)	3	0.74	ND(1.5)	7.3	12	9.4	12
	25.5	26	08/14/21	ND(0.098)	ND(0.049)	ND(0.049)	ND(0.049)	0.065	0.59	0.5	ND(0.098)	0.0084
OW-13A	14	14	07/19/21	ND(0.082)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.41)	ND(0.16)	ND(0.16)	ND(0.082)	ND(0.041)
	25.5	25.5	07/19/21	ND(0.076)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.38)	ND(0.15)	ND(0.15)	ND(0.076)	ND(0.038)
OW-66	18	18	07/19/21	ND(0.22)	ND(0.11)	0.49	0.23	ND(1.1)	1.2 J	2.3 J	2.4 J	2.6
	26	26	07/19/21	ND(0.048)	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.24)	ND(0.096)	ND(0.096)	0.013 J	0.022 J
OW-67	17	17	07/20/21	ND(0.057)	ND(0.029)	ND(0.029)	ND(0.029)	ND(0.29)	ND(0.11)	ND(0.11)	ND(0.057)	ND(0.029)
	26	26	07/20/21	ND(0.046)	ND(0.023)	ND(0.023)	ND(0.023)	ND(0.23)	ND(0.092)	ND(0.092)	ND(0.046)	ND(0.023)
OW-68	22	22	07/20/21	ND(0.051)	ND(0.026)	ND(0.026)	ND(0.026)	ND(0.26)	ND(0.1)	ND(0.1)	ND(0.051)	ND(0.026)
	26	26	07/20/21	ND(0.056)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.28)	ND(0.11)	ND(0.11)	ND(0.056)	ND(0.028)
OW-69	6	6	07/21/21	ND(0.068)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.34)	ND(0.14)	ND(0.14)	ND(0.068)	ND(0.034)
	26	26	07/21/21	ND(0.071)	ND(0.035)	ND(0.035)	ND(0.035)	ND(0.35)	ND(0.14)	ND(0.14)	ND(0.071)	ND(0.035)
RW-2R Dup	16.5	17	08/13/21	ND(0.23)	ND(0.12)	3.1	1.2	ND(1.2)	0.44	0.79	1	5
RW-2R	16.5	17	08/13/21	ND(0.24)	ND(0.12)	3.5	1.2	ND(1.2)	0.42	0.72	1	5.3
	32.5	33	08/13/21	ND(0.061)	ND(0.031)	0.0068	ND(0.031)	ND(0.31)	ND(0.12)	ND(0.12)	0.018	0.017
NMED Residential SSL	NA	NA		2,360	NA	5,810	172	232	49.7			NA
NMED Industrial SSL	NA	NA		14,220	NA	81,650	813	3,368	241			NA

Notes:
ND - Not detected
ft - feet
mg/kg - milligrams per kilogram
Dup - duplicate sample
NA - Not applicable
VOC - volatile organic compounds
All Other VOCs - VOCs analyzed that were non-detect are included in the lab reports
NMED Residential SSL - New Mexico Environment Department Residential Soil Screening Level, June 2019
NMED Industrial SSL - New Mexico Environment Department Industrial Soil Screening Level, June 2019
J - Estimated concentration
U - Evaluated to be undetected at the reported concentration
JB - Estimated concentration due to blank contamination
* - 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 3-2. VOC ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Start Depth (ft)	End Depth (ft)	Date Sampled	Tetrachloroethene (mg/kg)	1,2,4-Trimethyl-benzene (mg/kg)	1,3,5-Trimethyl-benzene (mg/kg)	All Other VOCs
MKTF-01R	6	6	07/22/21	0.0069 J	21	4.1	ND
	18	18	07/22/21	ND(0.027)	0.11 JB	0.017 J	ND
MKTF-02R	6	6	07/22/21	ND(0.03)	12	0.022 J	ND
	18	18	07/22/21	ND(0.036)	0.026J/ND(0.036)U*	ND(0.036)	ND
MKTF-04R	8.2	8.7	08/16/21	ND(0.027)	17	5.6	ND
	19.5	20	08/16/21	ND(0.027)	ND(0.027)	ND(0.027)	ND
MKTF-17R	6.5	7	08/14/21	ND(0.13)	29	8.2	ND
MKTF-17R Dup	20.5	21	08/14/21	ND(0.026)	ND(0.026)	ND(0.026)	ND
MKTF-17R	20.5	21	08/14/21	ND(0.026)	ND(0.026)	ND(0.026)	ND
MKTF-18R	9.5	10	08/14/21	ND(0.15)	52	16	ND
	25.5	26	08/14/21	ND(0.049)	ND(0.049)	ND(0.049)	ND
OW-13A	14	14	07/19/21	ND(0.041)	ND(0.041)	ND(0.041)	ND
	25.5	25.5	07/19/21	ND(0.038)	ND(0.038)	ND(0.038)	ND
OW-66	18	18	07/19/21	ND(0.11)	39	13	ND
	26	26	07/19/21	ND(0.024)	0.18	0.059	ND
OW-67	17	17	07/20/21	ND(0.029)	ND(0.029)	ND(0.029)	ND
	26	26	07/20/21	ND(0.023)	ND(0.023)	ND(0.023)	ND
OW-68	22	22	07/20/21	ND(0.026)	ND(0.026)	ND(0.026)	ND
	26	26	07/20/21	ND(0.028)	ND(0.028)	ND(0.028)	ND
OW-69	6	6	07/21/21	ND(0.034)	ND(0.034)	ND(0.034)	ND
	26	26	07/21/21	ND(0.035)	ND(0.035)	ND(0.035)	ND
RW-2R Dup	16.5	17	08/13/21	ND(0.12)	18	7.4	ND
RW-2R	16.5	17	08/13/21	ND(0.12)	20	7.6	ND
	32.5	33	08/13/21	ND(0.031)	0.067	0.019	ND
NMED Residential SSL	337			NA	NA	NA	
NMED Industrial SSL	628.8			NA	NA	NA	

Notes:
ND - Not detected
ft - feet
mg/kg - milligrams per kilogram
Dup - duplicate sample
NA - Not applicable
VOC - volatile organic compounds
All Other VOCs - VOCs analyzed that were non-detect are included in the lab reports
NMED Residential SSL - New Mexico Environment Department Residential Soil Screening Level, June 2019
NMED Industrial SSL - New Mexico Environment Department Industrial Soil Screening Level, June 2019
J - Estimated concentration
U - Evaluated to be undetected at the reported concentration
JB - Estimated concentration due to blank contamination
* - 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 3-3. SVOC ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Start Depth (ft)	End Depth (ft)	Date Sampled	Bis(2-ethyl hexyl)-phthalate (mg/kg)	Benzyl Butyl Phthalate (mg/kg)	Diethylphthalate (mg/kg)	Di-n-butylphthalate (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	2-Methyl phenol (mg/kg)	3,4- Methyl phenol (mg/kg)	Phenanthrene (mg/kg)
MKTF-01R	6	6	07/22/21	ND(0.49)	0.075 J	1.7B/ND(1.7)U*	0.41B/ND(0.41)U*	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)
	18	18	07/22/21	ND(0.5)	0.08 J	1.6B/ND(1.6)U*	ND(0.4)	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)
MKTF-02R	6	6	07/22/21	ND(0.5)	ND(0.2)	1.3B/ND(1.3)U*	0.29J/ND(0.4)U*	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)
	18	18	07/22/21	ND(0.48)	ND(0.19)	1.6B/ND(1.6)U*	0.38J/ND(0.39)U*	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)
MKTF-04R	8.2	8.7	08/16/21	ND(0.49)	ND(0.2)	ND(0.49)	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)
	19.5	20	08/16/21	ND(0.48)	ND(0.19)	ND(0.48)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)
MKTF-17R	6.5	7	08/14/21	ND(4.9)	ND(2)	ND(4.9)	ND(3.9)	ND(2)	ND(2)	ND(3.9)	ND(2)	ND(2)
MKTF-17R Dup	20.5	21	08/14/21	ND(0.48)	ND(0.19)	ND(0.48)	ND(0.39)	ND(0.19)	ND(0.19)	ND(0.39)	ND(0.19)	ND(0.19)
MKTF-17R	20.5	21	08/14/21	ND(0.49)	ND(0.2)	ND(0.49)	0.39	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)
MKTF-18R	9.5	10	08/14/21	0.41	ND(0.19)	ND(0.47)	0.28	ND(0.19)	0.48	ND(0.38)	ND(0.19)	1.2
	25.5	26	08/14/21	ND(0.49)	ND(0.2)	ND(0.49)	ND(0.39)	ND(0.2)	0.088	ND(0.39)	ND(0.2)	0.34
OW-13A	14	14	07/19/21	ND(0.49)	ND(0.2)	0.95 JB	0.28 J	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)
	25.5	25.5	07/19/21	ND(0.49)	ND(0.2)	0.81 JB	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)
OW-66	18	18	07/19/21	ND(0.49)	ND(0.2)	1 JB	0.33 J	0.08 J	ND(0.2)	0.097 J	0.12 J	0.12 J
	26	26	07/19/21	ND(0.49)	ND(0.2)	1.1 JB	0.29 J	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)
OW-67	17	17	07/20/21	ND(0.49)	ND(0.2)	0.8 JB	ND(0.39)	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)
	26	26	07/20/21	0.22 J	ND(0.2)	0.92 JB	0.3 J	ND(0.2)	ND(0.2)	ND(0.39)	ND(0.2)	ND(0.2)
OW-68	22	22	07/20/21	0.22 J	ND(0.2)	1.1 JB	0.36 J	ND(0.2)	ND(0.2)	ND(0.4)	ND(0.2)	ND(0.2)
	26	26	07/20/21	0.22 J	ND(0.19)	1 JB	0.39	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)
OW-69	6	6	07/21/21	ND(0.48)	ND(0.19)	0.69B/ND(0.69)U*	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)
	26	26	07/21/21	0.31 J	ND(0.19)	0.88 JB	0.35 J	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)
RW-2R Dup	16.5	17	08/13/21	ND(0.47)	ND(0.19)	ND(0.47)	ND(0.38)	ND(0.19)	ND(0.19)	0.11	ND(0.19)	ND(0.19)
RW-2R	16.5	17	08/13/21	ND(0.49)	ND(0.19)	ND(0.49)	0.34	ND(0.19)	ND(0.19)	0.25	ND(0.19)	ND(0.19)
	32.5	33	08/13/21	ND(0.48)	ND(0.19)	ND(0.48)	ND(0.38)	ND(0.19)	ND(0.19)	ND(0.38)	ND(0.19)	ND(0.19)
NMED Residential SSL	380	NA		49,300	6,160	2,320	2,320	NA	NA			1,740
NMED Industrial SSL	1,832	NA		733,000	91,630	33,680	33,680	NA	NA			25,260

Notes:
ND - Not detected
ft - feet
mg/kg - milligrams per kilogram
Dup - duplicate sample
NA - Not applicable
SVOC - semi-volatile organic compounds
All Other SVOCs - SVOCs analyzed that were non-detect are included in the lab reports
NMED Residential SSL - New Mexico Environment Department Residential Soil Screening Level, June 2019
NMED Industrial SSL - New Mexico Environment Department Industrial Soil Screening Level, June 2019
J - Estimated concentration
U - Evaluated to be undetected at the reported concentration
JB - Estimated concentration due to blank contamination
* - 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 3-3. SVOC ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Start Depth (ft)	End Depth (ft)	Date Sampled	Phenol (mg/kg)	1-Methyl-naphthalene (mg/kg)	2-Methyl-naphthalene (mg/kg)	Naphthalene (mg/kg)	All Other SVOCs
MKTF-01R	6	6	07/22/21	0.093 J	0.38	0.66	0.28	ND
	18	18	07/22/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND
MKTF-02R	6	6	07/22/21	ND(0.2)	0.19 J	ND(0.2)	0.19 J	ND
	18	18	07/22/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND
MKTF-04R	8.2	8.7	08/16/21	ND(0.2)	0.18	0.33	0.25	ND
	19.5	20	08/16/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND
MKTF-17R	6.5	7	08/14/21	ND(2)	1.3	2.5	3.4	ND
MKTF-17R Dup	20.5	21	08/14/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND
MKTF-17R	20.5	21	08/14/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND
MKTF-18R	9.5	10	08/14/21	0.13	3	4.4	3.2	ND
	25.5	26	08/14/21	ND(0.2)	0.49	0.53	ND(0.2)	ND
OW-13A	14	14	07/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND
	25.5	25.5	07/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND
OW-66	18	18	07/19/21	0.15 J	0.59 J	1.1 J	1.4 J	ND
	26	26	07/19/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND
OW-67	17	17	07/20/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND
	26	26	07/20/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND
OW-68	22	22	07/20/21	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND
	26	26	07/20/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND
OW-69	6	6	07/21/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND
	26	26	07/21/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND
RW-2R Dup	16.5	17	08/13/21	0.12	0.12	0.21	0.22	ND
RW-2R	16.5	17	08/13/21	0.27	0.2	0.34	0.4	ND
	32.5	33	08/13/21	ND(0.19)	ND(0.19)	ND(0.19)	ND(0.19)	ND
NMED Residential SSL	18,500			172	232	49.7	NA	
NMED Industrial SSL	274,900			813	3,368	241	NA	

Notes:
ND - Not detected
ft - feet
mg/kg - milligrams per kilogram
Dup - duplicate sample
NA - Not applicable
SVOC - semi-volatile organic compounds
All Other SVOCs - SVOCs analyzed that were non-detect are included in the lab reports
NMED Residential SSL - New Mexico Environment Department Residential Soil Screening Level, June 2019
NMED Industrial SSL - New Mexico Environment Department Industrial Soil Screening Level, June 2019
J - Estimated concentration
U - Evaluated to be undetected at the reported concentration
JB - Estimated concentration due to blank contamination
* - 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 3-4. METALS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Start Depth (ft)	End Depth (ft)	Date Sampled	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Cadmium, Total (mg/kg)	Chromium, Total (mg/kg)	Iron, Total (mg/kg)	Lead, Total (mg/kg)	Manganese, Total (mg/kg)	Mercury, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)
MKTF-01R	6	6	07/22/21	ND(4.8)	350	ND(0.19)	9.7	14000	2.6 JB	310	0.0041 J	ND(4.8)	ND(0.48)
MKTF-01R	18	18	07/22/21	ND(4.9)	390	ND(0.2)	11	19000	ND(0.59)	1600	ND(0.034)	ND(4.9)	ND(0.49)
MKTF-02R	6	6	07/22/21	ND(4.9)	410	ND(0.19)	9.9	16000	1.9 JB	270	0.0069 J	ND(4.9)	ND(0.49)
MKTF-02R	18	18	07/22/21	ND(5)	230	ND(0.2)	11	22000	1.3 JB	950	ND(0.031)	ND(5)	ND(0.5)
MKTF-04R	8.2	8.7	08/16/21	ND(4.8)	1500	ND(0.19)	8.6	15000	1.8	320	ND(0.034)	ND(4.8)	ND(0.48)
MKTF-04R	19.5	20	08/16/21	ND(5)	820	ND(0.2)	8.5	11000	2.1	770	0.016 J	ND(5)	ND(0.5)
MKTF-17R	6.5	7	08/14/21	ND(13)	810	ND(0.51)	7.8	11000	2.7	880	0.023 J	ND(13)	0.95 J
MKTF-17R Dup	20.5	21	08/14/21	ND(4.8)	210	ND(0.19)	12	19000	2.5	370	ND(0.034)	ND(4.8)	ND(0.48)
MKTF-17R	20.5	21	08/14/21	ND(13)	170	ND(0.51)	12	18000	3.3	300	ND(0.035)	ND(13)	ND(1.3)
MKTF-18R	9.5	10	08/14/21	ND(24)	1200	ND(0.95)	3.8	7700	3.5	7200	0.0090 J	ND(24)	1.8 J
MKTF-18R	25.5	26	08/14/21	ND(4.9)	280	ND(0.2)	8.1	12000	ND(0.59)	560	0.0030 J	ND(4.9)	ND(0.49)
OW-13A	14	14	07/19/21	ND(4.8)	1000	ND(0.19)	11	15000	ND(0.57)	960	0.0028 J	ND(4.8)	ND(0.48)
OW-13A	25.5	25.5	07/19/21	ND(5.1)	250	ND(0.2)	12	16000	ND(0.61)	330	ND(0.031)	ND(5.1)	ND(0.51)
OW-66	18	18	07/19/21	2.9 J	340	ND(0.19)	4.3	7100	1.2	480	ND(0.032)	ND(4.8)	ND(0.48)
OW-66	26	26	07/19/21	ND(5.2)	580	ND(0.21)	6.6	9200	0.69	180	0.0033 J	ND(5.2)	ND(0.52)
OW-67	17	17	07/20/21	ND(4.8)	650	ND(0.19)	5.4	8400	1.7	420	ND(0.16)	ND(4.8)	ND(0.48)
OW-67	26	26	07/20/21	ND(4.8)	340	ND(0.19)	7.1	10000	1.3	450	ND(0.033)	ND(4.8)	ND(0.48)
OW-68	22	22	07/20/21	ND(5.2)	400	ND(0.21)	9.1	11000	1.2	420	ND(0.035)	ND(5.2)	ND(0.52)
OW-68	26	26	07/20/21	ND(5)	800	ND(0.2)	10	14000	ND(0.61)	710	ND(0.035)	ND(5)	ND(0.5)
OW-69	6	6	07/21/21	ND(4.9)	290	ND(0.2)	5.5	9800	4.5	220	0.0051 J	ND(4.9)	ND(0.49)
OW-69	26	26	07/21/21	ND(5.1)	160	ND(0.2)	18	19000	ND(0.61)	250	ND(0.032)	ND(5.1)	ND(0.51)
RW-2R Dup	16.5	17	08/13/21	ND(2.4)	220	ND(0.098)	7.2	11000	1.5	370	ND(0.031)	ND(2.4)	ND(0.24)
RW-2R	16.5	17	08/13/21	1.7 J	190	ND(0.096)	8.1	13000	1	560	ND(0.032)	ND(2.4)	ND(0.24)
RW-2R	32.5	33	08/13/21	ND(26)	1700	ND(1)	7.9	14000	8.1	1300	0.0049 J	ND(26)	ND(2.6)
[a] NMED Residential SSL				7.07	15,600	85,900	96.6	54,800	400	10,500	NA	391	391
[b] NMED Industrial SSL				35.88	254,700	417,000	504.6	908,400	800	160,200	NA	6,489	6,489

Notes:
ND - Not detected
NM - Not measured
ft - feet
mg/kg - Milligrams per kilogram
Dup - Duplicate sample
NA - Not applicable
a. NMED Residential SSL - New Mexico Environmental Department Residential Soil Screening Level, June 2019
b. NMED Industrial SSL- New Mexico Environmental Department Industrial Soil Screening Level, June 2019
J - Estimated concentration
JB - Estimated concentration due to blank contamination

TABLE 3-5. VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	1,1,1,2-Tetrachloroethane (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2,2-Tetrachloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	1,1-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	1,1-Dichloropropene (ug/L)	1,2,3-Trichlorobenzene (ug/L)	1,2,3-Trichloropropane (ug/L)	1,2,4-Trichlorobenzene (ug/L)	1,2,4-Trimethylbenzene (ug/L)
MKTF-01R	9/17/2021	ND(1.3)	ND(1.5)	ND(1.4)	ND(0.99)	3 J	ND(1)	ND(0.9)	ND(1.2)	**ND(2.2)**	ND(1.2)	**310 J**
MKTF-02R	9/17/2021	ND(1.3)	ND(1.5)	ND(1.4)	**7.9**	**110**	**280**	ND(0.9)	ND(1.2)	**ND(2.2)**	ND(1.2)	ND(0.61)
MKTF-04R	9/17/2021	ND(1.3)	ND(1.5)	ND(1.4)	ND(0.99)	**35**	**45**	ND(0.9)	ND(1.2)	**ND(2.2)**	ND(1.2)	**160 J**
MKTF-17R	9/17/2021	ND(1.3)	ND(1.5)	ND(1.4)	ND(0.99)	3.3 J	ND(1)	ND(0.9)	ND(1.2)	**ND(2.2)**	ND(1.2)	**430 J**
MKTF-18R	9/17/2021	ND(0.27)	ND(0.3)	ND(0.27)	ND(0.2)	**32 J**	ND(1)	ND(0.9)	ND(1.2)	**ND(0.44)**	ND(1.2)	**780 J**
OW-66	9/17/2021	ND(2.7)	ND(3)	ND(2.7)	ND(2)	ND(2.7)	ND(2)	ND(1.8)	ND(2.5)	**ND(4.4)**	ND(2.4)	**1,300 J**
OW-67	9/17/2021	ND(0.27)	ND(0.3)	ND(0.27)	ND(0.2)	ND(0.27)	ND(0.2)	ND(0.18)	ND(0.25)	**ND(0.44)**	ND(0.24)	ND(0.12)
OW-68	9/17/2021	ND(0.27)	ND(0.3)	ND(0.27)	ND(0.2)	ND(0.27)	ND(0.2)	ND(0.18)	0.37 J	**ND(0.44)**	ND(0.24)	0.58J/ND(1)U
[a]NMED Groundwater Cleanup Levels		NA	**200**	**10**	**5**	**25**	**7**	NA	NA	NA	**70**	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**5.74**	8,000	0.757	2.75	27.5	284	NA	NA	**0.00835**	11.5	NA
[d]USEPA RSL Tap Water HQ 1.0		5.7	8000	0.76	0.41	28	280	NA	**7**	0.0075	4	**56**

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

- Bolded values indicate exceedences

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

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TABLE 3-5. VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	1,2-Dibromo-3-Chloropropane (ug/L)	1,2-Dibromoethane (ug/L)	1,2-Dichlorobenzene (ug/L)	1,2-Dichloroethane (ug/L)	1,2-Dichloropropane (ug/L)	1,3,5-Trimethylbenzene (ug/L)	1,3-Dichlorobenzene (ug/L)	1,3-Dichloropropane (ug/L)	1,4-Dichlorobenzene (ug/L)	1-Methylnaphthalene (ug/L)	2,2-Dichloropropane (ug/L)
MKTF-01R	9/17/2021	**ND(2.9)**	**ND(1.5)**	ND(0.77)	2.4 J	ND(1)	28 J	ND(0.81)	ND(0.9)	ND(1)	**28 J**	ND(1.3)
MKTF-02R	9/17/2021	**ND(2.9)**	**ND(1.5)**	ND(0.77)	**67**	ND(1)	ND(0.91)	ND(0.81)	ND(0.9)	ND(1)	ND(4.2)	ND(1.3)
MKTF-04R	9/17/2021	**ND(2.9)**	**ND(1.5)**	ND(0.77)	2.3 J	1.3 J	29 J	ND(0.81)	ND(0.9)	ND(1)	**48 J**	ND(1.3)
MKTF-17R	9/17/2021	**ND(2.9)**	**ND(1.5)**	ND(0.77)	ND(1.3)	ND(1)	**120 J**	ND(0.81)	ND(0.9)	ND(1)	**27 J**	ND(1.3)
MKTF-18R	9/17/2021	**ND(0.59)**	**ND(0.3)**	0.57 J	1.5 J	0.54 J	30 J	ND(0.81)	ND(0.9)	ND(0.21)	**200 J**	ND(1.3)
OW-66	9/17/2021	**ND(5.9)**	**ND(3)**	ND(1.5)	4.4 J	ND(2)	**350 J**	ND(1.6)	ND(1.8)	ND(2.1)	**35J/ND(40)U**	ND(2.6)
OW-67	9/17/2021	**ND(0.59)**	**ND(0.3)**	ND(0.15)	ND(0.25)	ND(0.2)	ND(0.18)	ND(0.16)	ND(0.18)	ND(0.21)	ND(0.84)	ND(0.26)
OW-68	9/17/2021	**ND(0.59)**	**ND(0.3)**	ND(0.15)	0.3 J	ND(0.2)	ND(0.18)	ND(0.16)	ND(0.18)	ND(0.21)	ND(0.84)	ND(0.26)
[a]NMED Groundwater Cleanup Levels		NA	**0.05**	**600**	**5**	**5**	NA	NA	NA	**75**	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**0.00334**	0.0747	302	1.71	4.38	NA	NA	NA	4.82	**11.4**	NA
[d]USEPA RSL Tap Water HQ 1.0		0.0033	0.075	300	1.7	8.2	**60**	NA	**370**	4.8	11	NA

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

- Bolded values indicate exceedences

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

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TABLE 3-5. VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	2-Butanone (ug/L)	2-Chlorotoluene (ug/L)	2-Hexanone (ug/L)	2-Methylnaphthalene (ug/L)	4-Chlorotoluene (ug/L)	4-Methyl-2-Pentanone (ug/L)	Acetone (ug/L)	Benzene (ug/L)	Bromobenzene (ug/L)	Bromodichloro-methane (ug/L)	Bromoform (ug/L)
MKTF-01R	9/17/2021	22J/ND(50)U	ND(0.66)	ND(9)	25 J	ND(1.7)	ND(4.4)	47J/ND(50)U	**7,100 J**	ND(1.4)	ND(1)	ND(1.6)
MKTF-02R	9/17/2021	ND(10)	ND(0.66)	ND(9)	ND(3.5)	ND(1.7)	ND(4.4)	ND(13)	**29 J**	ND(1.4)	ND(1)	ND(1.6)
MKTF-04R	9/17/2021	17J/ND(50)U	ND(0.66)	ND(9)	**59 J**	ND(1.7)	ND(4.4)	26J/ND(50)U	**1,100 J**	ND(1.4)	ND(1)	ND(1.6)
MKTF-17R	9/17/2021	11J/ND(50)U	ND(0.66)	ND(9)	34 J	ND(1.7)	ND(4.4)	16J/ND(50)U	**1,600 J**	ND(1.4)	ND(1)	ND(1.6)
MKTF-18R	9/17/2021	8J/ND(10)U	ND(0.13)	ND(1.8)	**300 J**	ND(1.7)	ND(0.88)	20J/ND(50)U	**3,700 J**	ND(0.28)	0.49 J	ND(1.6)
OW-66	9/17/2021	32J/ND(100)U	ND(1.3)	ND(18)	**61 J**	ND(3.4)	ND(8.8)	32J/ND(100)U	**12,000 J**	ND(2.8)	**2.1 J**	ND(3.1)
OW-67	9/17/2021	ND(2)	ND(0.13)	ND(1.8)	ND(0.69)	ND(0.34)	ND(0.88)	4.7J/ND(10)U	ND(0.23)	ND(0.28)	ND(0.2)	ND(0.31)
OW-68	9/17/2021	2J/ND(10)U	ND(0.13)	ND(1.8)	ND(0.69)	ND(0.34)	ND(0.88)	5.2J/ND(10)U	0.78J/ND(1)U	ND(0.28)	ND(0.2)	ND(0.31)
[a]NMED Groundwater Cleanup Levels		NA	NA	NA	NA	NA	NA	NA	**5**	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**5,560**	NA	NA	**35.1**	NA	**1,240**	**14,100**	4.55	NA	**1.34**	**32.9**
[d]USEPA RSL Tap Water HQ 1.0		5,600	**240**	**38**	36	**250**	6,300	14,000	4.6	**62**	1.3	33

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

- Bolded values indicate exceedences

J - estimated concentration
ug/L - micrograms per Liter
NA - not applicable
ND - non-detect
U - Evaluated to be undetected at the reported concentration

TABLE 3-5. VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	Bromomethane (ug/L)	Carbon Disulfide (ug/L)	Carbon tetrachloride (ug/L)	Chlorobenzene (ug/L)	Chloroethane (ug/L)	Chloroform (ug/L)	Chloromethane (ug/L)	cis-1,2-Dichloroethene (ug/L)	cis-1,3-Dichloropropene (ug/L)	Dibromochloro-methane (ug/L)	Dibromomethane (ug/L)
MKTF-01R	9/17/2021	ND(4.3)	ND(3)	ND(0.88)	ND(0.78)	ND(1.9)	ND(0.67)	ND(2.1)	ND(1.9)	ND(1.8)	ND(1.4)	ND(1.5)
MKTF-02R	9/17/2021	ND(4.3)	ND(3)	ND(0.88)	ND(0.78)	4.5 J	1.3 J	3.2 J	3.1 J	ND(1.8)	ND(1.4)	ND(1.5)
MKTF-04R	9/17/2021	ND(4.3)	ND(3)	ND(0.88)	ND(0.78)	ND(1.9)	1.2 J	2.6 J	18	ND(1.8)	ND(1.4)	ND(1.5)
MKTF-17R	9/17/2021	ND(4.3)	ND(3)	ND(0.88)	ND(0.78)	ND(1.9)	ND(0.67)	ND(2.1)	ND(1.9)	ND(1.8)	ND(1.4)	ND(1.5)
MKTF-18R	9/17/2021	ND(0.85)	ND(0.59)	ND(0.18)	ND(0.16)	ND(1.9)	ND(0.13)	ND(2.1)	17 J	ND(0.36)	0.49 J	ND(0.31)
OW-66	9/17/2021	ND(8.5)	ND(5.9)	ND(1.8)	ND(1.6)	ND(3.8)	ND(1.3)	**28 J**	ND(3.9)	ND(3.6)	**6.2 J**	ND(3.1)
OW-67	9/17/2021	ND(0.85)	ND(0.59)	ND(0.18)	ND(0.16)	ND(0.38)	ND(0.13)	ND(0.41)	ND(0.39)	ND(0.36)	ND(0.28)	ND(0.31)
OW-68	9/17/2021	ND(0.85)	ND(0.59)	ND(0.18)	ND(0.16)	ND(0.38)	ND(0.13)	2.3 J	ND(0.39)	ND(0.36)	ND(0.28)	ND(0.31)
[a]NMED Groundwater Cleanup Levels		NA	NA	**5**	NA	NA	**100**	NA	**70**	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**7.54**	**810**	4.55	**77.6**	**20,900**	2.29	**20.3**	36.5	NA	**1.68**	**8**
[d]USEPA RSL Tap Water HQ 1.0		7.5	810	4.6	78	21,000	2.2	190	36	NA	8.7	8.3

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

- Bolded values indicate exceedences

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

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TABLE 3-5. VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	Dichlorodifluoro-methane (ug/L)	Ethylbenzene (ug/L)	Hexachlorobutadiene (ug/L)	Isopropylbenzene (ug/L)	Methylene Chloride (ug/L)	MTBE (ug/L)	Naphthalene (ug/L)	n-Butylbenzene (ug/L)	n-Propylbenzene (ug/L)	p-Isopropyltoluene (ug/L)
MKTF-01R	9/17/2021	ND(2)	370 J	**ND(2.8)**	20	ND(2.5)	86 J	**52 J**	6.9 J	52 J	2.4 J
MKTF-02R	9/17/2021	ND(2)	ND(1.1)	**ND(2.8)**	ND(0.91)	ND(2.5)	45 J	ND(2.5)	ND(1.3)	ND(0.91)	ND(1)
MKTF-04R	9/17/2021	ND(2)	200 J	**ND(2.8)**	11	ND(2.5)	**1,600 J**	**81 J**	3.6 J	28 J	2.2 J
MKTF-17R	9/17/2021	ND(2)	280 J	**ND(2.8)**	18	ND(2.5)	**3,900 J**	**72 J**	4.9 J	28 J	3.4 J
MKTF-18R	9/17/2021	ND(2)	39 J	ND(0.56)	4.3 J	ND(2.5)	**200 J**	**77 J**	4	6.6 J	2.5
OW-66	9/17/2021	ND(4)	**720 J**	**ND(5.6)**	26	ND(5)	**680 J**	**130**	20 J	140 J	4.4 J
OW-67	9/17/2021	ND(0.4)	ND(0.21)	ND(0.56)	ND(0.18)	ND(0.5)	34 J	ND(0.5)	ND(0.25)	ND(0.18)	ND(0.2)
OW-68	9/17/2021	ND(0.4)	0.85 J	ND(0.56)	ND(0.18)	ND(0.5)	1.3 J	ND(0.5)	ND(0.25)	0.3 J	ND(0.2)
[a]NMED Groundwater Cleanup Levels		NA	**700**	NA	NA	**5**	NA	**30**	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**197**	15	**1.39**	**447**	118	**143**	1.65	NA	NA	NA
[d]USEPA RSL Tap Water HQ 1.0		200	15	1.4	450	110	140	1.7	**1,000**	**660**	NA

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

- Bolded values indicate exceedences

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

TABLE 3-5. VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	sec-Butylbenzene (ug/L)	Styrene (ug/L)	tert-Butylbenzene (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	trans-1,2-Dichloroethene (ug/L)	trans-1,3-Dichloropropene (ug/L)	Trichloroethene (ug/L)	Trichlorofluoro-methane (ug/L)	Vinyl Chloride (ug/L)	Xylenes, Total (ug/L)
MKTF-01R	9/17/2021	3.2 J	ND(0.68)	ND(1.2)	ND(1.8)	170 J	ND(0.97)	ND(1.7)	ND(1)	ND(0.79)	**22**	**850**
MKTF-02R	9/17/2021	ND(0.72)	ND(0.68)	ND(1.2)	ND(1.8)	ND(1)	ND(0.97)	ND(1.7)	**23**	ND(0.79)	1.9 J	ND(1.9)
MKTF-04R	9/17/2021	1.8 J	ND(0.68)	ND(1.2)	ND(1.8)	13 J	ND(0.97)	ND(1.7)	2.1 J	ND(0.79)	ND(1.6)	250
MKTF-17R	9/17/2021	2.8 J	ND(0.68)	ND(1.2)	ND(1.8)	**5,400 J**	ND(0.97)	ND(1.7)	ND(1)	ND(0.79)	ND(1.6)	**2,700**
MKTF-18R	9/17/2021	1.9	0.21 J	ND(0.24)	ND(1.8)	**1,800 J**	ND(0.97)	ND(1.7)	ND(0.2)	ND(0.16)	0.41 J	260 J
OW-66	9/17/2021	5.6 J	1.4 J	ND(2.4)	ND(3.6)	**9,200 J**	2.7 J	6.5 J	ND(2)	ND(1.6)	**ND(3.2)**	**6,200**
OW-67	9/17/2021	ND(0.14)	ND(0.14)	ND(0.24)	ND(0.36)	ND(0.2)	ND(0.19)	ND(0.34)	ND(0.2)	ND(0.16)	ND(0.32)	ND(0.37)
OW-68	9/17/2021	ND(0.14)	ND(0.14)	ND(0.24)	ND(0.36)	ND(0.2)	ND(0.19)	ND(0.34)	ND(0.2)	ND(0.16)	ND(0.32)	0.87 J
[a]NMED Groundwater Cleanup Levels		NA	**100**	NA	**5**	**1,000**	**100**	NA	**5**	NA	**2**	**620**
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		NA	1,210	NA	113	1,090	93.2	NA	2.59	**1,140**	0.324	193
[d]USEPA RSL Tap Water HQ 1.0		**2,000**	1,200	**690**	41	1,100	360	NA	2.8	5,200	0.19	190

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

- Bolded values indicate exceedences

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

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TABLE 3-6. SEMI-VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	1,2,4-Trichlorobenzene (ug/L)	1,2-Dichlorobenzene (ug/L)	1,3-Dichlorobenzene (ug/L)	1,4-Dichlorobenzene (ug/L)	1,4-Dioxane (ug/L)	1-Methylnaphthalene (ug/L)	2,4,5-Trichlorophenol (ug/L)	2,4,6-Trichlorophenol (ug/L)	2,4-Dichlorophenol (ug/L)	2,4-Dimethylphenol (ug/L)
MKTF-01R	9/17/2021	ND(0.58)	ND(0.75)	ND(0.64)	ND(0.7)	--	11 J	ND(0.62)	ND(0.43)	ND(0.58)	19 J
MKTF-02R	9/17/2021	ND(0.58)	ND(0.75)	ND(0.64)	ND(0.7)	--	ND(0.024)	ND(0.62)	ND(0.43)	ND(0.58)	ND(0.97)
MKTF-04R	9/17/2021	ND(0.58)	ND(0.75)	ND(0.64)	ND(0.7)	--	9 J	ND(0.62)	ND(0.43)	ND(0.58)	3.9 J
MKTF-17R	9/17/2021	ND(0.58)	ND(0.75)	ND(0.64)	ND(0.7)	--	**15 J**	ND(0.62)	ND(0.43)	ND(0.58)	13 J
MKTF-18R	9/17/2021	ND(0.58)	ND(0.75)	ND(0.64)	ND(0.7)	--	**27 J**	ND(0.62)	ND(0.43)	ND(0.58)	3.9 J
OW-66	9/17/2021	ND(0.58)	ND(0.75)	ND(0.64)	ND(0.7)	ND(0.48)	**33 J**	ND(0.62)	ND(0.43)	ND(0.58)	5.4 J
OW-67	9/17/2021	ND(0.58)	ND(0.75)	ND(0.64)	ND(0.7)	--	ND(0.024)	ND(0.62)	ND(0.43)	ND(0.58)	ND(0.97)
OW-68	9/17/2021	ND(0.58)	ND(0.75)	ND(0.64)	ND(0.7)	--	ND(0.024)	ND(0.62)	ND(0.43)	ND(0.58)	ND(0.97)
[a]NMED Groundwater Cleanup Levels		**70**	**600**	NA	**75**	NA	NA	NA	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		11.5	302	NA	4.82	**4.59**	**11.4**	**1,170**	**41.1**	**45.3**	**354**
[d]USEPA RSL Tap Water HQ 1.0		4	300	NA	4.8	4.6	11	1,200	12	46	360

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

- Bolded values indicate exceedences.

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

-- not sampled

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TABLE 3-6. SEMI-VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	2,4-Dinitrophenol (ug/L)	2,4-Dinitrotoluene (ug/L)	2,6-Dinitrotoluene (ug/L)	2-Chloronaphthalene (ug/L)	2-Chlorophenol (ug/L)	2-Methylnaphthalene (ug/L)	2-Methylphenol (ug/L)	2-Nitroaniline (ug/L)	2-Nitrophenol (ug/L)
MKTF-01R	9/17/2021	ND(0.5)	ND(0.62)	**ND(0.58)**	ND(0.59)	ND(0.62)	8.2 J	2.1 J	ND(0.31)	ND(0.47)
MKTF-02R	9/17/2021	ND(0.5)	ND(0.62)	**ND(0.58)**	ND(0.59)	ND(0.62)	ND(0.034)	ND(0.51)	ND(0.31)	ND(0.47)
MKTF-04R	9/17/2021	ND(0.5)	ND(0.62)	**ND(0.58)**	ND(0.59)	ND(0.62)	6.2 J	ND(0.51)	ND(0.31)	ND(0.47)
MKTF-17R	9/17/2021	ND(0.5)	ND(0.62)	**ND(0.58)**	ND(0.59)	ND(0.62)	16 J	280	ND(0.31)	ND(0.47)
MKTF-18R	9/17/2021	ND(0.5)	ND(0.62)	**ND(0.58)**	ND(0.59)	ND(0.62)	19 J	130 J	ND(0.31)	ND(0.47)
OW-66	9/17/2021	ND(0.5)	ND(0.62)	**ND(0.58)**	ND(0.59)	ND(0.62)	**51 J**	14	ND(0.31)	ND(0.47)
OW-67	9/17/2021	ND(0.5)	ND(0.62)	**ND(0.58)**	ND(0.59)	ND(0.62)	ND(0.034)	ND(0.51)	ND(0.31)	ND(0.47)
OW-68	9/17/2021	ND(0.5)	ND(0.62)	**ND(0.58)**	ND(0.59)	ND(0.62)	ND(0.034)	ND(0.51)	ND(0.31)	ND(0.47)
[a]NMED Groundwater Cleanup Levels		NA	NA	NA	NA	NA	NA	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**38.7**	**2.37**	**0.485**	**733**	**91**	**35.1**	NA	NA	NA
[d]USEPA RSL Tap Water HQ 1.0		39	2.4	0.49	750	91	36	**930**	**190**	NA

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.
- Bolded values indicate exceedences.

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

-- not sampled

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TABLE 3-6. SEMI-VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	3,3-Dichlorobenzidine (ug/L)	3,4-Methylphenol (ug/L)	3-Nitroaniline (ug/L)	4,6-Dinitro-2-methylphenol (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)
MKTF-01R	9/17/2021	ND(0.51)	5.3	ND(1.6)	ND(0.53)	ND(0.77)	ND(0.41)	ND(0.53)	ND(0.57)	ND(0.47)	ND(0.28)
MKTF-02R	9/17/2021	ND(0.51)	ND(0.45)	ND(1.6)	ND(0.53)	ND(0.77)	ND(0.41)	ND(0.53)	ND(0.57)	ND(0.47)	ND(0.28)
MKTF-04R	9/17/2021	ND(0.51)	ND(0.45)	ND(1.6)	ND(0.53)	ND(0.77)	ND(0.41)	ND(0.53)	ND(0.57)	ND(0.47)	ND(0.28)
MKTF-17R	9/17/2021	ND(0.51)	29	ND(1.6)	ND(0.53)	ND(0.77)	ND(0.41)	ND(0.53)	ND(0.57)	ND(0.47)	ND(0.28)
MKTF-18R	9/17/2021	ND(0.51)	ND(0.45)	ND(1.6)	ND(0.53)	ND(0.77)	ND(0.41)	ND(0.53)	ND(0.57)	ND(0.47)	ND(0.28)
OW-66	9/17/2021	ND(0.51)	17	ND(1.6)	ND(0.53)	ND(0.77)	ND(0.41)	ND(0.53)	ND(0.57)	ND(0.47)	ND(0.28)
OW-67	9/17/2021	ND(0.51)	ND(0.45)	ND(1.6)	ND(0.53)	ND(0.77)	ND(0.41)	ND(0.53)	ND(0.57)	ND(0.47)	ND(0.28)
OW-68	9/17/2021	ND(0.51)	ND(0.45)	ND(1.6)	ND(0.53)	ND(0.77)	ND(0.41)	ND(0.53)	ND(0.57)	ND(0.47)	ND(0.28)
[a]NMED Groundwater Cleanup Levels		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**1.25**	NA	NA	**1.52**	NA	NA	NA	NA	NA	NA
[d]USEPA RSL Tap Water HQ 1.0		1.3	NA	NA	1.5	NA	**1,400**	**3.7**	NA	**38**	NA

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.
- Bolded values indicate exceedences.

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

-- not sampled

TABLE 3-6. SEMI-VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	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)	Benzo(b)fluoranthene (ug/L)	Benzo(g,h,i)perylene (ug/L)
MKTF-01R	9/17/2021	ND(0.31)	ND(0.43)	ND(0.5)	ND(0.34)	ND(0.55)	**ND(0.36)**	**ND(0.34)**	**ND(0.57)**	ND(0.34)
MKTF-02R	9/17/2021	ND(0.031)	ND(0.043)	ND(0.5)	ND(0.034)	ND(0.55)	ND(0.036)	ND(0.034)	ND(0.057)	ND(0.034)
MKTF-04R	9/17/2021	1.6	ND(0.43)	ND(0.5)	ND(0.34)	ND(0.55)	**ND(0.36)**	**ND(0.34)**	**ND(0.57)**	ND(0.34)
MKTF-17R	9/17/2021	1.2	ND(0.43)	ND(0.5)	ND(0.75)	ND(0.55)	**ND(0.36)**	**ND(0.34)**	**ND(0.57)**	ND(0.34)
MKTF-18R	9/17/2021	3 J	ND(0.43)	ND(0.5)	ND(0.34)	ND(0.55)	**ND(0.36)**	**ND(0.34)**	**ND(0.57)**	ND(0.34)
OW-66	9/17/2021	1	ND(0.43)	ND(0.5)	ND(0.34)	ND(0.55)	**ND(0.36)**	**ND(0.34)**	**ND(0.57)**	ND(0.34)
OW-67	9/17/2021	ND(0.031)	ND(0.043)	ND(0.5)	ND(0.034)	ND(0.55)	ND(0.036)	ND(0.034)	ND(0.057)	ND(0.034)
OW-68	9/17/2021	0.2	ND(0.043)	ND(0.5)	ND(0.034)	ND(0.55)	ND(0.036)	ND(0.034)	ND(0.057)	ND(0.034)
[a]NMED Groundwater Cleanup Levels		NA	NA	NA	NA	NA	NA	**0.2**	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**535**	NA	NA	**1,720**	NA	**0.12**	0.251	**0.343**	NA
[d]USEPA RSL Tap Water HQ 1.0		530	NA	**130**	1,800	**1.2**	0.3	0.25	2.5	NA

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.
- Bolded values indicate exceedences.

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

-- not sampled

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TABLE 3-6. SEMI-VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	Benzo(k)fluoranthene (ug/L)	Benzoic Acid (ug/L)	Benzyl Alcohol (ug/L)	Bis(2-chloroethoxy) methane (ug/L)	Bis(2-chloroethyl)ether (ug/L)	Bis(2-chloroisopropyl)ether (ug/L)	Bis(2-ethylhexyl)phthalate (ug/L)	Butylbenzylphthalate (ug/L)	Carbazole (ug/L)
MKTF-01R	9/17/2021	ND(0.36)	ND(1.1)	ND(0.68)	ND(0.41)	**ND(0.63)**	ND(0.54)	ND(4.5)	ND(0.74)	ND(0.56)
MKTF-02R	9/17/2021	ND(0.036)	ND(1.1)	ND(0.68)	ND(0.41)	**ND(0.63)**	ND(0.54)	ND(4.5)	ND(0.74)	ND(0.56)
MKTF-04R	9/17/2021	ND(0.36)	ND(1.1)	ND(0.68)	ND(0.41)	**ND(0.63)**	ND(0.54)	ND(4.5)	ND(0.74)	ND(0.56)
MKTF-17R	9/17/2021	ND(0.36)	ND(1.1)	ND(0.68)	ND(0.41)	**ND(0.63)**	ND(0.54)	ND(4.5)	ND(0.74)	ND(0.56)
MKTF-18R	9/17/2021	ND(0.36)	ND(1.1)	ND(0.68)	ND(0.41)	**ND(0.63)**	ND(0.54)	ND(4.5)	ND(0.74)	ND(0.56)
OW-66	9/17/2021	ND(0.36)	ND(1.1)	ND(0.68)	ND(0.41)	**ND(0.63)**	ND(0.54)	ND(4.5)	ND(0.74)	3.7 J
OW-67	9/17/2021	ND(0.036)	ND(1.1)	ND(0.68)	ND(0.41)	**ND(0.63)**	ND(0.54)	ND(4.5)	ND(0.74)	ND(0.56)
OW-68	9/17/2021	ND(0.036)	ND(1.1)	ND(0.68)	ND(0.41)	**ND(0.63)**	ND(0.54)	ND(4.5)	ND(0.74)	ND(0.56)
[a]NMED Groundwater Cleanup Levels		NA	NA	NA	NA	NA	NA	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**3.43**	NA	NA	NA	**0.137**	**9.81**	**55.6**	NA	NA
[d]USEPA RSL Tap Water HQ 1.0		25	**75,000**	**2,000**	**59**	0.14	NA	56	**160**	NA

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.
- Bolded values indicate exceedences.

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

-- not sampled

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TABLE 3-6. SEMI-VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	Chrysene (ug/L)	Dibenzo(a,h) anthracene (ug/L)	Dibenzofuran (ug/L)	Diethylphthalate (ug/L)	Dimethylphthalate (ug/L)	Di-n-butylphthalate (ug/L)	Di-n-octylphthalate (ug/L)	Fluoranthene (ug/L)	Fluorene (ug/L)	Hexachlorobenzene (ug/L)
MKTF-01R	9/17/2021	ND(0.24)	**ND(0.34)**	ND(0.38)	ND(3.9)	ND(2)	ND(6.5)	ND(3.1)	ND(1)	ND(0.31)	**ND(0.66)**
MKTF-02R	9/17/2021	ND(0.024)	ND(0.034)	ND(0.38)	ND(3.9)	ND(2)	ND(6.5)	ND(3.1)	ND(0.1)	ND(0.031)	**ND(0.66)**
MKTF-04R	9/17/2021	ND(0.24)	**ND(0.34)**	ND(0.38)	ND(3.9)	ND(2)	ND(6.5)	ND(3.1)	ND(1)	1.8	**ND(0.66)**
MKTF-17R	9/17/2021	ND(0.24)	**ND(0.34)**	ND(0.38)	ND(3.9)	ND(2)	ND(6.5)	ND(3.1)	ND(1)	2.4	**ND(0.66)**
MKTF-18R	9/17/2021	ND(0.24)	**ND(0.34)**	ND(0.38)	ND(3.9)	ND(2)	ND(6.5)	ND(3.1)	ND(1)	3.4 J	**ND(0.66)**
OW-66	9/17/2021	ND(0.24)	**ND(0.34)**	ND(0.38)	ND(3.9)	ND(2)	ND(6.5)	ND(3.1)	ND(1)	2.2	**ND(0.66)**
OW-67	9/17/2021	ND(0.024)	ND(0.034)	ND(0.38)	ND(3.9)	ND(2)	ND(6.5)	ND(3.1)	ND(0.1)	ND(0.031)	**ND(0.66)**
OW-68	9/17/2021	ND(0.024)	ND(0.034)	ND(0.38)	ND(3.9)	ND(2)	ND(6.5)	ND(3.1)	ND(0.1)	ND(0.031)	**ND(0.66)**
[a]NMED Groundwater Cleanup Levels		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**34.3**	**0.0343**	NA	**14,800**	**612**	**885**	NA	**802**	**288**	**0.0976**
[d]USEPA RSL Tap Water HQ 1.0		250	0.25	**7.9**	15,000	NA	900	**200**	800	290	0.098

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.
- Bolded values indicate exceedences.

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

-- not sampled

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TABLE 3-6. SEMI-VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	Hexachlorobutadiene (ug/L)	Hexachlorocyclo-pentadiene (ug/L)	Hexachloroethane (ug/L)	Indeno(1,2,3-cd)pyrene (ug/L)	Isophorone (ug/L)	Naphthalene (ug/L)	Nitrobenzene (ug/L)	N-Nitrosodimethylamine (ug/L)	N-Nitrosodi-n-propylamine (ug/L)
MKTF-01R	9/17/2021	ND(0.82)	**ND(0.65)**	ND(0.45)	**ND(0.43)**	ND(0.4)	21 J	ND(0.51)	**ND(0.36)**	**ND(0.48)**
MKTF-02R	9/17/2021	ND(0.82)	**ND(0.65)**	ND(0.45)	ND(0.043)	ND(0.4)	ND(0.034)	ND(0.51)	**ND(0.36)**	**ND(0.48)**
MKTF-04R	9/17/2021	ND(0.82)	**ND(0.65)**	ND(0.45)	**ND(0.43)**	ND(0.4)	15 J	ND(0.51)	**ND(0.36)**	**ND(0.48)**
MKTF-17R	9/17/2021	ND(0.82)	**ND(0.65)**	ND(0.45)	**ND(0.43)**	ND(0.4)	**38 J**	ND(0.51)	**ND(0.36)**	**ND(0.48)**
MKTF-18R	9/17/2021	ND(0.82)	**ND(0.65)**	ND(0.45)	**ND(0.43)**	ND(0.4)	**87 J**	ND(0.51)	**ND(0.36)**	**ND(0.48)**
OW-66	9/17/2021	ND(0.82)	**ND(0.65)**	ND(0.45)	**ND(0.43)**	ND(0.4)	**110**	ND(0.51)	**ND(0.36)**	**ND(0.48)**
OW-67	9/17/2021	ND(0.82)	**ND(0.65)**	ND(0.45)	ND(0.043)	ND(0.4)	ND(0.034)	ND(0.51)	**ND(0.36)**	**ND(0.48)**
OW-68	9/17/2021	ND(0.82)	**ND(0.65)**	ND(0.45)	ND(0.043)	ND(0.4)	ND(0.034)	ND(0.51)	**ND(0.36)**	**ND(0.48)**
[a]NMED Groundwater Cleanup Levels		NA	NA	NA	NA	NA	**30**	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**1.39**	**0.411**	**3.28**	**0.343**	**781**	1.65	**1.4**	**0.00491**	NA
[d]USEPA RSL Tap Water HQ 1.0		1.4	0.41	3.3	2.5	780	1.7	1.4	0.0011	**0.11**

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.
- Bolded values indicate exceedences.

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

-- not sampled

TABLE 3-6. SEMI-VOLATILE ORGANIC COMPOUNDS ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	N-Nitro-sodiphenylamine (ug/L)	Pentachlorophenol (ug/L)	Phenanthrene (ug/L)	Phenol (ug/L)	Pyrene (ug/L)	Pyridine (ug/L)
MKTF-01R	9/17/2021	ND(1)	ND(0.59)	ND(0.57)	92 J	ND(1.6)	ND(0.93)
MKTF-02R	9/17/2021	ND(1)	ND(0.59)	ND(0.057)	0.76 J	ND(0.16)	ND(0.93)
MKTF-04R	9/17/2021	ND(1)	ND(0.59)	ND(0.57)	8.3 J	ND(1.6)	ND(0.93)
MKTF-17R	9/17/2021	ND(1)	ND(0.59)	0.8 J	150 J	ND(1.6)	ND(0.93)
MKTF-18R	9/17/2021	ND(1)	ND(0.59)	6.2 J	8.2 J	ND(1.6)	ND(0.93)
OW-66	9/17/2021	ND(1)	ND(0.59)	2.6 J	18 J	ND(1.6)	ND(0.93)
OW-67	9/17/2021	ND(1)	ND(0.59)	ND(0.057)	ND(0.33)	ND(0.16)	ND(0.93)
OW-68	9/17/2021	ND(1)	ND(0.59)	ND(0.057)	ND(0.33)	0.18J/ND(0.2)U	ND(0.93)
[a]NMED Groundwater Cleanup Levels		NA	**1**	NA	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	NA	NA
[c]NMED Tap Water		**122**	0.413	**170**	**5,760**	**117**	NA
[d]USEPA RSL Tap Water HQ 1.0		120	0.41	NA	5,800	120	**20**

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.
- Bolded values indicate exceedences.

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported concentration

-- not sampled

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TABLE 3-7. METALS (TOTAL) ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	Antimony, Total (ug/L)	Arsenic, Total (ug/L)	Barium, Total (ug/L)	Beryllium, Total (ug/L)	Cadmium, Total (ug/L)	Calcium, Total (ug/L)	Chromium, Total (ug/L)	Cobalt, Total (ug/L)	Fluoride, Total (ug/L)	Iron, Total (ug/L)
MKTF-01R	9/17/2021	ND(2.2)	7.6	**5,400**	ND(0.88)	ND(1.5)	230,000	ND(2.1)	**12**	430 J	5,700 J
MKTF-02R	9/17/2021	ND(2.2)	1 J	56	ND(0.88)	ND(1.5)	310,000	ND(2.1)	5.3 J	ND(200)	47 J
MKTF-04R	9/17/2021	ND(2.2)	5.2	1,600	ND(0.88)	ND(1.5)	120,000	8.2	**9**	ND(200)	9,300 J
MKTF-17R	9/17/2021	ND(2.2)	5.5	320	ND(0.88)	ND(1.5)	110,000	ND(2.1)	4.5 J	790	1,400 J
MKTF-18R	9/17/2021	ND(2.2)	6.3	**2,000**	1.9 J	ND(1.5)	140,000	20 J	**15**	650	**17,000 J**
OW-66	9/17/2021	ND(2.2)	4.8 J	1,400	ND(0.88)	ND(1.5)	87,000	2.7 J	**10**	ND(200)	6,900 J
OW-67	9/17/2021	ND(2.2)	2.5 J	80	**ND(4.4)**	**ND(7.4)**	1,000,000	ND(11)	**29 J**	ND(200)	230 J
OW-68	9/17/2021	ND(2.2)	5.8	130	**ND(4.4)**	**ND(7.4)**	790,000	ND(11)	**100**	**6,400**	2,900 J
[a]NMED Groundwater Cleanup Levels		**6**	**10**	**2,000**	**4**	**5**	NA	**50**	NA	**1,600**	NA
[b]40 CFR 141.62		6	10	2,000	4	5	NA	100	NA	4,000	NA
[c]NMED Tap Water		7.26	0.855	3,280	12.4	6.24	NA	5.7	**5.98**	1,180	**13,800**
[d]USEPA RSL Tap Water HQ 1.0		7.8	0.052	3,800	25	9.2	NA	100	6	800	14,000

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

- Bolded values indicate exceedences.

J - estimated concentration
ug/L - micrograms per Liter
NA - not applicable
ND - non-detect
U - Evaluated to be undetected at the reported

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TABLE 3-7. METALS (TOTAL) ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	Lead, Total (ug/L)	Magnesium, Total (ug/L)	Manganese, Total (ug/L)	Mercury, Total (ug/L)	Nickel, Total (ug/L)	Potassium, Total (ug/L)	Selenium, Total (ug/L)	Silver, Total (ug/L)	Sodium, Total (ug/L)	Vanadium, Total (ug/L)	Zinc, Total (ug/L)
MKTF-01R	9/17/2021	9.5 J	55,000	**3,400**	ND(0.12)	35 J	2,900	ND(1.9)	ND(1.3)	720,000	ND(2.4)	ND(6.4)
MKTF-02R	9/17/2021	ND(0.31)	48,000	95	ND(0.12)	6.3 J	13,000	ND(1.9)	1.4 J	1,100,000	ND(2.4)	19
MKTF-04R	9/17/2021	7.5 J	31,000	**2,700**	ND(0.12)	16 J	3,400	2.8 J	ND(1.3)	330,000	16 J	16
MKTF-17R	9/17/2021	0.39J/ND(2.5)U	21,000	**3,400**	ND(0.12)	6.2 J	880 J	ND(1.9)	ND(1.3)	310,000	ND(2.4)	ND(6.4)
MKTF-18R	9/17/2021	**46 J**	36,000	**2,900 J**	ND(0.12)	26 J	5,100 J	6.3	ND(1.3)	320,000	33 J	36 J
OW-66	9/17/2021	9 J	22,000	**2,600**	ND(0.12)	**380 J**	970 J	ND(1.9)	ND(1.3)	470,000	8.3 J	9.5 J
OW-67	9/17/2021	ND(0.31)	180,000	**8,000**	ND(0.12)	110 J	4,600	2.8 J	ND(6.3)	2,300,000	ND(12)	ND(32)
OW-68	9/17/2021	2J/ND(2.5)U	130,000	**11,000**	ND(0.12)	170 J	15,000	7.6	ND(6.3)	2,500,000	ND(12)	ND(32)
[a]NMED Groundwater Cleanup Levels		**15**	NA	NA	**2**	NA	NA	**50**	**50**	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	2	NA	NA	50	NA	NA	NA	NA
[c]NMED Tap Water		NA	NA	**2,020**	NA	**372**	NA	98.7	81.2	NA	**63.1**	**5,960**
[d]USEPA RSL Tap Water HQ 1.0		15	NA	430	0.63	390	NA	100	94	NA	86	6,000

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

- Bolded values indicate exceedences.

J - estimated concentration
ug/L - micrograms per Liter
NA - not applicable
ND - non-detect
U - Evaluated to be undetected at the reported

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TABLE 3-8. METALS (DISSOLVED) ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	Antimony, Dissolved (mg/L)	Arsenic, Dissolved (mg/L)	Barium, Dissolved (mg/L)	Beryllium, Dissolved (mg/L)	Cadmium, Dissolved (mg/L)	Chromium, Dissolved (mg/L)	Cobalt, Dissolved (mg/L)	Iron, Dissolved (mg/L)	Lead, Dissolved (mg/L)
MKTF-01R	9/17/2021	ND(4.4)	6.6 J	**4,700**	ND(0.88)	ND(1.2)	ND(2)	**8**	4500	ND(0.57)
MKTF-02R	9/17/2021	ND(4.4)	ND(1.2)	48	ND(0.88)	ND(1.2)	ND(2)	5 J	ND(10)	ND(0.57)
MKTF-04R	9/17/2021	ND(4.4)	3.6 J	1,200	ND(0.88)	ND(1.2)	ND(2)	4.3 J	1,500	ND(0.57)
MKTF-17R	9/17/2021	ND(4.4)	4.6 J	230	ND(0.88)	ND(1.2)	ND(2)	2.8 J	160	ND(0.57)
MKTF-18R	9/17/2021	ND(4.4)	2.6 J	1,600	ND(0.88)	ND(1.2)	ND(2)	**8.8**	1,500 J	ND(0.57)
OW-66	9/17/2021	ND(4.4)	3.7 J	1,100	ND(0.88)	ND(1.2)	ND(2)	**8.4**	3,700	ND(0.57)
OW-67	9/17/2021	ND(4.4)	2.3 J	74	ND(0.88)	ND(1.2)	ND(2)	**11**	15 J	ND(0.57)
OW-68	9/17/2021	ND(4.4)	5.5 J	85	ND(0.88)	ND(1.2)	ND(2)	**79**	950	1.2 J
[a]NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA	NA	NA
[b]40 CFR 141.62		**6**	**10**	**2,000**	**4**	**5**	**100**	NA	NA	NA
[c]NMED Tap Water		7.26	0.855	3,280	12.4	6.24	NA	**5.98**	**13,800**	NA
[d]USEPA RSL Tap Water HQ 1.0		NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

- Bolded values indicate exceedences.

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported

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TABLE 3-8. METALS (DISSOLVED) ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	Manganese, Dissolved (mg/L)	Mercury, Dissolved (mg/L)	Nickel, Dissolved (mg/L)	Selenium, Dissolved (mg/L)	Silver, Dissolved (mg/L)	Vanadium, Dissolved (mg/L)	Zinc, Dissolved (mg/L)
MKTF-01R	9/17/2021	**3,100**	ND(0.12)	29	ND(3.4)	ND(1.3)	ND(2)	11 JB
MKTF-02R	9/17/2021	87	ND(0.12)	ND(3.3)	ND(3.4)	ND(1.3)	2.2 J	34 JB
MKTF-04R	9/17/2021	**2,400**	ND(0.12)	6.6 J	ND(3.4)	ND(1.3)	ND(2)	11 JB
MKTF-17R	9/17/2021	**2,800**	ND(0.12)	ND(3.3)	ND(3.4)	ND(1.3)	ND(2)	9.6J/ND(10)U
MKTF-18R	9/17/2021	1,700 J	ND(0.12)	4.8 J	ND(3.4)	ND(1.3)	ND(2)	11 JB
OW-66	9/17/2021	**2,400**	ND(0.12)	350	ND(3.4)	ND(1.3)	2.3 J	ND(6)
OW-67	9/17/2021	**7,400**	ND(0.12)	98	ND(3.4)	3.9 J	ND(2)	16 JB
OW-68	9/17/2021	**9,600**	ND(0.12)	150	5.8 J	2.9 J	2.3 J	39 JB
[a]NMED GW Cleanup Levels		NA	NA	NA	NA	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	**50**	NA	NA	NA
[c]NMED Tap Water		**2,020**	NA	**372**	98.7	**81.2**	**63.1**	**5,960**
[d]USEPA RSL Tap Water HQ 1.0		NA	NA	NA	NA	NA	NA	NA

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

- Bolded values indicate exceedences.

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported

TABLE 3-9. GENERAL CHEMISTRY ANALYTICAL DATA
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date Sampled	Alkalinity (mg/L)	Bicarbonate as CaCO3 (mg/L)	Carbonate (mg/L)	Chloride (ug/L)	Nitrogen, Nitrate (ug/L)	Nitrogen, Nitrite (ug/L)	Sulfate (ug/L)	TPH DRO (ug/L)	TPH GRO (ug/L)	TPH ORO (ug/L)
MKTF-01R	9/17/2021	611.8	611.8	ND(2)	220,000	ND(50)	ND(27)	63,000 J	**2,200**	**5,200**	**96**
MKTF-02R	9/17/2021	146.6	146.6	ND(2)	**1,800,000**	200J/ND(500)U	ND(27)	**710,000 J**	**220**	**560**	ND(52)
MKTF-04R	9/17/2021	691.9	691.9	ND(2)	**1,200,000**	ND(50)	ND(27)	13,000 JB	**1,200**	**19,000**	ND(52)
MKTF-17R	9/17/2021	697.2	697.2	ND(2)	170,000	390J/ND(500)U	ND(27)	10,000 JB	**1,800**	**29,000**	**ND(520)**
MKTF-18R	9/17/2021	623	623	ND(2)	220,000	ND(50)	ND(27)	10,000 JB	**2,600 J**	**5,000 J**	**ND(520)**
OW-66	9/17/2021	782.3	782.3	ND(2)	**320,000**	ND(50)	ND(27)	1,400J/ND(2,500)U	**4,000**	**69,000**	**ND(520)**
OW-67	9/17/2021	430.5	430.5	ND(2)	**4,900,000**	170J/ND(500)U	ND(27)	**760,000 J**	**560**	**410**	64 J
OW-68	9/17/2021	704	704	ND(2)	**5,100,000**	330J/ND(500)U	140 J	**800,000 J**	**1,100**	**1,700**	**120**
[a]NMED GW Cleanup Levels		NA	NA	NA	**250,000**	**10,000**	**1,000**	**600,000**	NA	NA	NA
[b]40 CFR 141.62		NA	NA	NA	NA	10,000	1,000	NA	NA	NA	NA
[c]NMED Tap Water		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[d]USEPA RSL Tap Water HQ 1.0		NA	NA	NA	NA	3,200	200	NA	NA	NA	NA
[e]NMED TPH Levels		NA	NA	NA	NA	3,200	200	NA	**16.7**	**10.1**	**85.8**

Notes:

[a] NMED GW Cleanup Levels - New Mexico Environment Department Groundwater Cleanup Levels, New Mexico Administrative Code 20.6.2.3103.

[b] 40 CFR 141.62 - Code of Federal Regulations, Chapter 40, Section 141.62 Maximum Contaminant Levels.

[c] NMED Tap Water - New Mexico Environment Department, Risk Assessment Guidance, Table A-1, Tap Water, March 2017.

[d] USEPA RSL Tap Water HQ 1.0 - United States Environmental Protection Agency Regional Screening Levels, Hazardous Quotient 1.0, November 2019.

[e] NMED TPH Levels - New Mexico Environment Department, Total Petroleum Hydrocarbon Screening Levels, Risk Assessment Guidance for Investigations and Remediation, Table 6-4, March 2017.

- Bolded values indicate exceedences.

J - estimated concentration

ug/L - micrograms per Liter

NA - not applicable

ND - non-detect

U - Evaluated to be undetected at the reported

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TABLE 3-10. FIELD PARAMETERS
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location	Date	pH	Temperature (°C)	Conductivity (mS)	Total Dissolved Solids (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	Oxygen Reduction Potential (mV)	Turbidity (NTU)
MKTF-01R	8/31/2021	6.8	20.1	4.09	2,658.5	2.18	1.43	-41.8	7
MKTF-02R	8/31/2021	7.04	14.1	6.08	3,952	3.33	5.7	110.1	1.34
MKTF-04R	8/30/2021	6.84	16.1	1.79	1,124.5	0.88	1.96	-25.8	18.64
MKTF-17R	8/30/2021	6.96	16.6	1.57	1,020.5	0.8	1.89	132.2	9.93
MKTF-18R	8/30/2021	6.79	18.2	1.69	1,098.5	0.86	0.78	-14.7	34.3
OW-66	9/2/2021	6.86	15.4	2.26	1,462	1.16	1.07	-14.6	61.6
OW-67	9/2/2021	6.6	16.9	15.56	10,107	9.12	1.74	159.4	7.78
OW-68	9/2/2021	6.91	14.2	14.39	9,453	8.38	2.16	-9.2	24.2
RW-2R	8/31/2021	Product in well, no parameters collected							

°C - degrees Celsius
mS - milliSiemens
g/L - grams per Liter
ppt - parts per trillion
% - percent
mV - millivolt
NTU - nephelometric turbidity unit

Appendix A - Boring Logs and Well Completion Diagrams

WELL COMPLETION LOG

WELL ID: MKTF-01R

Client: Marathon
Contractor: Terracon
Date Started: July 22, 2021

Project Name: Additional Well Installation
Driller: JC, EJ
Date Completed: July 22, 2021

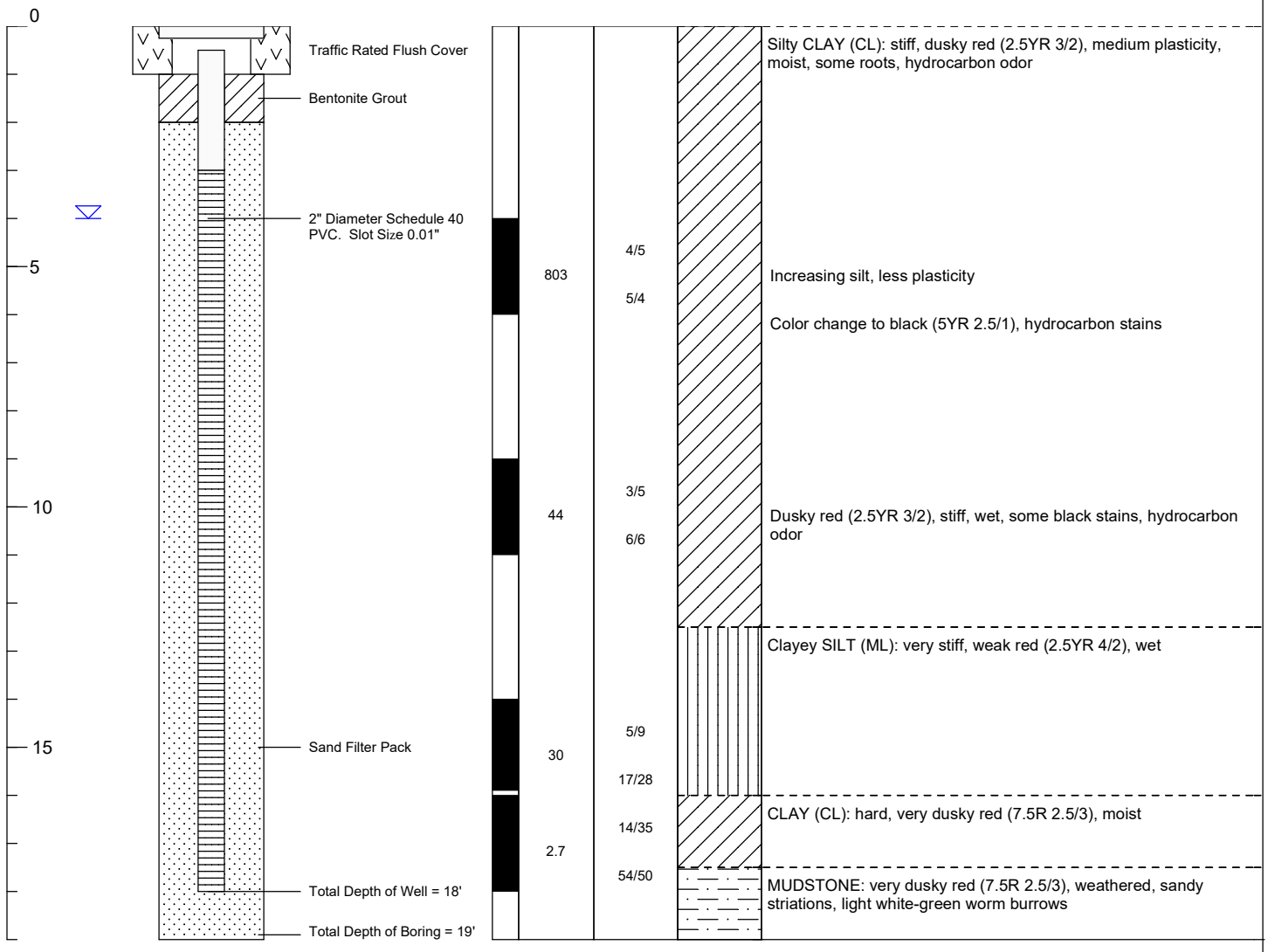
Field Geologist: Mackensie Swift, Will Glenn
Drilling Method: Hollow Stem Auger
Checked By: MS, WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 19'
Northing:

Top of Casing Elevation:
Depth of Set Well: 18'
Sample Type: Split Spoon

Depth of First Encountered Water: 4'
Water Level in Completed Well:



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NOTES: OVA calibrated with 100 ppm isobutylene

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WELL COMPLETION LOG

WELL ID: MKTF-02R

Client: Marathon

Contractor: Terracon

Date Started: July 22, 2021

Project Name: Additional Well Installation

Driller: JC, EJ

Date Completed: July 22, 2021

Field Geologist: Mackensie Swift, Will Glenn

Drilling Method: Hollow Stem Auger

Checked By: MS, WG

Well Location: Gallup Refinery, Gallup, NM

Borehole Diameter: 8"

Easting:

Ground Surface Elevation:

Total Depth Drilled: 19'

Northing:

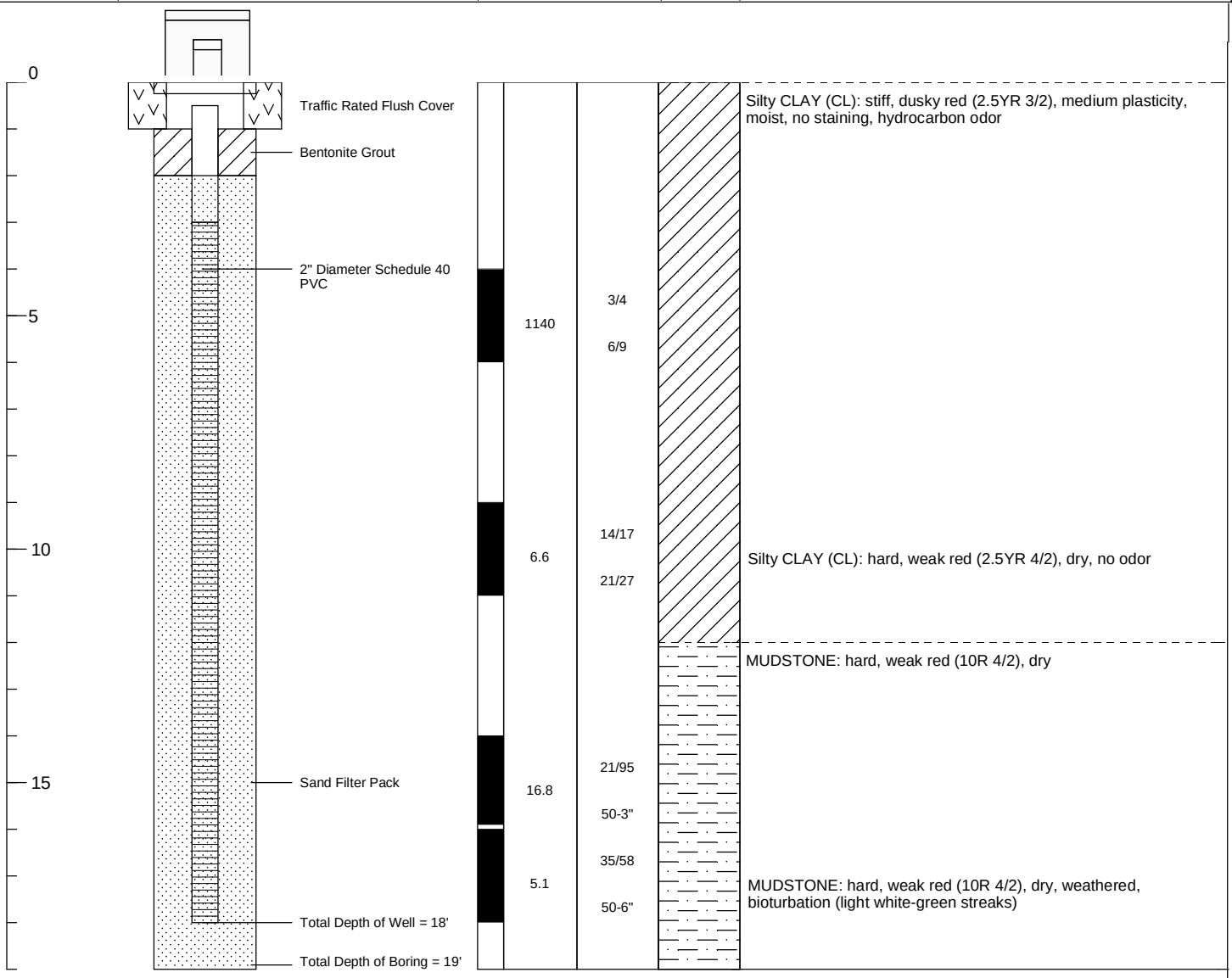
Top of Casing Elevation:

Depth of Set Well: 18'

Sample Type: Split Spoon

Depth of First Encountered Water:

Water Level in Completed Well:



NOTES: OVA calibrated with 100 ppm isobutylene

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WELL COMPLETION LOG

WELL ID: MKTF-04R

Client: Marathon
Contractor: Terracon
Date Started: August 16, 2021

Project Name: Additional Well Installation
Driller: JC
Date Completed: August 16, 2021

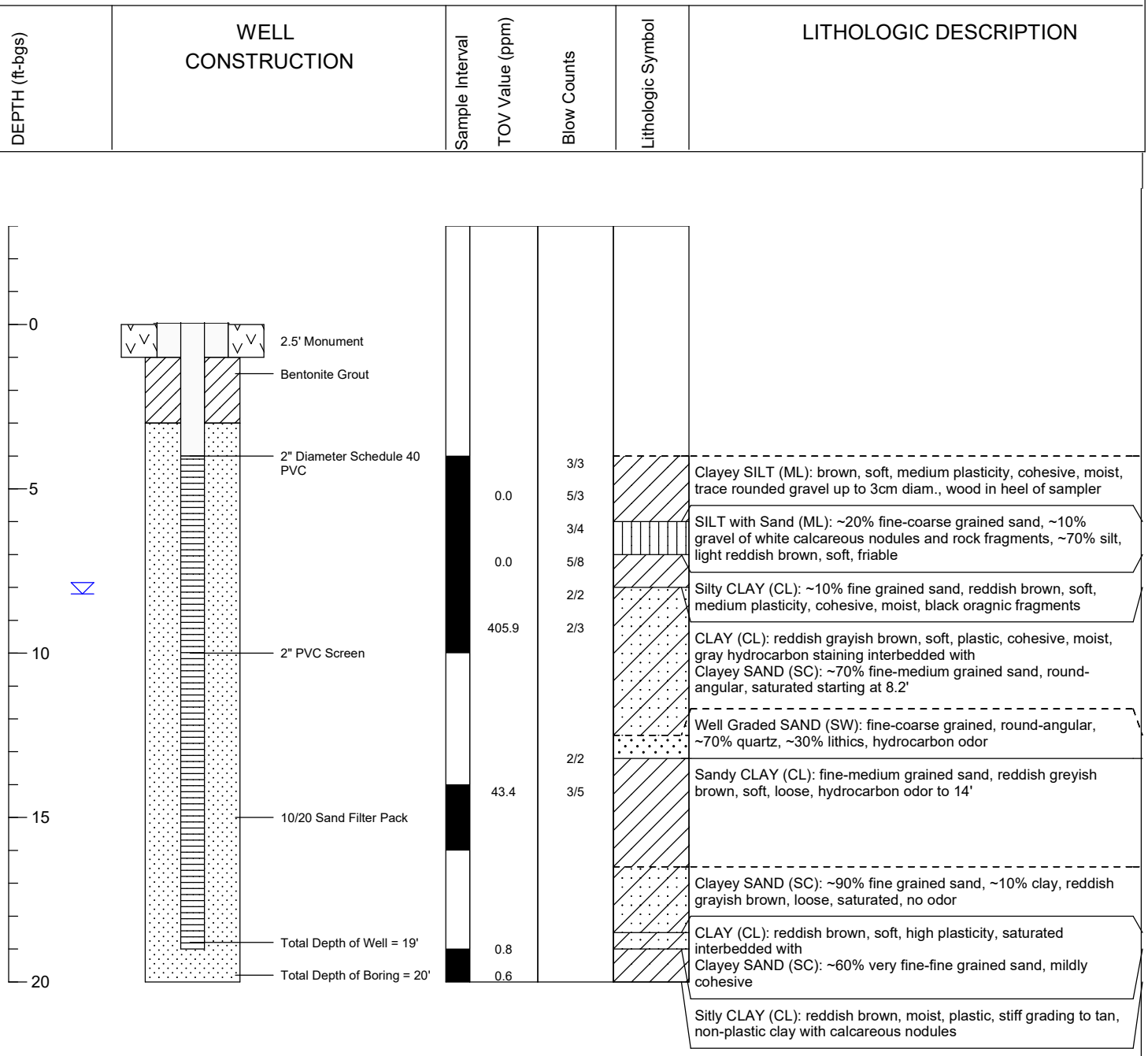
Field Geologist: Kara Hoppes
Drilling Method: Hollow Stem Auger
Checked By: MS, WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 20'
Northing:

Top of Casing Elevation:
Depth of Set Well: 19'
Sample Type: Split Spoon

Depth of First Encountered Water: 8.2'
Water Level in Completed Well:



NOTES: OVA calibrated with 100 ppm isobutylene

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WELL COMPLETION LOG

WELL ID: MKTF-17R

Client: Marathon
Contractor: Terracon
Date Started: August 14, 2021

Project Name: Additional Well Installation
Driller: JC
Date Completed: August 14, 2021

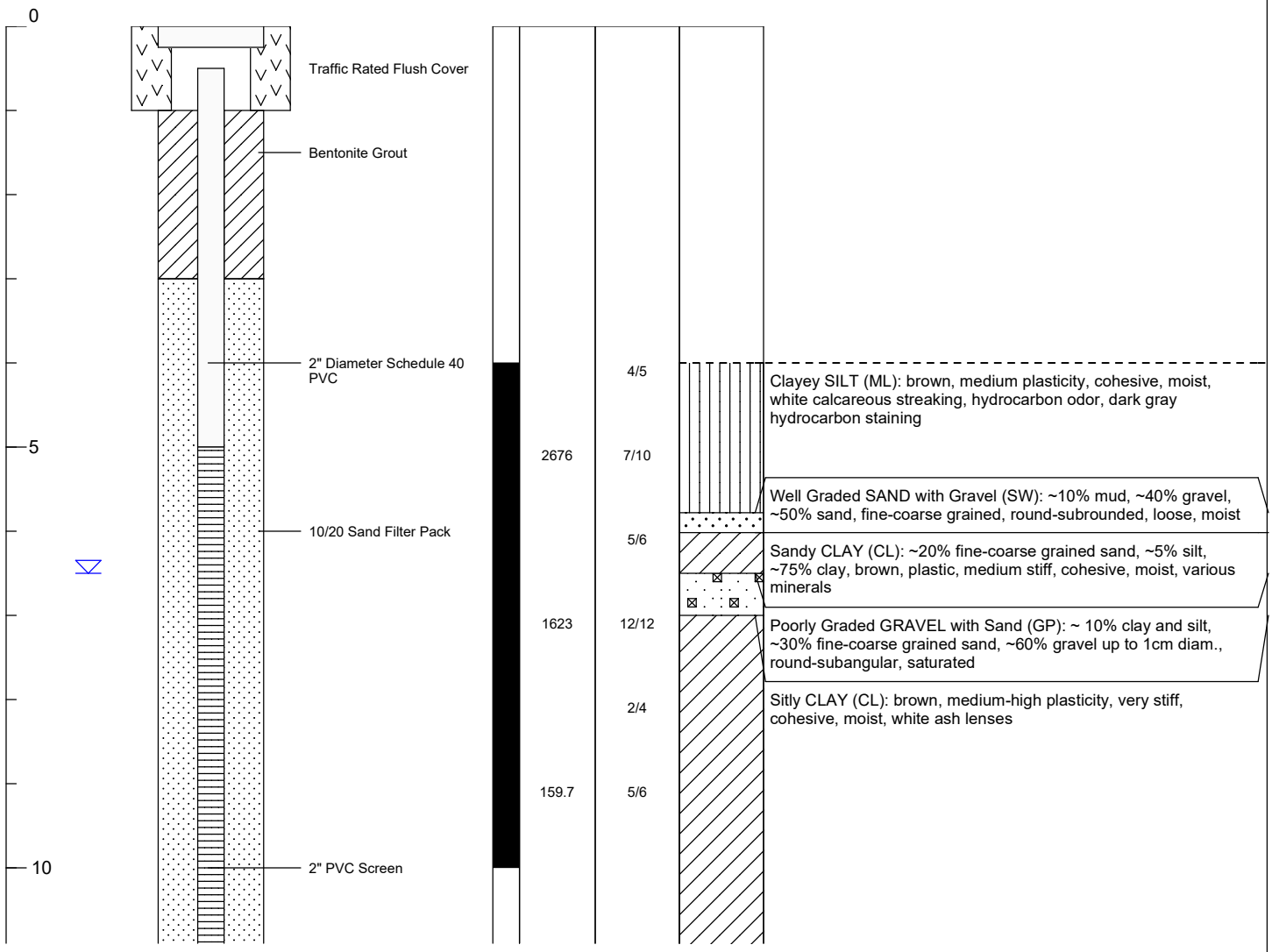
Field Geologist: Kara Hoppes
Drilling Method: Hollow Stem Auger
Checked By: MS, WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 21'
Northing:

Top of Casing Elevation:
Depth of Set Well: 20'
Sample Type: Split Spoon

Depth of First Encountered Water: 6.5'
Water Level in Completed Well:



NOTES: OVA calibrated with 100 ppm isobutylene

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WELL COMPLETION LOG

WELL ID: MKTF-17R

Client: Marathon
Contractor: Terracon
Date Started: August 14, 2021

Project Name: Additional Well Installation
Driller: JC
Date Completed: August 14, 2021

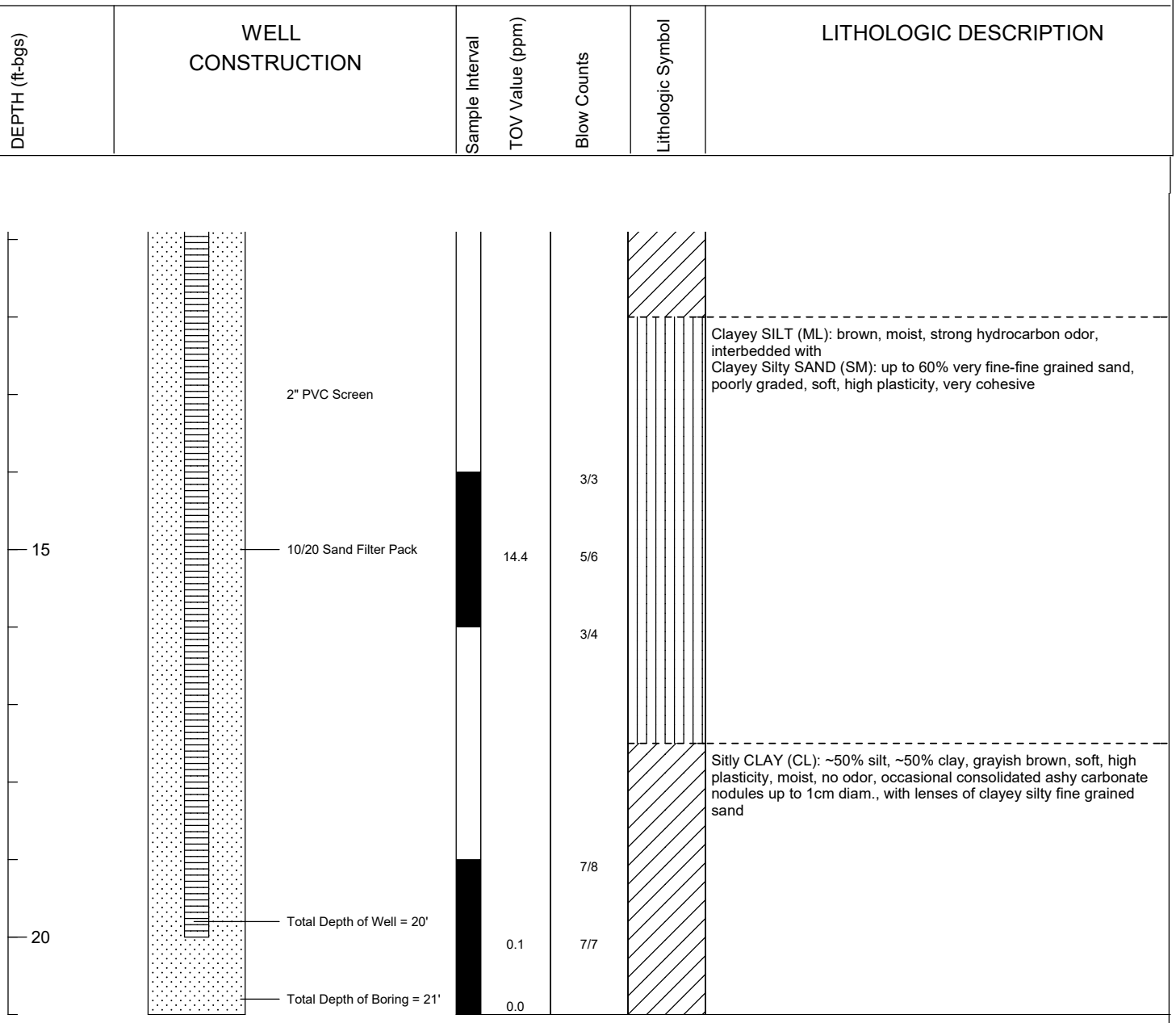
Field Geologist: Kara Hoppes
Drilling Method: Hollow Stem Auger
Checked By: MS, WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 21'
Northing:

Top of Casing Elevation:
Depth of Set Well: 20'
Sample Type: Split Spoon

Depth of First Encountered Water: 6.5'
Water Level in Completed Well:



NOTES: OVA calibrated with 100 ppm isobutylene

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DO NOT USE WELL LOG SEPARATE FROM THE ASSOCIATED REPORT

WELL COMPLETION LOG

WELL ID: MKTF-18R

Client: Marathon
Contractor: Terracon
Date Started: August 14, 2021

Project Name: Additional Well Installation
Driller: JC
Date Completed: August 14, 2021

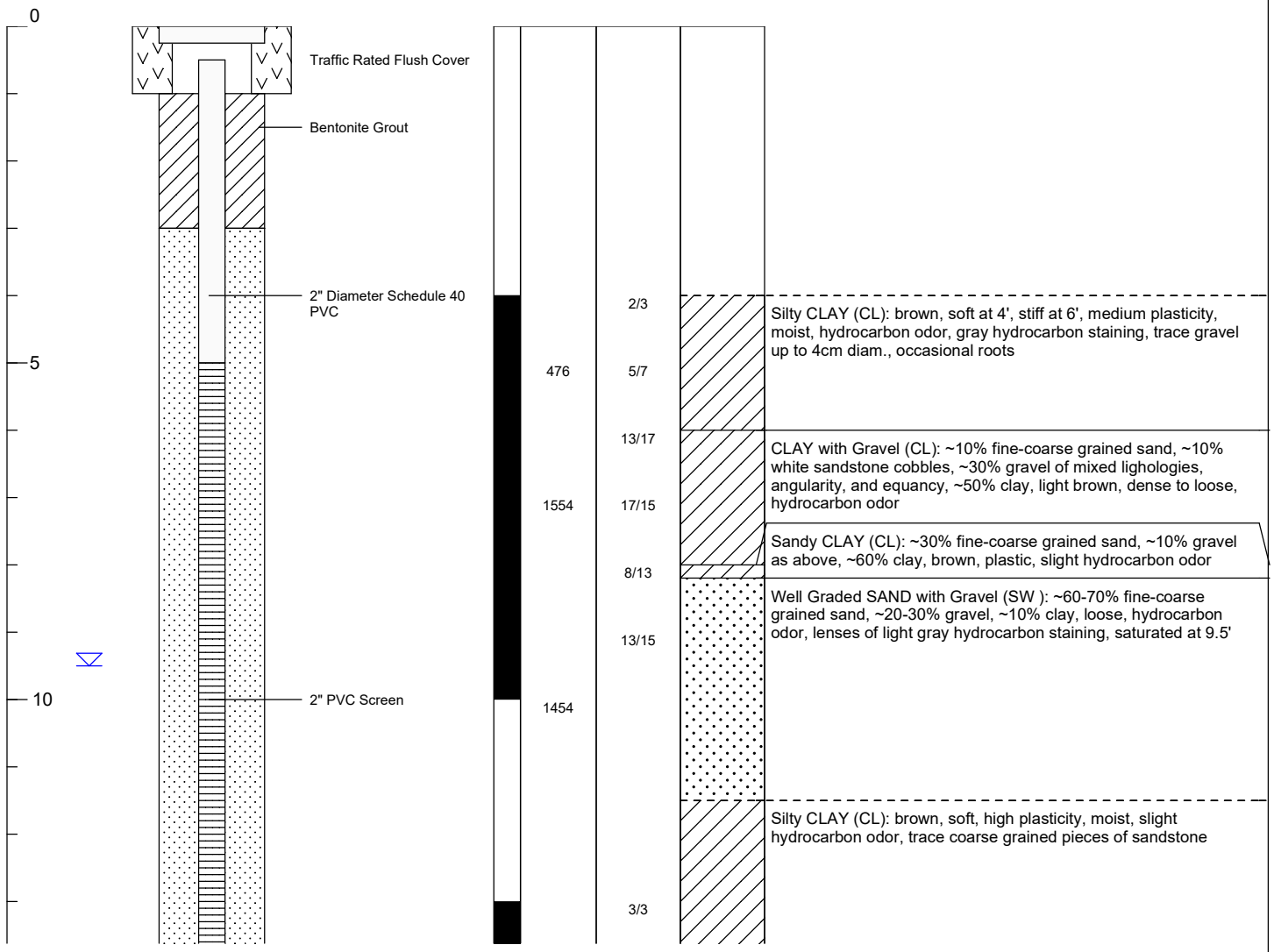
Field Geologist: Kara Hoppes
Drilling Method: Hollow Stem Auger
Checked By: MS, WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 26'
Northing:

Top of Casing Elevation:
Depth of Set Well: 25'
Sample Type: Split Spoon

Depth of First Encountered Water: 9.5'
Water Level in Completed Well:



NOTES: OVA calibrated with 100 ppm isobutylene

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WELL COMPLETION LOG

WELL ID: MKTF-18R

Client: Marathon
Contractor: Terracon
Date Started: August 14, 2021

Project Name: Additional Well Installation
Driller: JC
Date Completed: August 14, 2021

Field Geologist: Kara Hoppes
Drilling Method: Hollow Stem Auger
Checked By: MS, WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 26'
Northing:

Top of Casing Elevation:
Depth of Set Well: 25'
Sample Type: Split Spoon

Depth of First Encountered Water: 9.5'
Water Level in Completed Well:

DEPTH (ft-bgs)	WELL CONSTRUCTION	Sample Interval	TOV Value (ppm)	Blow Counts	Lithologic Symbol	LITHOLOGIC DESCRIPTION
15	10/20 Sand Filter Pack		14	6/3		
						Poorly Graded SAND (SP): ~90% sand, ~10% rounded gravel up to 1cm diam., light gray, moist, strong hydrocarbon odor, light gray hydrocarbon staining, lamination at top of section, trace sand pieces as above
						Silty CLAY (CL): grayish reddish brown, soft increasing to firm with depth, high plasticity, cohesive, moist, occasional white ash streaks and 2mm nodules, 1cm lenses of blackish gray hydrocarbon staining
				3/4		
			3	9/9		
20						Sandy CLAY (CL): reddish brown, soft, non-plastic, cohesive, saturated, no odor
						Clayey SAND (SC): very fine-fine grained sand grading to fine grained with depth, reddish brown, loose, saturated
	2" PVC Screen			4/5		
			202.9	9/10		
25	Total Depth of Well = 25'					CLAY (CL): ~10-20% sand, ~20% silt, ~60-70% clay, grayish reddish brown grading to grayish tan with depth, soft, high plasticity, cohesive, moist to saturated, hydrocarbon staining
	Total Depth of Boring = 26'		131.6			

NOTES: OVA calibrated with 100 ppm isobutylene

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WELL COMPLETION LOG

WELL ID: OW-13A

Client: Marathon
Contractor: Terracon
Date Started: July 19, 2021

Project Name: Additional Well Installation
Driller: JC, EJ
Date Completed: July 19, 2021

Field Geologist: Will Glenn
Drilling Method: Hollow Stem Auger
Checked By: MS, WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 25.5'
Northing:

Top of Casing Elevation:
Depth of Set Well: NA
Sample Type: Split Spoon

Depth of First Encountered Water:
Water Level in Completed Well:

DEPTH (ft-bgs)	WELL CONSTRUCTION	Sample Interval	TOV Value (ppm)	Blow Counts	Lithologic Symbol	LITHOLOGIC DESCRIPTION
0						Sandy SILT (ML): hard, weak red (2.5YR 5/2), dry
5			0	13/14 16/22		
10			0	14/17 20/24		10'-10.5': 10-15% Coarse gravel (up to 1 inch dia.) and sands, rounded, dense, weak red (7.5YR 5/4), dry
15			4.1	23/45 31/37		SILTSTONE: hard, weak red (7.5YR 5/4), dry, calcium carbonate veins (white, react with methanol), some gravel beds up to 2", rounded
20			0	20/64 50-2"		Ring chatter at 22', less gravel, dark reddish brown (2.5YR 3/4), dry
25			0	30/47 90-5"		No Gravel, hard

NOTES: OVA calibrated with 100 ppm isobutylene

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WELL COMPLETION LOG

WELL ID: OW-66

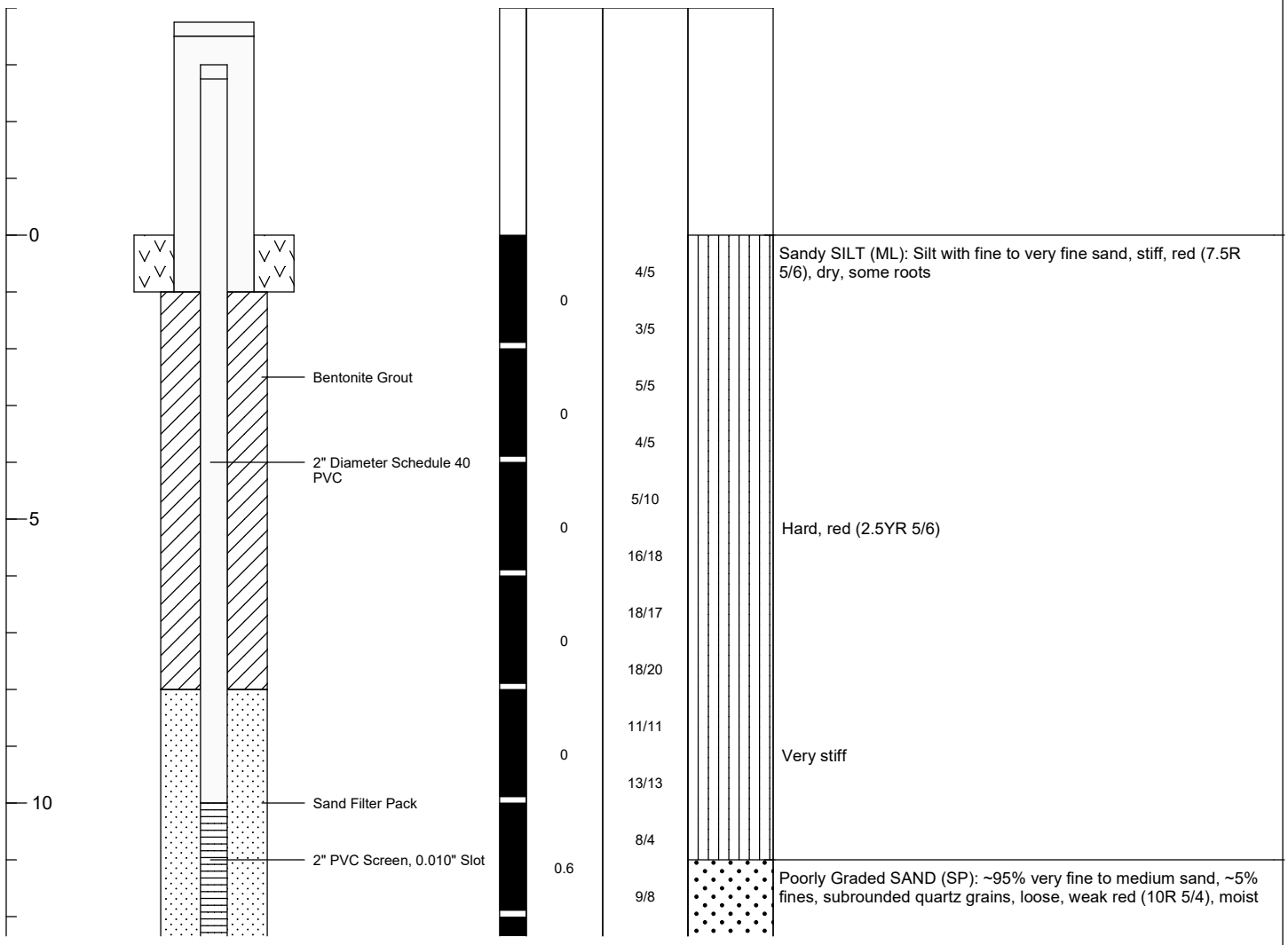
Client: Marathon
Project Name: Additional Well Installation
Field Geologist: Will Glenn
Well Location: Gallup Refinery, Gallup, NM
Ground Surface Elevation:
Top of Casing Elevation:

Contractor: Terracon
Driller: JC, EJ
Drilling Method: Hollow Stem Auger
Borehole Diameter: 8"
Total Depth Drilled: 26'
Depth of Set Well: 25'

Date Started: July 19, 2021
Date Completed: July 19, 2021
Checked By: MS, WG
Easting:
Northing:
Sample Type: Split Spoon

Depth of First Encountered Water: 14'

Water Level in Completed Well:



NOTES: OVA calibrated with 100 ppm isobutylene

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WELL COMPLETION LOG

WELL ID: OW-66

Client: Marathon
Contractor: Terracon
Date Started: July 19, 2021

Project Name: Additional Well Installation
Driller: JC, EJ
Date Completed: July 19, 2021

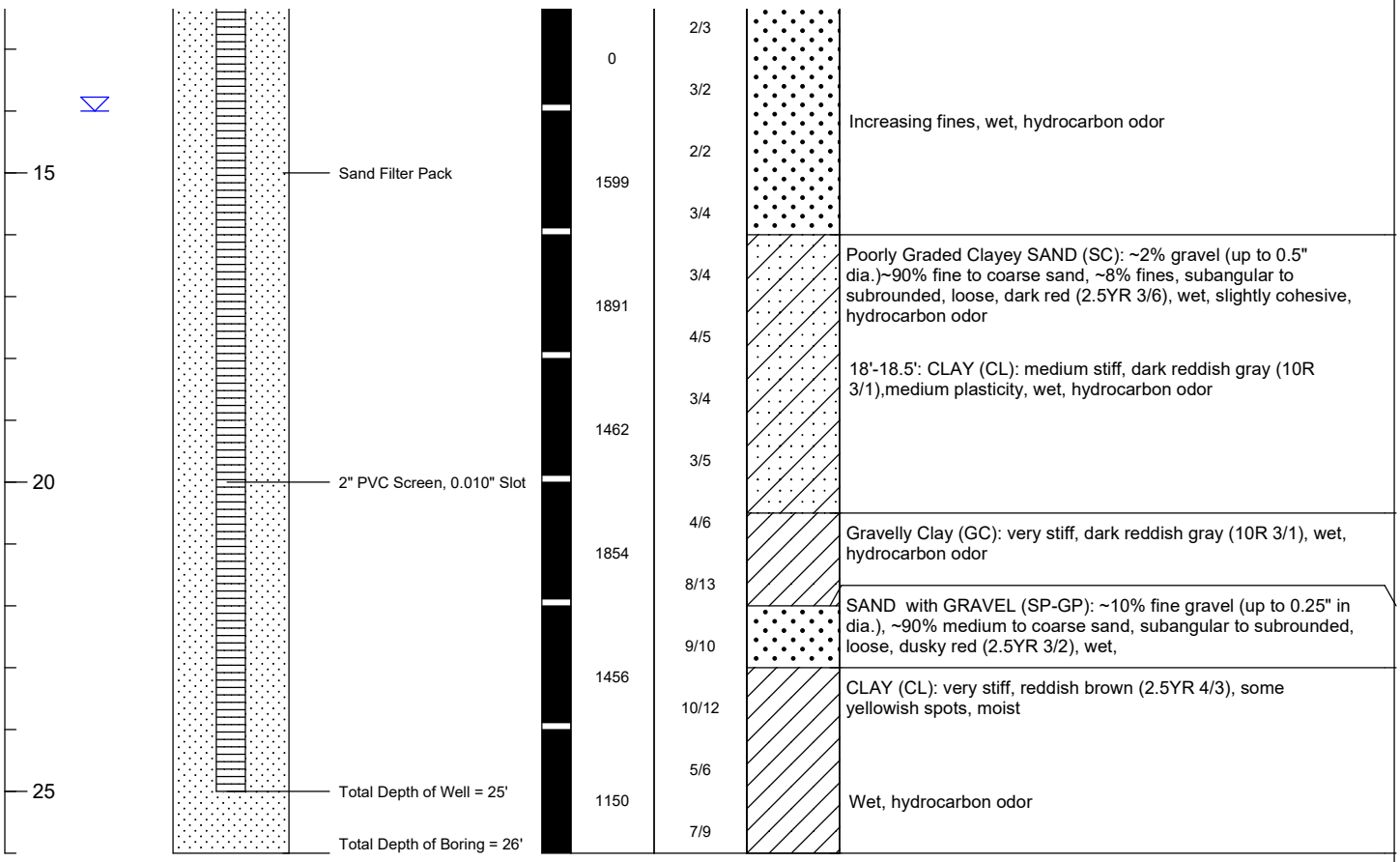
Field Geologist: Will Glenn
Drilling Method: Hollow Stem Auger
Checked By: MS, WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 26'
Northing:

Top of Casing Elevation:
Depth of Set Well: 25'
Sample Type: Split Spoon

Depth of First Encountered Water: 14'
Water Level in Completed Well:



NOTES: OVA calibrated with 100 ppm isobutylene

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WELL COMPLETION LOG

WELL ID: OW-67

Client: Marathon
Contractor: Terracon
Date Started: July 20, 2021

Project Name: Additional Well Installation
Driller: JC, EJ
Date Completed: July 20, 2021

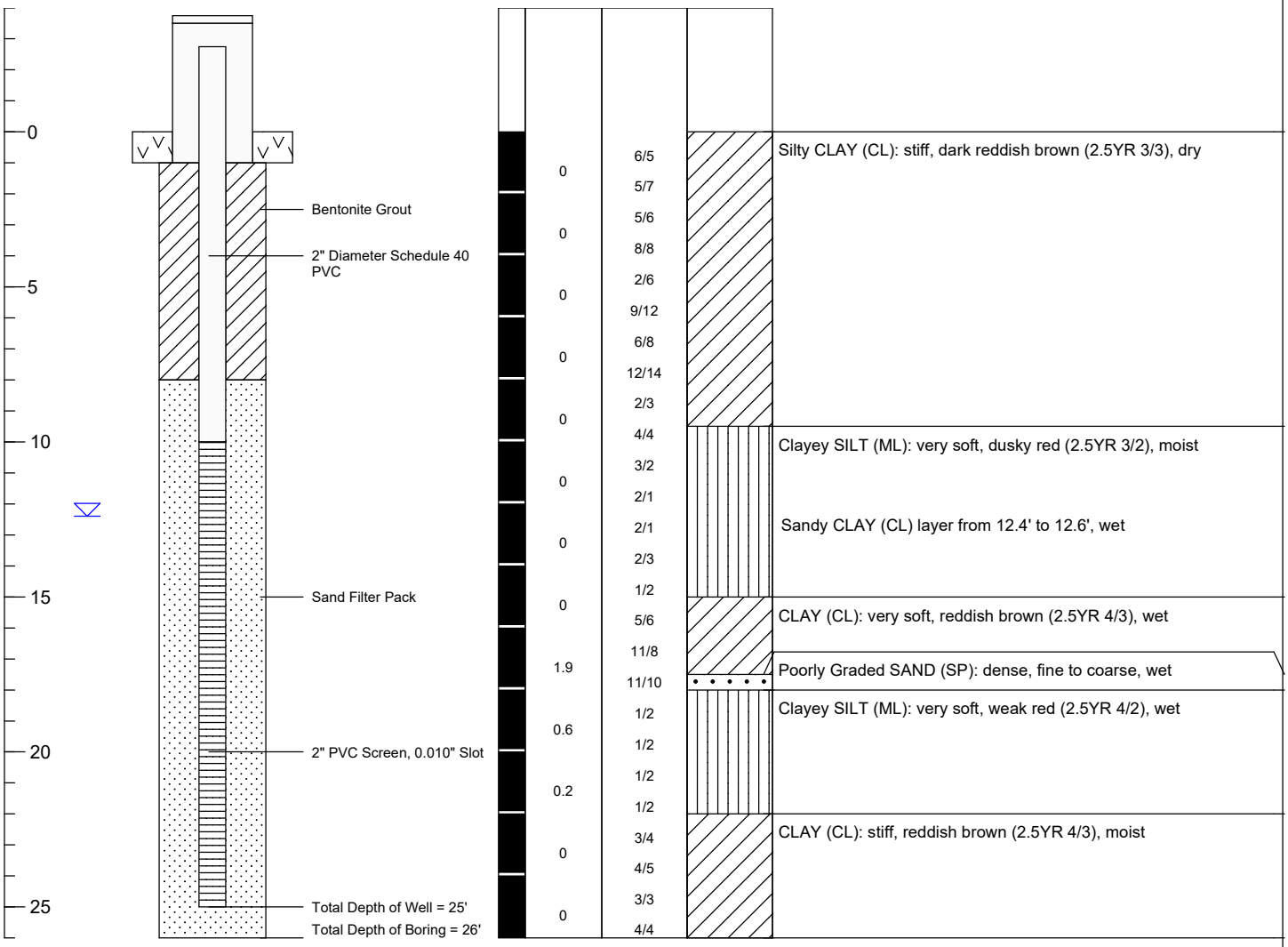
Field Geologist: Mackensie Swift, Will Glenn
Drilling Method: Hollow Stem Auger
Checked By: MS, WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 26'
Northing:

Top of Casing Elevation:
Depth of Set Well: 25'
Sample Type: Split Spoon

Depth of First Encountered Water: 12.4'
Water Level in Completed Well:



NOTES: OVA calibrated with 100 ppm isobutylene

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WELL COMPLETION LOG

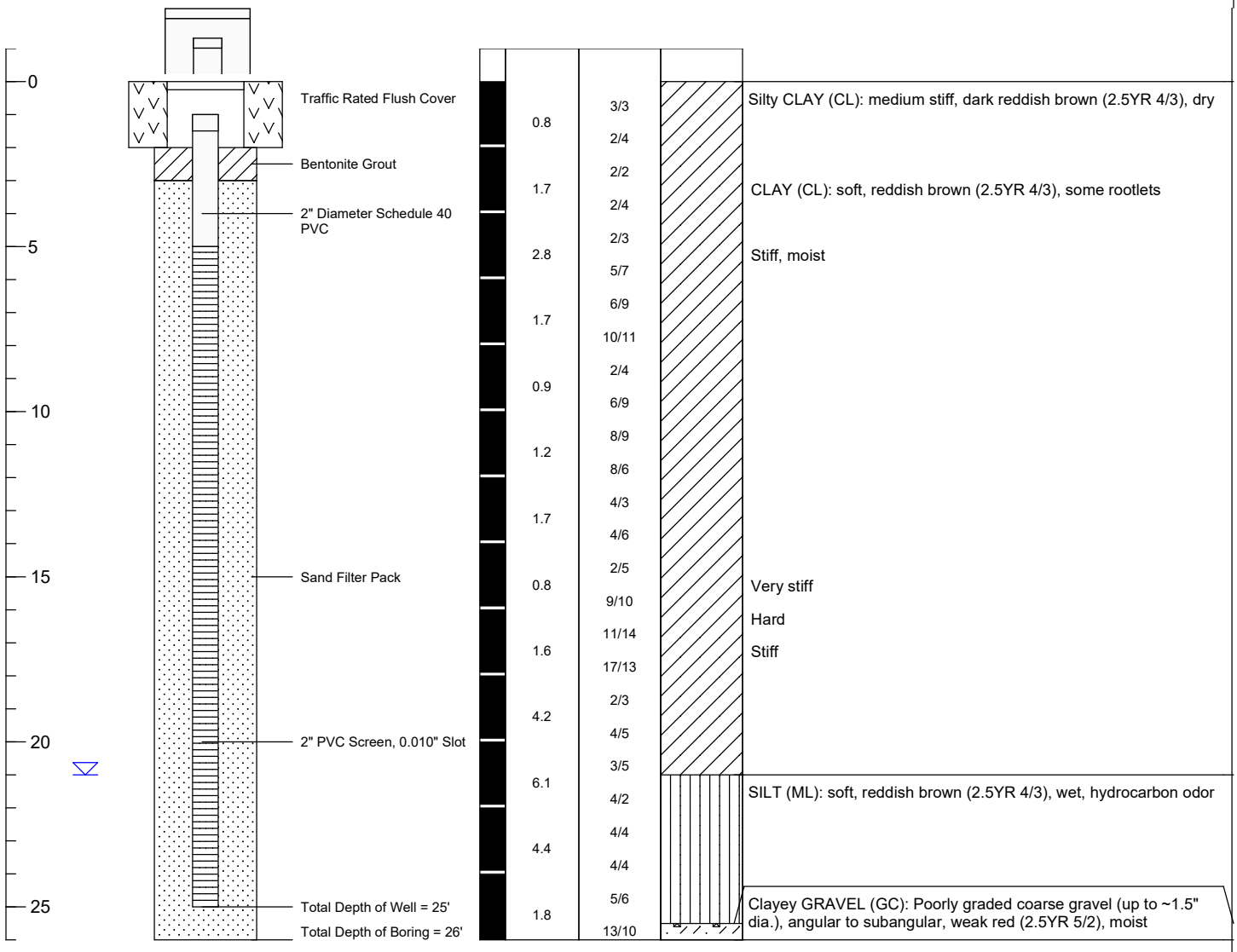
WELL ID: OW-68

Client: Marathon
Project Name: Additional Well Installation
Field Geologist: Mackensie Swift, Will Glenn
Well Location: Gallup Refinery, Gallup, NM
Ground Surface Elevation:
Top of Casing Elevation:

Contractor: Terracon
Driller: JC, EJ
Drilling Method: Hollow Stem Auger
Borehole Diameter: 8"
Total Depth Drilled: 26'
Depth of Set Well: 25'

Date Started: July 20, 2021
Date Completed: July 21, 2021
Checked By: MS, WG
Easting:
Northing:
Sample Type: Split Spoon

Depth of First Encountered Water: 21'
Water Level in Completed Well:



NOTES: OVA calibrated with 100 ppm isobutylene

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DO NOT USE WELL LOG SEPARATE FROM THE ASSOCIATED REPORT

WELL COMPLETION LOG

WELL ID: OW-69

Client: Marathon
Contractor: Terracon
Date Started: July 21, 2021

Project Name: Additional Well Installation
Driller: JC, EJ
Date Completed: July 21, 2021

Field Geologist: Will Glenn
Drilling Method: Hollow Stem Auger
Checked By: MS, WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 26'
Northing:

Top of Casing Elevation:
Depth of Set Well: NA
Sample Type: Split Spoon

Depth of First Encountered Water:

Water Level in Completed Well:

DEPTH (ft-bgs)	WELL CONSTRUCTION	Sample Interval	TOV Value (ppm)	Blow Counts	Lithologic Symbol	LITHOLOGIC DESCRIPTION
0		0.5		6/8		CLAY (CL): stiff, reddish brown (5YR 4/3), dry, some rootlets
				8/11		
				9/8		
		1.2		10/11		4'-5': sand, dense, reddish brown (2.5YR 4/3), dry
5				9/9		
		2.4		10/12		Silty CLAY (CL): very stiff, reddish brown (2.5YR 4/3), dry, some rootlets
				12/15		
		0.5		15/16		
				9/17		
		0.9		25/24		MUDSTONE: hard, reddish brown (2.5YR 4/3), dry
				24/28		
		0.6		29/28		
				15/23		
		0.3		30/28		Turns to dark reddish gray (10R 4/1)
10				35/24		
		0.2		28/27		Calcium carbonate veins
				24/24		
		1.0		38/42		
				21/38		
		0.8		42/44		Green mineral veins (worm burrows)
				10/15		
15		0.5		20/29		
				18/27		SANDSTONE: hard, light gray (5Y 3/1), dry
		0.4		50-6"		CLAY (CL): hard, weak red (2.5YR 5/2), dry
				80-5"		Sandy SILTSTONE: hard, weak red (2.5YR 4/2), dry
20		0		80-5"		
25						

NOTES: OVA calibrated with 100 ppm isobutylene

Trihydro Corporation
2501 Cherry Ave. Suite 200, Signal Hill, CA
Phone (562) 453-3536
Fax (562) 453-3555

DO NOT USE WELL LOG SEPARATE FROM THE ASSOCIATED REPORT

WELL COMPLETION LOG

WELL ID: RW-2R

Client: Marathon
Contractor: Terracon
Date Started: August 13, 2021

Project Name: Additional Well Installation
Driller: JC
Date Completed: August 13, 2021

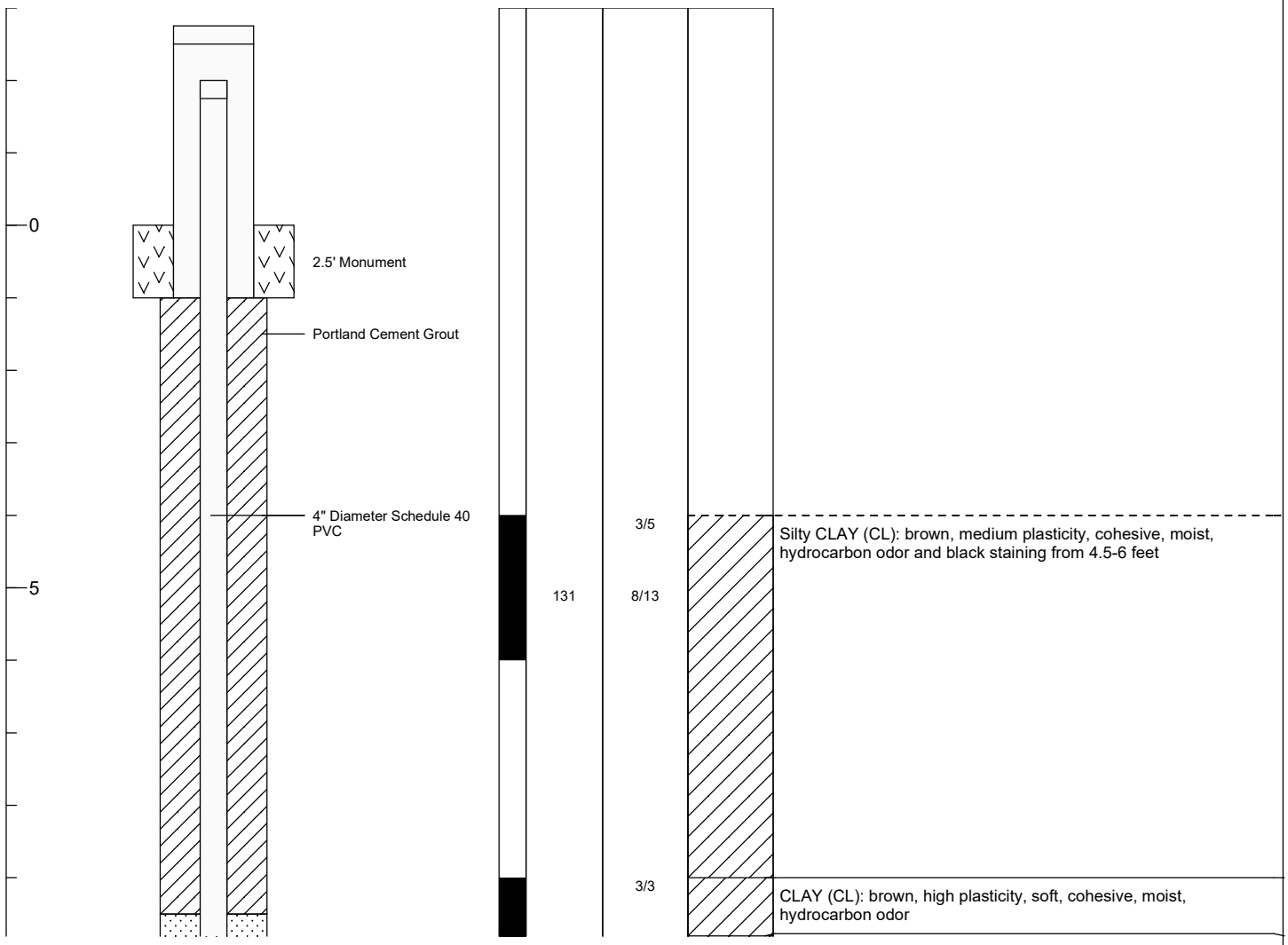
Field Geologist: Kara Hoppes
Drilling Method: Hollow Stem Auger
Checked By: WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 33'
Northing:

Top of Casing Elevation:
Depth of Set Well: 31.5'
Sample Type: Split Spoon

Depth of First Encountered Water: 16.5'
Water Level in Completed Well:



Trihydro Corporation
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Fax (562) 453-3555

NOTES: OVA calibrated with 100 ppm isobutylene

WELL COMPLETION LOG

WELL ID: RW-2R

Client: Marathon
Contractor: Terracon
Date Started: August 13, 2021

Project Name: Additional Well Installation
Driller: JC
Date Completed: August 13, 2021

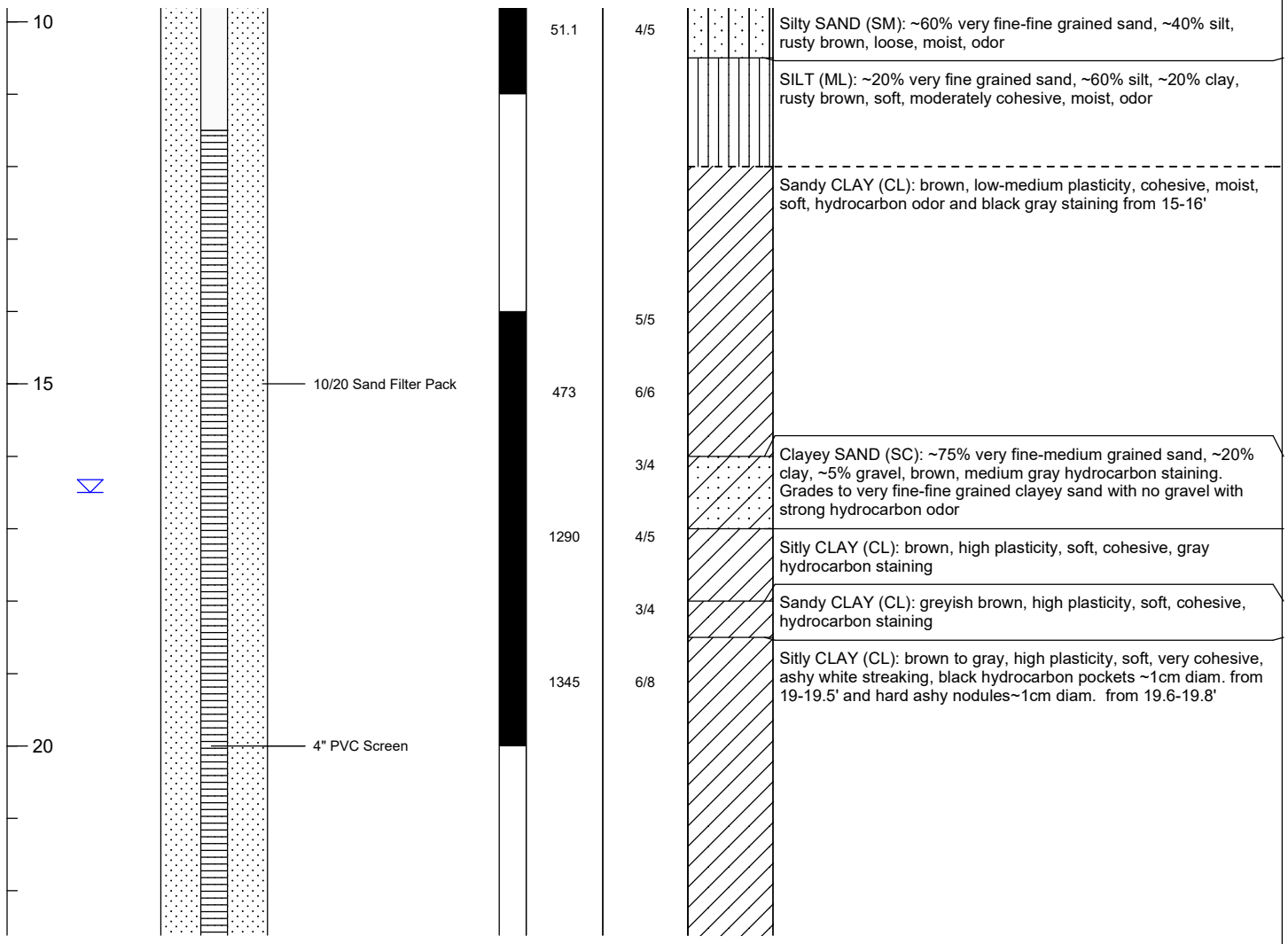
Field Geologist: Kara Hoppes
Drilling Method: Hollow Stem Auger
Checked By: WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 33'
Northing:

Top of Casing Elevation:
Depth of Set Well: 31.5'
Sample Type: Split Spoon

Depth of First Encountered Water: 16.5'
Water Level in Completed Well:



NOTES: OVA calibrated with 100 ppm isobutylene

Trihydro Corporation
2501 Cherry Ave. Suite 200, Signal Hill, CA
Phone (562) 453-3536
Fax (562) 453-3555

DO NOT USE WELL LOG SEPARATE FROM THE ASSOCIATED REPORT

WELL COMPLETION LOG

WELL ID: RW-2R

Client: Marathon
Contractor: Terracon
Date Started: August 13, 2021

Project Name: Additional Well Installation
Driller: JC
Date Completed: August 13, 2021

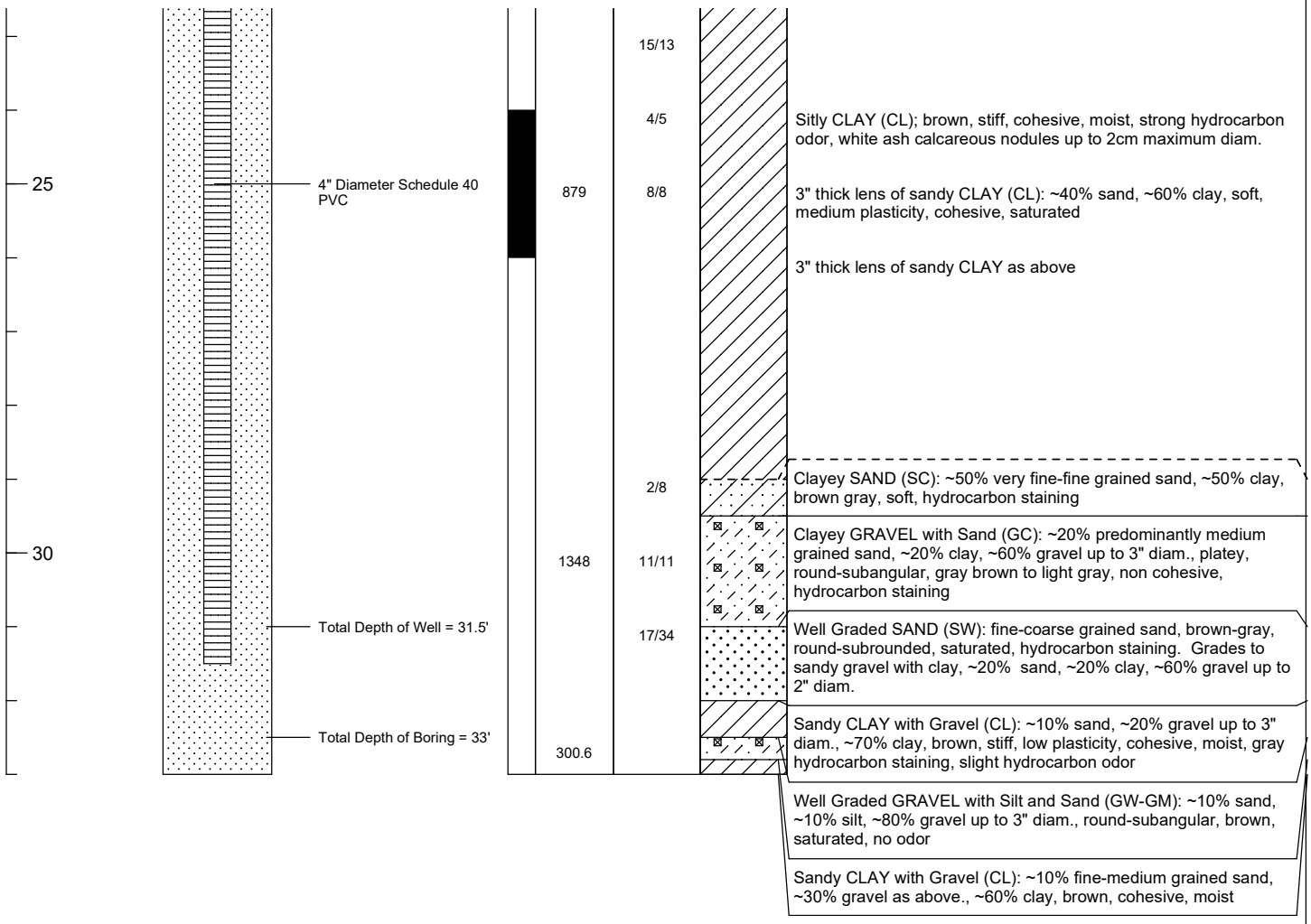
Field Geologist: Kara Hoppes
Drilling Method: Hollow Stem Auger
Checked By: WG

Well Location: Gallup Refinery, Gallup, NM
Borehole Diameter: 8"
Easting:

Ground Surface Elevation:
Total Depth Drilled: 33'
Northing:

Top of Casing Elevation:
Depth of Set Well: 31.5'
Sample Type: Split Spoon

Depth of First Encountered Water: 16.5'
Water Level in Completed Well:



NOTES: OVA calibrated with 100 ppm isobutylene

Trihydro Corporation
2501 Cherry Ave. Suite 200, Signal Hill, CA
Phone (562) 453-3536
Fax (562) 453-3555

DO NOT USE WELL LOG SEPARATE FROM THE ASSOCIATED REPORT

Appendix B - Well Development Forms

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Well ID RW-02R

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel	Hilario Trejo	Measured Depth (pre-development)	35.71		
Date	9/6/2021	Static Product Level (ft)	22.21	Qty of Drilling Fluid Lost	N/A
Project	Additional Well Installations	Static Water Level (ft)	24.88	Development Method	bailer
Job Number	697-092-001	Standing Fluid Column (ft)	13.50	Purging Equipment	bailer
Installation Date	8/16/2021	One Well Volume (gal)	8.82	Water Level Equipment	fluid level probe
Well Diameter	4 inch	One Annulus Volume (gal)		pH/EC Meter	YSI
Borehole Diameter	10-in	Minimum Gallons to Purge	88.16	Turbidity Meter	LaMotte, 2020we
Screen Length	20 ft	Measured Depth (post-development)		Other	TD of Installed well = 31.5 ft bgs
		Water Level (ft) (post-development)	Dry		

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (ºC)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
12:15	45							Purged Dry, water brownish, strong HC odor. Sunny 79 F
FINAL FIELD PARAMETER MEASUREMENTS								

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Well ID MKTF-01R

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel	Hilario Trejo	Measured Depth (pre-development)	18.75		
Date	8/31/2021	Static Water Level (ft)	3.40	Qty of Drilling Fluid Lost	N/A
Project	Additional Well Installations	Standing Water Column (ft)	15.35	Development Method	bailer
Job Number	697-092-001	One Well Volume (gal)	2.50	Purging Equipment	bailer
Installation Date	7/22/2021	One Annulus Volume (gal)		Water Level Equipment	fluid level probe
Well Diameter	2 inch	Minimum Gallons to Purge	25.02	pH/EC Meter	YSI
Borehole Diameter	8-in	Measured Depth (post-development)		Turbidity Meter	LaMotte, 2020we
Screen Length	15 ft	Water Level (ft) (post-development)	Dry	Other	TD of Installed well = 18 ftbgs

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (ºC)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
13:45	22.5							Purged Dry, water brownish w/HC odor. Sunny 80 F
FINAL FIELD PARAMETER MEASUREMENTS								

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Well ID MKTF-02R

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel	Hilario Trejo	Measured Depth (pre-development)	21.50		
Date	8/31/2021	Static Water Level (ft)	16.10	Qty of Drilling Fluid Lost	N/A
Project	Additional Well Installations	Standing Water Column (ft)	5.40	Development Method	bailer
Job Number	697-092-001	One Well Volume (gal)	0.88	Purging Equipment	bailer
Installation Date	7/22/2021	One Annulus Volume (gal)		Water Level Equipment	fluid level probe
Well Diameter	2 inch	Minimum Gallons to Purge	8.80	pH/EC Meter	YSI
Borehole Diameter	8-in	Measured Depth (post-development)		Turbidity Meter	LaMotte, 2020we
Screen Length	15 ft	Water Level (ft) (post-development)	Dry	Other	TD of Installed well = 18 ft bgs

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (ºC)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
14:15	2.5							Purged Dry, water brownish, NO odor. Sunny 79 F
FINAL FIELD PARAMETER MEASUREMENTS								

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Well ID MKTF-04R

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel	Hilario Trejo	Measured Depth (pre-development)	19.20		
Date	8/30/2021	Static Water Level (ft)	9.60	Qty of Drilling Fluid Lost	N/A
Project	Additional Well Installations	Standing Water Column (ft)	9.60	Development Method	bailer
Job Number	697-092-001	One Well Volume (gal)	1.56	Purging Equipment	bailer
Installation Date	8/16/2021	One Annulus Volume (gal)		Water Level Equipment	fluid level probe
Well Diameter	2 inch	Minimum Gallons to Purge	15.65	pH/EC Meter	YSI
Borehole Diameter	8-in	Measured Depth (post-development)		Turbidity Meter	LaMotte, 2020we
Screen Length	15 ft	Water Level (ft) (post-development)	Dry	Other	TD of Installed well = 19 ft bgs

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (ºC)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
15:25	7.5							Purged Dry, water brownish, NO odor. Sunny 81 F
FINAL FIELD PARAMETER MEASUREMENTS								

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Well ID MKTF-17R

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel	Hilario Trejo	Measured Depth (pre-development)	20.45		
Date	8/30/2021	Static Water Level (ft)	11.93	Qty of Drilling Fluid Lost	N/A
Project	Additional Well Installations	Standing Water Column (ft)	8.52	Development Method	bailer
Job Number	697-092-001	One Well Volume (gal)	1.39	Purging Equipment	bailer
Installation Date	8/14/2021	One Annulus Volume (gal)		Water Level Equipment	fluid level probe
Well Diameter	2 inch	Minimum Gallons to Purge	13.89	pH/EC Meter	YSI
Borehole Diameter	8-in	Measured Depth (post-development)		Turbidity Meter	LaMotte, 2020we
Screen Length	15 ft	Water Level (ft) (post-development)	Dry	Other	TD of Installed well = 20 ft bgs

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (ºC)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
14:08	7							Purged Dry, water brownish w/HC odor. Sunny 81 F
FINAL FIELD PARAMETER MEASUREMENTS								

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Well ID MKTF-18R

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel	Hilario Trejo	Measured Depth (pre-development)	25.55		
Date	8/30/2021	Static Water Level (ft)	9.58	Qty of Drilling Fluid Lost	N/A
Project	Additional Well Installations	Standing Water Column (ft)	15.97	Development Method	bailer
Job Number	697-092-001	One Well Volume (gal)	2.60	Purging Equipment	bailer
Installation Date	8/14/2021	One Annulus Volume (gal)		Water Level Equipment	fluid level probe
Well Diameter	2 inch	Minimum Gallons to Purge	26.03	pH/EC Meter	YSI
Borehole Diameter	8-in	Measured Depth (post-development)		Turbidity Meter	LaMotte, 2020we
Screen Length	20 ft	Water Level (ft) (post-development)	Dry	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.	
14:38	17.5							Purged Dry, water brownish w/HC odor. Sunny 81 F
FINAL FIELD PARAMETER MEASUREMENTS								

MONITORING WELL DEVELOPMENT LOG

Well ID OW-66

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel Hilario Trejo
Date 9/2/2021
Project Additional Well Installations
Job Number 697-092-001
Installation Date 7/19/2021
Well Diameter 2 inch
Borehole Diameter 8-in
Screen Length 15 ft

Measured Depth (pre-development) 27.83
Static Water Level (ft) 18.21
Standing Water Column (ft) 9.62
One Well Volume (gal) 1.57
One Annulus Volume (gal)
Minimum Gallons to Purge 15.68
Measured Depth (post-development)
Water Level (ft) (post-development) Dry

Qty of Drilling Fluid Lost N/A
Development Method bailer
Purging Equipment bailer
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.	GPM	Water Level	
11:15	14									Purged Dry, water brownish w/HC odor. Sunny 80
FINAL FIELD PARAMETER MEASUREMENTS										

MONITORING WELL DEVELOPMENT LOG

Trihydro CORPORATION

Page 1 of 1

Well ID OW-67

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel	Hilario Trejo	Measured Depth (pre-development)	27.75		
Date	9/2/2021	Static Water Level (ft)	12.4	Qty of Drilling Fluid Lost	N/A
Project	Additional Well Installations	Standing Water Column (ft)	15.35	Development Method	bailer
Job Number	697-092-001	One Well Volume (gal)	2.50	Purging Equipment	bailer
Installation Date	7/20/2021	One Annulus Volume (gal)		Water Level Equipment	fluid level probe
Well Diameter	2 inch	Minimum Gallons to Purge	25.02	pH/EC Meter	YSI
Borehole Diameter	8-in	Measured Depth (post-development)		Turbidity Meter	LaMotte, 2020we
Screen Length	15 ft	Water Level (ft) (post-development)	16.55	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.	
13:45	25	15.71	6.59	17.9	7.89	1.77	9.18	
13:50	26	15.59	6.55	17.5	7.99	1.83	9.09	
13:57	27	15.56	6.60	16.9	7.78	1.74	9.12	water brownish w/HC odor. Sunny 83 F
FINAL FIELD PARAMETER MEASUREMENTS								

MONITORING WELL DEVELOPMENT LOG

Trihydro CORPORATION

Page 1 of 1

Well ID OW-68

All Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Trihydro Personnel	Hilario Trejo	Measured Depth (pre-development)	28.22		
Date	9/2/2021	Static Water Level (ft)	14.22	Qty of Drilling Fluid Lost	N/A
Project	Additional Well Installations	Standing Water Column (ft)	14	Development Method	bailer
Job Number	697-092-001	One Well Volume (gal)	2.28	Purging Equipment	bailer
Installation Date	7/21/2021	One Annulus Volume (gal)		Water Level Equipment	fluid level probe
Well Diameter	2 inch	Minimum Gallons to Purge	22.82	pH/EC Meter	YSI
Borehole Diameter	8-in	Measured Depth (post-development)		Turbidity Meter	LaMotte, 2020we
Screen Length	20 ft	Water Level (ft) (post-development)	25.33	Other	TD of Installed well = 25 ft bgs

Time	Amount Purged (gal)	Field Parameters Measured						Comments
		EC (mS/cm)	pH	Temp. (°C)	Turbidity (NTU)	D.O. (mg/L)	SAL.	
14:55	23	14.38	6.71	14	23.6	2.1	8.36	
15:00	24	14.55	6.79	14.1	23.0	2.07	8.49	
15:07	25	14.39	6.91	14.2	24.2	2.16	8.38	water brownish w/HC odor. Sunny 79 F

FINAL FIELD PARAMETER MEASUREMENTS

Appendix C - Laboratory Data and Data Validation

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 22, 2021

Lesli Alexander

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: Well Installations 2021 OrderNo.: 2107A83

Dear Lesli Alexander:

Hall Environmental Analysis Laboratory received 11 sample(s) on 7/21/2021 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued August 04, 2021.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-66-18
Project: Well Installations 2021 **Collection Date:** 7/19/2021 12:00:00 PM
Lab ID: 2107A83-001 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 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)	96	4.2	8.5		mg/Kg	1	7/23/2021 6:46:49 PM	61498
Motor Oil Range Organics (MRO)	ND	43	43		mg/Kg	1	7/23/2021 6:46:49 PM	61498
Surr: DNOP	111	0	70-130		%Rec	1	7/23/2021 6:46:49 PM	61498
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0026	0.032		mg/Kg	1	7/23/2021 10:04:32 AM	61495
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	2.9	2.7	4.8	J	mg/Kg	2	7/23/2021 4:17:11 PM	61509
Barium	340	0.29	0.48		mg/Kg	5	7/29/2021 2:08:00 PM	61509
Cadmium	ND	0.096	0.19		mg/Kg	2	7/23/2021 4:17:11 PM	61509
Chromium	4.3	0.29	0.57		mg/Kg	2	7/23/2021 4:17:11 PM	61509
Iron	7100	24	24	E	mg/Kg	10	7/29/2021 2:16:23 PM	61509
Lead	1.2	0.51	0.57		mg/Kg	2	7/23/2021 4:17:11 PM	61509
Manganese	480	0.32	0.38		mg/Kg	2	7/29/2021 2:01:18 PM	61509
Selenium	ND	4.2	4.8		mg/Kg	2	7/29/2021 2:01:18 PM	61509
Silver	ND	0.28	0.48		mg/Kg	2	7/23/2021 4:17:11 PM	61509
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.087	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Acenaphthylene	ND	0.088	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Aniline	ND	0.068	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Anthracene	ND	0.088	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Azobenzene	ND	0.098	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Benzo(a)pyrene	ND	0.092	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Benzo(k)fluoranthene	ND	0.073	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Benzoic acid	ND	0.12	0.49		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Benzyl alcohol	ND	0.080	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Bis(2-chloroisopropyl)ether	ND	0.099	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	7/28/2021 12:12:39 PM	61566
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Butyl benzyl phthalate	ND	0.059	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Carbazole	ND	0.086	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
4-Chloro-3-methylphenol	ND	0.082	0.49		mg/Kg	1	7/28/2021 12:12:39 PM	61566
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	7/28/2021 12:12:39 PM	61566
2-Chloronaphthalene	ND	0.093	0.24		mg/Kg	1	7/28/2021 12:12:39 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-66-18
Project: Well Installations 2021 **Collection Date:** 7/19/2021 12:00:00 PM
Lab ID: 2107A83-001 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Chrysene	ND	0.086	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Di-n-butyl phthalate	0.33	0.27	0.39	J	mg/Kg	1	7/28/2021 12:12:39 PM	61566
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Diethyl phthalate	1.0	0.32	0.49	B	mg/Kg	1	7/28/2021 12:12:39 PM	61566
Dimethyl phthalate	ND	0.090	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	7/28/2021 12:12:39 PM	61566
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	7/28/2021 12:12:39 PM	61566
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	7/28/2021 12:12:39 PM	61566
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	7/28/2021 12:12:39 PM	61566
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	7/28/2021 12:12:39 PM	61566
2,6-Dinitrotoluene	ND	0.099	0.49		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Fluoranthene	0.080	0.079	0.20	J	mg/Kg	1	7/28/2021 12:12:39 PM	61566
Fluorene	ND	0.087	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Hexachloroethane	ND	0.086	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Isophorone	ND	0.080	0.39		mg/Kg	1	7/28/2021 12:12:39 PM	61566
1-Methylnaphthalene	0.59	0.090	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
2-Methylnaphthalene	1.1	0.081	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
2-Methylphenol	0.097	0.082	0.39	J	mg/Kg	1	7/28/2021 12:12:39 PM	61566
3+4-Methylphenol	0.12	0.081	0.20	J	mg/Kg	1	7/28/2021 12:12:39 PM	61566
N-Nitrosodi-n-propylamine	ND	0.090	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Naphthalene	1.4	0.092	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	7/28/2021 12:12:39 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-66-18
Project: Well Installations 2021 **Collection Date:** 7/19/2021 12:00:00 PM
Lab ID: 2107A83-001 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.084	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Pentachlorophenol	ND	0.084	0.39		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Phenanthrene	0.12	0.10	0.20	J	mg/Kg	1	7/28/2021 12:12:39 PM	61566
Phenol	0.15	0.075	0.20	J	mg/Kg	1	7/28/2021 12:12:39 PM	61566
Pyrene	ND	0.074	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Pyridine	ND	0.16	0.39		mg/Kg	1	7/28/2021 12:12:39 PM	61566
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
2,4,5-Trichlorophenol	ND	0.062	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
2,4,6-Trichlorophenol	ND	0.084	0.20		mg/Kg	1	7/28/2021 12:12:39 PM	61566
Surr: 2-Fluorophenol	0		20.3-74.1	S	%Rec	1	7/28/2021 12:12:39 PM	61566
Surr: Phenol-d5	77.7		23.1-92.7		%Rec	1	7/28/2021 12:12:39 PM	61566
Surr: 2,4,6-Tribromophenol	87.1		17.3-122		%Rec	1	7/28/2021 12:12:39 PM	61566
Surr: Nitrobenzene-d5	54.8		24.7-73.2		%Rec	1	7/28/2021 12:12:39 PM	61566
Surr: 2-Fluorobiphenyl	50.3		21.5-90.1		%Rec	1	7/28/2021 12:12:39 PM	61566
Surr: 4-Terphenyl-d14	83.1		15-140		%Rec	1	7/28/2021 12:12:39 PM	61566
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	10	0.021	0.055		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Toluene	52	0.12	1.1		mg/Kg	50	7/23/2021 4:22:41 PM	R80062
Ethylbenzene	8.1	0.027	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Methyl tert-butyl ether (MTBE)	0.054	0.022	0.11	J	mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,2,4-Trimethylbenzene	39	0.16	1.1		mg/Kg	50	7/23/2021 4:22:41 PM	R80062
1,3,5-Trimethylbenzene	13	0.25	1.1		mg/Kg	50	7/23/2021 4:22:41 PM	R80062
1,2-Dichloroethane (EDC)	ND	0.025	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,2-Dibromoethane (EDB)	ND	0.044	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Naphthalene	2.4	0.020	0.22		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1-Methylnaphthalene	1.2	0.13	0.44		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
2-Methylnaphthalene	2.3	0.10	0.44		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Acetone	0.37	0.10	1.7	J	mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Bromobenzene	ND	0.0089	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Bromodichloromethane	ND	0.010	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Bromoform	ND	0.027	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Bromomethane	ND	0.097	0.33		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
2-Butanone	ND	0.17	1.1		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Carbon disulfide	ND	0.027	1.1		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Carbon tetrachloride	ND	0.0098	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Chlorobenzene	ND	0.018	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Chloroethane	ND	0.041	0.22		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Chloroform	ND	0.015	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017

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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-66-18
Project: Well Installations 2021 **Collection Date:** 7/19/2021 12:00:00 PM
Lab ID: 2107A83-001 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	0.11	0.011	0.33	J	mg/Kg	5	7/22/2021 6:44:15 PM	A80017
2-Chlorotoluene	ND	0.023	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
4-Chlorotoluene	ND	0.070	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
cis-1,2-DCE	ND	0.055	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
cis-1,3-Dichloropropene	ND	0.015	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,2-Dibromo-3-chloropropane	ND	0.048	0.22		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Dibromochloromethane	ND	0.015	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Dibromomethane	ND	0.017	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,2-Dichlorobenzene	ND	0.023	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,3-Dichlorobenzene	ND	0.021	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,4-Dichlorobenzene	ND	0.030	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Dichlorodifluoromethane	ND	0.034	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,1-Dichloroethane	ND	0.019	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,1-Dichloroethene	ND	0.016	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,2-Dichloropropane	ND	0.019	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,3-Dichloropropane	ND	0.024	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
2,2-Dichloropropane	ND	0.013	0.22		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,1-Dichloropropene	ND	0.012	0.22		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Hexachlorobutadiene	ND	0.029	0.22		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
2-Hexanone	ND	0.021	1.1		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Isopropylbenzene	0.49	0.021	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
4-Isopropyltoluene	0.23	0.029	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
4-Methyl-2-pentanone	ND	0.13	1.1		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Methylene chloride	ND	0.080	0.33		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
n-Butylbenzene	1.2	0.030	0.33		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
n-Propylbenzene	2.6	0.018	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
sec-Butylbenzene	0.41	0.091	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Styrene	ND	0.014	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
tert-Butylbenzene	ND	0.026	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,1,1,2-Tetrachloroethane	ND	0.0097	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,1,2,2-Tetrachloroethane	ND	0.036	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Tetrachloroethene (PCE)	ND	0.030	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
trans-1,2-DCE	ND	0.019	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
trans-1,3-Dichloropropene	ND	0.026	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,2,3-Trichlorobenzene	ND	0.0075	0.22		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,2,4-Trichlorobenzene	ND	0.039	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,1,1-Trichloroethane	ND	0.024	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,1,2-Trichloroethane	ND	0.0098	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Trichloroethene (TCE)	ND	0.017	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017

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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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-66-18
Project: Well Installations 2021 **Collection Date:** 7/19/2021 12:00:00 PM
Lab ID: 2107A83-001 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.025	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
1,2,3-Trichloropropane	ND	0.047	0.22		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Vinyl chloride	ND	0.0093	0.11		mg/Kg	5	7/22/2021 6:44:15 PM	A80017
Xylenes, Total	93	0.58	2.2		mg/Kg	50	7/23/2021 4:22:41 PM	R80062
Surr: Dibromofluoromethane	89.1		70-130		%Rec	5	7/22/2021 6:44:15 PM	A80017
Surr: 1,2-Dichloroethane-d4	93.8		70-130		%Rec	5	7/22/2021 6:44:15 PM	A80017
Surr: Toluene-d8	103		70-130		%Rec	5	7/22/2021 6:44:15 PM	A80017
Surr: 4-Bromofluorobenzene	107		70-130		%Rec	5	7/22/2021 6:44:15 PM	A80017
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	1200	31	110		mg/Kg	50	7/23/2021 4:22:41 PM	R80062
Surr: BFB	98.9	0	70-130		%Rec	50	7/23/2021 4:22:41 PM	R80062

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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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-66-26
Project: Well Installations 2021 **Collection Date:** 7/19/2021 11:50:00 AM
Lab ID: 2107A83-002 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 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)	7.8	4.8	9.8	J	mg/Kg	1	7/23/2021 6:58:39 PM	61498
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	7/23/2021 6:58:39 PM	61498
Surr: DNOP	110	0	70-130		%Rec	1	7/23/2021 6:58:39 PM	61498
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0033	0.0025	0.032	J	mg/Kg	1	7/23/2021 10:06:36 AM	61495
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.9	5.2		mg/Kg	2	7/23/2021 4:34:10 PM	61509
Barium	580	1.2	2.1		mg/Kg	20	7/29/2021 2:29:20 PM	61509
Cadmium	ND	0.10	0.21		mg/Kg	2	7/23/2021 4:34:10 PM	61509
Chromium	6.6	0.31	0.62		mg/Kg	2	7/29/2021 2:18:40 PM	61509
Iron	9200	52	52	E	mg/Kg	20	7/29/2021 2:29:20 PM	61509
Lead	0.69	0.55	0.62		mg/Kg	2	7/29/2021 2:18:40 PM	61509
Manganese	180	0.34	0.41		mg/Kg	2	7/23/2021 4:34:10 PM	61509
Selenium	ND	4.5	5.2		mg/Kg	2	7/29/2021 2:18:40 PM	61509
Silver	ND	0.30	0.52		mg/Kg	2	7/23/2021 4:34:10 PM	61509
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Aniline	ND	0.068	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Anthracene	ND	0.089	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Azobenzene	ND	0.098	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Benzo(a)pyrene	ND	0.092	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Benzoic acid	ND	0.12	0.49		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Benzyl alcohol	ND	0.080	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	7/28/2021 2:18:47 PM	61566
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Carbazole	ND	0.086	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	7/28/2021 2:18:47 PM	61566
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	7/28/2021 2:18:47 PM	61566
2-Chloronaphthalene	ND	0.093	0.25		mg/Kg	1	7/28/2021 2:18:47 PM	61566

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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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-66-26
Project: Well Installations 2021 **Collection Date:** 7/19/2021 11:50:00 AM
Lab ID: 2107A83-002 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Chrysene	ND	0.087	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Di-n-butyl phthalate	0.29	0.27	0.39	J	mg/Kg	1	7/28/2021 2:18:47 PM	61566
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Diethyl phthalate	1.1	0.32	0.49	B	mg/Kg	1	7/28/2021 2:18:47 PM	61566
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	7/28/2021 2:18:47 PM	61566
2,4-Dimethylphenol	ND	0.070	0.29		mg/Kg	1	7/28/2021 2:18:47 PM	61566
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	7/28/2021 2:18:47 PM	61566
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	7/28/2021 2:18:47 PM	61566
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	7/28/2021 2:18:47 PM	61566
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Fluoranthene	ND	0.079	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Fluorene	ND	0.087	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Isophorone	ND	0.080	0.39		mg/Kg	1	7/28/2021 2:18:47 PM	61566
1-Methylnaphthalene	ND	0.090	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
2-Methylphenol	ND	0.083	0.39		mg/Kg	1	7/28/2021 2:18:47 PM	61566
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Naphthalene	ND	0.092	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	7/28/2021 2:18:47 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-66-26
Project: Well Installations 2021 **Collection Date:** 7/19/2021 11:50:00 AM
Lab ID: 2107A83-002 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.085	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
4-Nitrophenol	ND	0.081	0.25		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Phenanthrene	ND	0.10	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Phenol	ND	0.076	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Pyrene	ND	0.074	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Pyridine	ND	0.16	0.39		mg/Kg	1	7/28/2021 2:18:47 PM	61566
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
2,4,5-Trichlorophenol	ND	0.062	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
2,4,6-Trichlorophenol	ND	0.084	0.20		mg/Kg	1	7/28/2021 2:18:47 PM	61566
Surr: 2-Fluorophenol	59.0		20.3-74.1		%Rec	1	7/28/2021 2:18:47 PM	61566
Surr: Phenol-d5	72.3		23.1-92.7		%Rec	1	7/28/2021 2:18:47 PM	61566
Surr: 2,4,6-Tribromophenol	82.5		17.3-122		%Rec	1	7/28/2021 2:18:47 PM	61566
Surr: Nitrobenzene-d5	51.8		24.7-73.2		%Rec	1	7/28/2021 2:18:47 PM	61566
Surr: 2-Fluorobiphenyl	55.9		21.5-90.1		%Rec	1	7/28/2021 2:18:47 PM	61566
Surr: 4-Terphenyl-d14	66.3		15-140		%Rec	1	7/28/2021 2:18:47 PM	61566
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	0.12	0.0046	0.012		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Toluene	0.33	0.0025	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Ethylbenzene	0.057	0.0058	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Methyl tert-butyl ether (MTBE)	0.035	0.0048	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,2,4-Trimethylbenzene	0.18	0.0034	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,3,5-Trimethylbenzene	0.059	0.0054	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,2-Dichloroethane (EDC)	ND	0.0055	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,2-Dibromoethane (EDB)	ND	0.0094	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Naphthalene	0.013	0.0044	0.048	J	mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1-Methylnaphthalene	ND	0.027	0.096		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
2-Methylnaphthalene	ND	0.022	0.096		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Acetone	ND	0.022	0.36		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Bromobenzene	ND	0.0019	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Bromodichloromethane	ND	0.0022	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Bromoform	ND	0.0058	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Bromomethane	ND	0.021	0.072		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
2-Butanone	0.057	0.037	0.24	J	mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Carbon disulfide	ND	0.0058	0.24		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Carbon tetrachloride	ND	0.0021	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Chlorobenzene	ND	0.0038	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Chloroethane	0.017	0.0089	0.048	J	mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Chloroform	ND	0.0033	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-66-26
Project: Well Installations 2021
Collection Date: 7/19/2021 11:50:00 AM
Lab ID: 2107A83-002
Matrix: MEOH (SOIL)
Received Date: 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.0023	0.072		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
2-Chlorotoluene	ND	0.0050	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
4-Chlorotoluene	ND	0.015	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
cis-1,2-DCE	ND	0.012	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
cis-1,3-Dichloropropene	ND	0.0032	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,2-Dibromo-3-chloropropane	ND	0.010	0.048		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Dibromochloromethane	ND	0.0031	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Dibromomethane	ND	0.0036	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,2-Dichlorobenzene	ND	0.0050	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,3-Dichlorobenzene	ND	0.0045	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,4-Dichlorobenzene	ND	0.0064	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Dichlorodifluoromethane	ND	0.0073	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,1-Dichloroethane	ND	0.0040	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,1-Dichloroethene	ND	0.0035	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,2-Dichloropropane	ND	0.0041	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,3-Dichloropropane	ND	0.0053	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
2,2-Dichloropropane	ND	0.0028	0.048		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,1-Dichloropropene	ND	0.0025	0.048		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Hexachlorobutadiene	ND	0.0062	0.048		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
2-Hexanone	ND	0.0046	0.24		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Isopropylbenzene	ND	0.0044	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
4-Isopropyltoluene	ND	0.0062	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
4-Methyl-2-pentanone	ND	0.028	0.24		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Methylene chloride	ND	0.017	0.072		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
n-Butylbenzene	ND	0.0064	0.072		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
n-Propylbenzene	0.022	0.0039	0.024	J	mg/Kg	1	7/22/2021 7:41:47 PM	A80017
sec-Butylbenzene	ND	0.020	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Styrene	ND	0.0030	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
tert-Butylbenzene	ND	0.0055	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,1,1,2-Tetrachloroethane	ND	0.0021	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,1,2,2-Tetrachloroethane	ND	0.0077	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Tetrachloroethene (PCE)	ND	0.0066	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
trans-1,2-DCE	ND	0.0041	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
trans-1,3-Dichloropropene	ND	0.0056	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,2,3-Trichlorobenzene	ND	0.0016	0.048		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,2,4-Trichlorobenzene	ND	0.0083	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,1,1-Trichloroethane	ND	0.0053	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,1,2-Trichloroethane	ND	0.0021	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Trichloroethene (TCE)	ND	0.0037	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017

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Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-66-26
Project: Well Installations 2021 **Collection Date:** 7/19/2021 11:50:00 AM
Lab ID: 2107A83-002 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0054	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
1,2,3-Trichloropropane	ND	0.010	0.048		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Vinyl chloride	ND	0.0020	0.024		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Xylenes, Total	0.38	0.013	0.048		mg/Kg	1	7/22/2021 7:41:47 PM	A80017
Surr: Dibromofluoromethane	100		70-130		%Rec	1	7/22/2021 7:41:47 PM	A80017
Surr: 1,2-Dichloroethane-d4	107		70-130		%Rec	1	7/22/2021 7:41:47 PM	A80017
Surr: Toluene-d8	96.3		70-130		%Rec	1	7/22/2021 7:41:47 PM	A80017
Surr: 4-Bromofluorobenzene	98.0		70-130		%Rec	1	7/22/2021 7:41:47 PM	A80017
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	5.7	0.67	2.4		mg/Kg	1	7/22/2021 7:41:47 PM	C80017
Surr: BFB	98.5	0	70-130		%Rec	1	7/22/2021 7:41:47 PM	C80017

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-13A-14
Project: Well Installations 2021 **Collection Date:** 7/19/2021 3:55:00 PM
Lab ID: 2107A83-003 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 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	7/23/2021 7:10:20 PM	61498
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	7/23/2021 7:10:20 PM	61498
Surr: DNOP	105	0	70-130		%Rec	1	7/23/2021 7:10:20 PM	61498
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0028	0.0027	0.034	J	mg/Kg	1	7/23/2021 10:08:41 AM	61495
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.7	4.8		mg/Kg	2	7/23/2021 4:36:25 PM	61509
Barium	1000	1.1	1.9		mg/Kg	20	7/29/2021 2:33:43 PM	61509
Cadmium	ND	0.095	0.19		mg/Kg	2	7/23/2021 4:36:25 PM	61509
Chromium	11	0.29	0.57		mg/Kg	2	7/29/2021 2:31:28 PM	61509
Iron	15000	48	48	E	mg/Kg	20	7/29/2021 2:33:43 PM	61509
Lead	ND	0.51	0.57		mg/Kg	2	7/23/2021 4:36:25 PM	61509
Manganese	960	3.2	3.8		mg/Kg	20	7/29/2021 2:33:43 PM	61509
Selenium	ND	4.2	4.8		mg/Kg	2	7/29/2021 2:31:28 PM	61509
Silver	ND	0.28	0.48		mg/Kg	2	7/23/2021 4:36:25 PM	61509
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.087	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Aniline	ND	0.068	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Anthracene	ND	0.089	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Azobenzene	ND	0.098	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Benzo(a)pyrene	ND	0.092	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Benzo(k)fluoranthene	ND	0.073	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Benzoic acid	ND	0.12	0.49		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Benzyl alcohol	ND	0.080	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Bis(2-chloroisopropyl)ether	ND	0.099	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	7/28/2021 3:01:02 PM	61566
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Butyl benzyl phthalate	ND	0.059	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Carbazole	ND	0.086	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
4-Chloro-3-methylphenol	ND	0.082	0.49		mg/Kg	1	7/28/2021 3:01:02 PM	61566
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	7/28/2021 3:01:02 PM	61566
2-Chloronaphthalene	ND	0.093	0.24		mg/Kg	1	7/28/2021 3:01:02 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-13A-14
Project: Well Installations 2021 **Collection Date:** 7/19/2021 3:55:00 PM
Lab ID: 2107A83-003 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Chrysene	ND	0.086	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Di-n-butyl phthalate	0.28	0.27	0.39	J	mg/Kg	1	7/28/2021 3:01:02 PM	61566
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Diethyl phthalate	0.95	0.32	0.49	B	mg/Kg	1	7/28/2021 3:01:02 PM	61566
Dimethyl phthalate	ND	0.090	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	7/28/2021 3:01:02 PM	61566
2,4-Dimethylphenol	ND	0.070	0.29		mg/Kg	1	7/28/2021 3:01:02 PM	61566
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	7/28/2021 3:01:02 PM	61566
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	7/28/2021 3:01:02 PM	61566
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	7/28/2021 3:01:02 PM	61566
2,6-Dinitrotoluene	ND	0.099	0.49		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Fluoranthene	ND	0.079	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Fluorene	ND	0.087	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Hexachloroethane	ND	0.086	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Isophorone	ND	0.080	0.39		mg/Kg	1	7/28/2021 3:01:02 PM	61566
1-Methylnaphthalene	ND	0.090	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
2-Methylphenol	ND	0.082	0.39		mg/Kg	1	7/28/2021 3:01:02 PM	61566
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
N-Nitrosodi-n-propylamine	ND	0.090	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Naphthalene	ND	0.092	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	7/28/2021 3:01:02 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-13A-14
Project: Well Installations 2021 **Collection Date:** 7/19/2021 3:55:00 PM
Lab ID: 2107A83-003 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.084	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Pentachlorophenol	ND	0.084	0.39		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Phenanthrene	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Phenol	ND	0.075	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Pyrene	ND	0.074	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Pyridine	ND	0.16	0.39		mg/Kg	1	7/28/2021 3:01:02 PM	61566
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
2,4,5-Trichlorophenol	ND	0.062	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
2,4,6-Trichlorophenol	ND	0.084	0.20		mg/Kg	1	7/28/2021 3:01:02 PM	61566
Surr: 2-Fluorophenol	53.5		20.3-74.1		%Rec	1	7/28/2021 3:01:02 PM	61566
Surr: Phenol-d5	64.4		23.1-92.7		%Rec	1	7/28/2021 3:01:02 PM	61566
Surr: 2,4,6-Tribromophenol	78.6		17.3-122		%Rec	1	7/28/2021 3:01:02 PM	61566
Surr: Nitrobenzene-d5	48.3		24.7-73.2		%Rec	1	7/28/2021 3:01:02 PM	61566
Surr: 2-Fluorobiphenyl	52.3		21.5-90.1		%Rec	1	7/28/2021 3:01:02 PM	61566
Surr: 4-Terphenyl-d14	63.3		15-140		%Rec	1	7/28/2021 3:01:02 PM	61566
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0079	0.020		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Toluene	ND	0.0043	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Ethylbenzene	ND	0.010	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Methyl tert-butyl ether (MTBE)	ND	0.0082	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,2,4-Trimethylbenzene	ND	0.0058	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,3,5-Trimethylbenzene	ND	0.0092	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,2-Dichloroethane (EDC)	ND	0.0093	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,2-Dibromoethane (EDB)	ND	0.016	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Naphthalene	ND	0.0075	0.082		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1-Methylnaphthalene	ND	0.047	0.16		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
2-Methylnaphthalene	ND	0.038	0.16		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Acetone	0.11	0.037	0.61	J	mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Bromobenzene	ND	0.0033	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Bromodichloromethane	ND	0.0038	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Bromoform	ND	0.0099	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Bromomethane	ND	0.036	0.12		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
2-Butanone	0.12	0.063	0.41	J	mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Carbon disulfide	ND	0.010	0.41		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Carbon tetrachloride	ND	0.0036	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Chlorobenzene	ND	0.0065	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Chloroethane	ND	0.015	0.082		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Chloroform	ND	0.0056	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017

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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-13A-14
Project: Well Installations 2021
Collection Date: 7/19/2021 3:55:00 PM
Lab ID: 2107A83-003
Matrix: MEOH (SOIL)
Received Date: 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.0039	0.12		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
2-Chlorotoluene	ND	0.0085	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
4-Chlorotoluene	ND	0.026	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
cis-1,2-DCE	ND	0.020	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
cis-1,3-Dichloropropene	ND	0.0054	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,2-Dibromo-3-chloropropane	ND	0.018	0.082		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Dibromochloromethane	ND	0.0054	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Dibromomethane	ND	0.0062	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,2-Dichlorobenzene	ND	0.0085	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,3-Dichlorobenzene	ND	0.0077	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,4-Dichlorobenzene	ND	0.011	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Dichlorodifluoromethane	ND	0.013	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,1-Dichloroethane	ND	0.0069	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,1-Dichloroethene	ND	0.0060	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,2-Dichloropropane	ND	0.0070	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,3-Dichloropropane	ND	0.0090	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
2,2-Dichloropropane	ND	0.0048	0.082		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,1-Dichloropropene	ND	0.0043	0.082		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Hexachlorobutadiene	ND	0.011	0.082		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
2-Hexanone	ND	0.0078	0.41		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Isopropylbenzene	ND	0.0076	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
4-Isopropyltoluene	ND	0.011	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
4-Methyl-2-pentanone	ND	0.048	0.41		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Methylene chloride	ND	0.030	0.12		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
n-Butylbenzene	ND	0.011	0.12		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
n-Propylbenzene	ND	0.0066	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
sec-Butylbenzene	ND	0.034	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Styrene	ND	0.0052	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
tert-Butylbenzene	ND	0.0095	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,1,1,2-Tetrachloroethane	ND	0.0036	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,1,2,2-Tetrachloroethane	ND	0.013	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Tetrachloroethene (PCE)	ND	0.011	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
trans-1,2-DCE	ND	0.0070	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
trans-1,3-Dichloropropene	ND	0.0096	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,2,3-Trichlorobenzene	ND	0.0028	0.082		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,2,4-Trichlorobenzene	ND	0.014	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,1,1-Trichloroethane	ND	0.0090	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,1,2-Trichloroethane	ND	0.0036	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Trichloroethene (TCE)	ND	0.0063	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-13A-14
Project: Well Installations 2021 **Collection Date:** 7/19/2021 3:55:00 PM
Lab ID: 2107A83-003 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0093	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
1,2,3-Trichloropropane	ND	0.017	0.082		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Vinyl chloride	ND	0.0034	0.041		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Xylenes, Total	ND	0.022	0.082		mg/Kg	1	7/22/2021 8:10:32 PM	A80017
Surr: Dibromofluoromethane	108		70-130		%Rec	1	7/22/2021 8:10:32 PM	A80017
Surr: 1,2-Dichloroethane-d4	101		70-130		%Rec	1	7/22/2021 8:10:32 PM	A80017
Surr: Toluene-d8	97.2		70-130		%Rec	1	7/22/2021 8:10:32 PM	A80017
Surr: 4-Bromofluorobenzene	98.7		70-130		%Rec	1	7/22/2021 8:10:32 PM	A80017
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	1.1	4.1		mg/Kg	1	7/22/2021 8:10:32 PM	C80017
Surr: BFB	97.1	0	70-130		%Rec	1	7/22/2021 8:10:32 PM	C80017

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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-13A-25.5
Project: Well Installations 2021 **Collection Date:** 7/19/2021 3:45:00 PM
Lab ID: 2107A83-004 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 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	7/23/2021 7:22:13 PM	61498
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	7/23/2021 7:22:13 PM	61498
Surr: DNOP	108	0	70-130		%Rec	1	7/23/2021 7:22:13 PM	61498
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0025	0.031		mg/Kg	1	7/23/2021 10:10:46 AM	61495
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.9	5.1		mg/Kg	2	7/23/2021 4:38:46 PM	61509
Barium	250	0.12	0.20		mg/Kg	2	7/29/2021 2:36:16 PM	61509
Cadmium	ND	0.10	0.20		mg/Kg	2	7/23/2021 4:38:46 PM	61509
Chromium	12	0.31	0.61		mg/Kg	2	7/29/2021 2:36:16 PM	61509
Iron	16000	5.1	5.1	E	mg/Kg	2	7/29/2021 2:36:16 PM	61509
Lead	ND	0.54	0.61		mg/Kg	2	7/23/2021 4:38:46 PM	61509
Manganese	330	0.34	0.41		mg/Kg	2	7/23/2021 4:38:46 PM	61509
Selenium	ND	4.5	5.1		mg/Kg	2	7/29/2021 2:36:16 PM	61509
Silver	ND	0.30	0.51		mg/Kg	2	7/23/2021 4:38:46 PM	61509
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.087	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Aniline	ND	0.068	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Anthracene	ND	0.089	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Azobenzene	ND	0.098	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Benzo(a)pyrene	ND	0.092	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Benzoic acid	ND	0.12	0.49		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Benzyl alcohol	ND	0.080	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Bis(2-chloroisopropyl)ether	ND	0.099	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	7/28/2021 3:43:05 PM	61566
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Carbazole	ND	0.086	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
4-Chloro-3-methylphenol	ND	0.082	0.49		mg/Kg	1	7/28/2021 3:43:05 PM	61566
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	7/28/2021 3:43:05 PM	61566
2-Chloronaphthalene	ND	0.093	0.24		mg/Kg	1	7/28/2021 3:43:05 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-13A-25.5
Project: Well Installations 2021 **Collection Date:** 7/19/2021 3:45:00 PM
Lab ID: 2107A83-004 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Chrysene	ND	0.086	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Diethyl phthalate	0.81	0.32	0.49	B	mg/Kg	1	7/28/2021 3:43:05 PM	61566
Dimethyl phthalate	ND	0.090	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	7/28/2021 3:43:05 PM	61566
2,4-Dimethylphenol	ND	0.070	0.29		mg/Kg	1	7/28/2021 3:43:05 PM	61566
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	7/28/2021 3:43:05 PM	61566
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	7/28/2021 3:43:05 PM	61566
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	7/28/2021 3:43:05 PM	61566
2,6-Dinitrotoluene	ND	0.099	0.49		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Fluoranthene	ND	0.079	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Fluorene	ND	0.087	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Isophorone	ND	0.080	0.39		mg/Kg	1	7/28/2021 3:43:05 PM	61566
1-Methylnaphthalene	ND	0.090	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
2-Methylphenol	ND	0.082	0.39		mg/Kg	1	7/28/2021 3:43:05 PM	61566
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Naphthalene	ND	0.092	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	7/28/2021 3:43:05 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-13A-25.5
Project: Well Installations 2021 **Collection Date:** 7/19/2021 3:45:00 PM
Lab ID: 2107A83-004 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.084	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Pentachlorophenol	ND	0.084	0.39		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Phenanthrene	ND	0.10	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Phenol	ND	0.075	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Pyrene	ND	0.074	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Pyridine	ND	0.16	0.39		mg/Kg	1	7/28/2021 3:43:05 PM	61566
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
2,4,5-Trichlorophenol	ND	0.062	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
2,4,6-Trichlorophenol	ND	0.084	0.20		mg/Kg	1	7/28/2021 3:43:05 PM	61566
Surr: 2-Fluorophenol	46.4		20.3-74.1		%Rec	1	7/28/2021 3:43:05 PM	61566
Surr: Phenol-d5	53.1		23.1-92.7		%Rec	1	7/28/2021 3:43:05 PM	61566
Surr: 2,4,6-Tribromophenol	78.6		17.3-122		%Rec	1	7/28/2021 3:43:05 PM	61566
Surr: Nitrobenzene-d5	44.4		24.7-73.2		%Rec	1	7/28/2021 3:43:05 PM	61566
Surr: 2-Fluorobiphenyl	45.9		21.5-90.1		%Rec	1	7/28/2021 3:43:05 PM	61566
Surr: 4-Terphenyl-d14	61.8		15-140		%Rec	1	7/28/2021 3:43:05 PM	61566
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0073	0.019		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Toluene	ND	0.0040	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Ethylbenzene	ND	0.0092	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Methyl tert-butyl ether (MTBE)	ND	0.0075	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,2,4-Trimethylbenzene	ND	0.0053	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,3,5-Trimethylbenzene	ND	0.0085	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,2-Dichloroethane (EDC)	ND	0.0086	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,2-Dibromoethane (EDB)	ND	0.015	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Naphthalene	ND	0.0069	0.076		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1-Methylnaphthalene	ND	0.043	0.15		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
2-Methylnaphthalene	ND	0.035	0.15		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Acetone	ND	0.034	0.57		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Bromobenzene	ND	0.0030	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Bromodichloromethane	ND	0.0035	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Bromoform	ND	0.0091	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Bromomethane	ND	0.033	0.11		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
2-Butanone	0.16	0.058	0.38	J	mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Carbon disulfide	ND	0.0092	0.38		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Carbon tetrachloride	ND	0.0034	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Chlorobenzene	ND	0.0060	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Chloroethane	ND	0.014	0.076		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Chloroform	ND	0.0052	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-13A-25.5
Project: Well Installations 2021 **Collection Date:** 7/19/2021 3:45:00 PM
Lab ID: 2107A83-004 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.0036	0.11		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
2-Chlorotoluene	ND	0.0078	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
4-Chlorotoluene	ND	0.024	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
cis-1,2-DCE	ND	0.019	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
cis-1,3-Dichloropropene	ND	0.0050	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,2-Dibromo-3-chloropropane	ND	0.016	0.076		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Dibromochloromethane	ND	0.0050	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Dibromomethane	ND	0.0058	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,2-Dichlorobenzene	ND	0.0079	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,3-Dichlorobenzene	ND	0.0072	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,4-Dichlorobenzene	ND	0.010	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Dichlorodifluoromethane	ND	0.012	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,1-Dichloroethane	ND	0.0063	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,1-Dichloroethene	ND	0.0055	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,2-Dichloropropane	ND	0.0065	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,3-Dichloropropane	ND	0.0083	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
2,2-Dichloropropane	ND	0.0044	0.076		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,1-Dichloropropene	ND	0.0040	0.076		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Hexachlorobutadiene	ND	0.0099	0.076		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
2-Hexanone	ND	0.0072	0.38		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Isopropylbenzene	ND	0.0070	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
4-Isopropyltoluene	ND	0.0097	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
4-Methyl-2-pentanone	ND	0.044	0.38		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Methylene chloride	ND	0.027	0.11		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
n-Butylbenzene	ND	0.010	0.11		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
n-Propylbenzene	ND	0.0061	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
sec-Butylbenzene	ND	0.031	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Styrene	ND	0.0048	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
tert-Butylbenzene	ND	0.0088	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,1,1,2-Tetrachloroethane	ND	0.0033	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,1,2,2-Tetrachloroethane	ND	0.012	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Tetrachloroethene (PCE)	ND	0.010	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
trans-1,2-DCE	ND	0.0065	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
trans-1,3-Dichloropropene	ND	0.0089	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,2,3-Trichlorobenzene	ND	0.0026	0.076		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,2,4-Trichlorobenzene	ND	0.013	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,1,1-Trichloroethane	ND	0.0084	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,1,2-Trichloroethane	ND	0.0034	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Trichloroethene (TCE)	ND	0.0058	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017

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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-13A-25.5
Project: Well Installations 2021 **Collection Date:** 7/19/2021 3:45:00 PM
Lab ID: 2107A83-004 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0086	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
1,2,3-Trichloropropane	ND	0.016	0.076		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Vinyl chloride	ND	0.0032	0.038		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Xylenes, Total	ND	0.020	0.076		mg/Kg	1	7/22/2021 8:39:14 PM	A80017
Surr: Dibromofluoromethane	104		70-130		%Rec	1	7/22/2021 8:39:14 PM	A80017
Surr: 1,2-Dichloroethane-d4	100		70-130		%Rec	1	7/22/2021 8:39:14 PM	A80017
Surr: Toluene-d8	93.6		70-130		%Rec	1	7/22/2021 8:39:14 PM	A80017
Surr: 4-Bromofluorobenzene	102		70-130		%Rec	1	7/22/2021 8:39:14 PM	A80017
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	1.1	3.8		mg/Kg	1	7/22/2021 8:39:14 PM	C80017
Surr: BFB	99.3	0	70-130		%Rec	1	7/22/2021 8:39:14 PM	C80017

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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-68-22
Project: Well Installations 2021 **Collection Date:** 7/20/2021 5:15:00 PM
Lab ID: 2107A83-005 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 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	4.4	9.0		mg/Kg	1	7/23/2021 7:33:59 PM	61498
Motor Oil Range Organics (MRO)	ND	45	45		mg/Kg	1	7/23/2021 7:33:59 PM	61498
Surr: DNOP	107	0	70-130		%Rec	1	7/23/2021 7:33:59 PM	61498
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0028	0.035		mg/Kg	1	7/23/2021 10:12:53 AM	61495
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.9	5.2		mg/Kg	2	7/23/2021 4:40:58 PM	61509
Barium	400	0.13	0.21		mg/Kg	2	7/29/2021 2:38:24 PM	61509
Cadmium	ND	0.10	0.21		mg/Kg	2	7/23/2021 4:40:58 PM	61509
Chromium	9.1	0.31	0.62		mg/Kg	2	7/29/2021 2:38:24 PM	61509
Iron	11000	5.2	5.2	E	mg/Kg	2	7/29/2021 2:38:24 PM	61509
Lead	1.2	0.56	0.62		mg/Kg	2	7/29/2021 2:38:24 PM	61509
Manganese	420	0.34	0.42		mg/Kg	2	7/23/2021 4:40:58 PM	61509
Selenium	ND	4.6	5.2		mg/Kg	2	7/29/2021 2:38:24 PM	61509
Silver	ND	0.30	0.52		mg/Kg	2	7/23/2021 4:40:58 PM	61509
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.089	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Acenaphthylene	ND	0.090	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Aniline	ND	0.069	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Anthracene	ND	0.090	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Azobenzene	ND	0.099	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Benz(a)anthracene	ND	0.064	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Benzo(a)pyrene	ND	0.094	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Benzo(b)fluoranthene	ND	0.11	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Benzo(k)fluoranthene	ND	0.075	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Benzoic acid	ND	0.12	0.50		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Benzyl alcohol	ND	0.082	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Bis(2-chloroethoxy)methane	ND	0.076	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Bis(2-ethylhexyl)phthalate	0.22	0.21	0.50	J	mg/Kg	1	7/28/2021 4:25:22 PM	61566
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Butyl benzyl phthalate	ND	0.061	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Carbazole	ND	0.088	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
4-Chloro-3-methylphenol	ND	0.084	0.50		mg/Kg	1	7/28/2021 4:25:22 PM	61566
4-Chloroaniline	ND	0.097	0.50		mg/Kg	1	7/28/2021 4:25:22 PM	61566
2-Chloronaphthalene	ND	0.094	0.25		mg/Kg	1	7/28/2021 4:25:22 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-68-22
Project: Well Installations 2021 **Collection Date:** 7/20/2021 5:15:00 PM
Lab ID: 2107A83-005 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
4-Chlorophenyl phenyl ether	ND	0.084	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Chrysene	ND	0.088	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Di-n-butyl phthalate	0.36	0.28	0.40	J	mg/Kg	1	7/28/2021 4:25:22 PM	61566
Di-n-octyl phthalate	ND	0.13	0.40		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
1,2-Dichlorobenzene	ND	0.081	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
1,3-Dichlorobenzene	ND	0.071	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Diethyl phthalate	1.1	0.32	0.50	B	mg/Kg	1	7/28/2021 4:25:22 PM	61566
Dimethyl phthalate	ND	0.092	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
2,4-Dichlorophenol	ND	0.081	0.40		mg/Kg	1	7/28/2021 4:25:22 PM	61566
2,4-Dimethylphenol	ND	0.071	0.30		mg/Kg	1	7/28/2021 4:25:22 PM	61566
4,6-Dinitro-2-methylphenol	ND	0.084	0.40		mg/Kg	1	7/28/2021 4:25:22 PM	61566
2,4-Dinitrophenol	ND	0.050	0.50		mg/Kg	1	7/28/2021 4:25:22 PM	61566
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	7/28/2021 4:25:22 PM	61566
2,6-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Fluoranthene	ND	0.080	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Fluorene	ND	0.089	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Hexachlorobenzene	ND	0.089	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Hexachlorobutadiene	ND	0.093	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Hexachloroethane	ND	0.088	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Isophorone	ND	0.081	0.40		mg/Kg	1	7/28/2021 4:25:22 PM	61566
1-Methylnaphthalene	ND	0.092	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
2-Methylnaphthalene	ND	0.082	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
2-Methylphenol	ND	0.084	0.40		mg/Kg	1	7/28/2021 4:25:22 PM	61566
3+4-Methylphenol	ND	0.082	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
N-Nitrosodi-n-propylamine	ND	0.092	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Naphthalene	ND	0.094	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
3-Nitroaniline	ND	0.12	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Nitrobenzene	ND	0.082	0.40		mg/Kg	1	7/28/2021 4:25:22 PM	61566

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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
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P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-68-22
Project: Well Installations 2021 **Collection Date:** 7/20/2021 5:15:00 PM
Lab ID: 2107A83-005 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.086	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
4-Nitrophenol	ND	0.082	0.25		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Pentachlorophenol	ND	0.086	0.40		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Phenanthrene	ND	0.10	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Phenol	ND	0.077	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Pyrene	ND	0.075	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Pyridine	ND	0.16	0.40		mg/Kg	1	7/28/2021 4:25:22 PM	61566
1,2,4-Trichlorobenzene	ND	0.091	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
2,4,6-Trichlorophenol	ND	0.086	0.20		mg/Kg	1	7/28/2021 4:25:22 PM	61566
Surr: 2-Fluorophenol	55.1		20.3-74.1		%Rec	1	7/28/2021 4:25:22 PM	61566
Surr: Phenol-d5	69.6		23.1-92.7		%Rec	1	7/28/2021 4:25:22 PM	61566
Surr: 2,4,6-Tribromophenol	83.6		17.3-122		%Rec	1	7/28/2021 4:25:22 PM	61566
Surr: Nitrobenzene-d5	50.9		24.7-73.2		%Rec	1	7/28/2021 4:25:22 PM	61566
Surr: 2-Fluorobiphenyl	51.2		21.5-90.1		%Rec	1	7/28/2021 4:25:22 PM	61566
Surr: 4-Terphenyl-d14	65.2		15-140		%Rec	1	7/28/2021 4:25:22 PM	61566
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0049	0.013		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Toluene	ND	0.0027	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Ethylbenzene	ND	0.0063	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Methyl tert-butyl ether (MTBE)	0.0055	0.0051	0.026	J	mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,2,4-Trimethylbenzene	ND	0.0036	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,3,5-Trimethylbenzene	ND	0.0058	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,2-Dichloroethane (EDC)	ND	0.0059	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,2-Dibromoethane (EDB)	ND	0.010	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Naphthalene	ND	0.0047	0.051		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1-Methylnaphthalene	ND	0.029	0.10		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
2-Methylnaphthalene	ND	0.024	0.10		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Acetone	0.074	0.023	0.38	J	mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Bromobenzene	ND	0.0021	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Bromodichloromethane	ND	0.0024	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Bromoform	ND	0.0062	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Bromomethane	ND	0.022	0.077		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
2-Butanone	0.095	0.040	0.26	J	mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Carbon disulfide	ND	0.0062	0.26		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Carbon tetrachloride	ND	0.0023	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Chlorobenzene	ND	0.0041	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Chloroethane	ND	0.0096	0.051		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Chloroform	ND	0.0035	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017

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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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-68-22
Project: Well Installations 2021 **Collection Date:** 7/20/2021 5:15:00 PM
Lab ID: 2107A83-005 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.0025	0.077		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
2-Chlorotoluene	ND	0.0053	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
4-Chlorotoluene	ND	0.016	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
cis-1,2-DCE	ND	0.013	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
cis-1,3-Dichloropropene	ND	0.0034	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,2-Dibromo-3-chloropropane	ND	0.011	0.051		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Dibromochloromethane	ND	0.0034	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Dibromomethane	ND	0.0039	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,2-Dichlorobenzene	ND	0.0053	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,3-Dichlorobenzene	ND	0.0048	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,4-Dichlorobenzene	ND	0.0069	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Dichlorodifluoromethane	ND	0.0079	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,1-Dichloroethane	ND	0.0043	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,1-Dichloroethene	ND	0.0038	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,2-Dichloropropane	ND	0.0044	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,3-Dichloropropane	ND	0.0056	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
2,2-Dichloropropane	ND	0.0030	0.051		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,1-Dichloropropene	ND	0.0027	0.051		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Hexachlorobutadiene	ND	0.0067	0.051		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
2-Hexanone	ND	0.0049	0.26		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Isopropylbenzene	ND	0.0048	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
4-Isopropyltoluene	ND	0.0066	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
4-Methyl-2-pentanone	ND	0.030	0.26		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Methylene chloride	ND	0.019	0.077		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
n-Butylbenzene	ND	0.0069	0.077		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
n-Propylbenzene	ND	0.0041	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
sec-Butylbenzene	ND	0.021	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Styrene	ND	0.0032	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
tert-Butylbenzene	ND	0.0059	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,1,1,2-Tetrachloroethane	ND	0.0022	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,1,2,2-Tetrachloroethane	ND	0.0083	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Tetrachloroethene (PCE)	ND	0.0070	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
trans-1,2-DCE	ND	0.0044	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
trans-1,3-Dichloropropene	ND	0.0060	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,2,3-Trichlorobenzene	ND	0.0017	0.051		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,2,4-Trichlorobenzene	ND	0.0089	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,1,1-Trichloroethane	ND	0.0057	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,1,2-Trichloroethane	ND	0.0023	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Trichloroethene (TCE)	ND	0.0039	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017

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H	Holding times for preparation or analysis exceeded
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Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-68-22
Project: Well Installations 2021 **Collection Date:** 7/20/2021 5:15:00 PM
Lab ID: 2107A83-005 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0058	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
1,2,3-Trichloropropane	ND	0.011	0.051		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Vinyl chloride	ND	0.0021	0.026		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Xylenes, Total	ND	0.013	0.051		mg/Kg	1	7/22/2021 9:07:57 PM	A80017
Surr: Dibromofluoromethane	101		70-130		%Rec	1	7/22/2021 9:07:57 PM	A80017
Surr: 1,2-Dichloroethane-d4	99.2		70-130		%Rec	1	7/22/2021 9:07:57 PM	A80017
Surr: Toluene-d8	96.9		70-130		%Rec	1	7/22/2021 9:07:57 PM	A80017
Surr: 4-Bromofluorobenzene	96.6		70-130		%Rec	1	7/22/2021 9:07:57 PM	A80017
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.71	2.6		mg/Kg	1	7/22/2021 9:07:57 PM	C80017
Surr: BFB	93.6	0	70-130		%Rec	1	7/22/2021 9:07:57 PM	C80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-68-26
Project: Well Installations 2021 **Collection Date:** 7/20/2021 3:20:00 PM
Lab ID: 2107A83-006 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 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	4.3	8.7		mg/Kg	1	7/23/2021 7:45:38 PM	61498
Motor Oil Range Organics (MRO)	ND	43	43		mg/Kg	1	7/23/2021 7:45:38 PM	61498
Surr: DNOP	107	0	70-130		%Rec	1	7/23/2021 7:45:38 PM	61498
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0027	0.035		mg/Kg	1	7/23/2021 10:15:00 AM	61495
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.9	5.0		mg/Kg	2	7/23/2021 4:43:14 PM	61509
Barium	800	1.2	2.0		mg/Kg	20	7/29/2021 2:42:54 PM	61509
Cadmium	ND	0.10	0.20		mg/Kg	2	7/23/2021 4:43:14 PM	61509
Chromium	10	0.30	0.61		mg/Kg	2	7/29/2021 2:40:37 PM	61509
Iron	14000	50	50	E	mg/Kg	20	7/29/2021 2:42:54 PM	61509
Lead	ND	0.54	0.61		mg/Kg	2	7/23/2021 4:43:14 PM	61509
Manganese	710	3.3	4.0		mg/Kg	20	7/29/2021 2:42:54 PM	61509
Selenium	ND	4.4	5.0		mg/Kg	2	7/29/2021 2:40:37 PM	61509
Silver	ND	0.29	0.50		mg/Kg	2	7/23/2021 4:43:14 PM	61509
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.085	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Acenaphthylene	ND	0.086	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Aniline	ND	0.066	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Anthracene	ND	0.086	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Azobenzene	ND	0.095	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Benz(a)anthracene	ND	0.061	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Benzo(a)pyrene	ND	0.089	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Benzo(g,h,i)perylene	ND	0.097	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Benzo(k)fluoranthene	ND	0.071	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Benzoic acid	ND	0.12	0.47		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Benzyl alcohol	ND	0.078	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Bis(2-chloroethoxy)methane	ND	0.073	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Bis(2-chloroethyl)ether	ND	0.099	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Bis(2-chloroisopropyl)ether	ND	0.096	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Bis(2-ethylhexyl)phthalate	0.22	0.20	0.47	J	mg/Kg	1	7/28/2021 5:07:46 PM	61566
4-Bromophenyl phenyl ether	ND	0.099	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Butyl benzyl phthalate	ND	0.058	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Carbazole	ND	0.083	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
4-Chloro-3-methylphenol	ND	0.080	0.47		mg/Kg	1	7/28/2021 5:07:46 PM	61566
4-Chloroaniline	ND	0.092	0.47		mg/Kg	1	7/28/2021 5:07:46 PM	61566
2-Chloronaphthalene	ND	0.090	0.24		mg/Kg	1	7/28/2021 5:07:46 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-68-26
Project: Well Installations 2021 **Collection Date:** 7/20/2021 3:20:00 PM
Lab ID: 2107A83-006 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
4-Chlorophenyl phenyl ether	ND	0.080	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Chrysene	ND	0.084	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Di-n-butyl phthalate	0.39	0.26	0.38		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Di-n-octyl phthalate	ND	0.12	0.38		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Dibenzofuran	ND	0.099	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
1,2-Dichlorobenzene	ND	0.077	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
1,3-Dichlorobenzene	ND	0.068	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
1,4-Dichlorobenzene	ND	0.080	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Diethyl phthalate	1.0	0.31	0.47	B	mg/Kg	1	7/28/2021 5:07:46 PM	61566
Dimethyl phthalate	ND	0.088	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
2,4-Dichlorophenol	ND	0.077	0.38		mg/Kg	1	7/28/2021 5:07:46 PM	61566
2,4-Dimethylphenol	ND	0.067	0.28		mg/Kg	1	7/28/2021 5:07:46 PM	61566
4,6-Dinitro-2-methylphenol	ND	0.080	0.38		mg/Kg	1	7/28/2021 5:07:46 PM	61566
2,4-Dinitrophenol	ND	0.048	0.47		mg/Kg	1	7/28/2021 5:07:46 PM	61566
2,4-Dinitrotoluene	ND	0.12	0.47		mg/Kg	1	7/28/2021 5:07:46 PM	61566
2,6-Dinitrotoluene	ND	0.096	0.47		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Fluoranthene	ND	0.077	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Fluorene	ND	0.085	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Hexachlorobenzene	ND	0.084	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Hexachlorobutadiene	ND	0.089	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Hexachloroethane	ND	0.084	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Isophorone	ND	0.077	0.38		mg/Kg	1	7/28/2021 5:07:46 PM	61566
1-Methylnaphthalene	ND	0.087	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
2-Methylnaphthalene	ND	0.078	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
2-Methylphenol	ND	0.080	0.38		mg/Kg	1	7/28/2021 5:07:46 PM	61566
3+4-Methylphenol	ND	0.078	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
N-Nitrosodi-n-propylamine	ND	0.088	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
N-Nitrosodiphenylamine	ND	0.099	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Naphthalene	ND	0.089	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
2-Nitroaniline	ND	0.097	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Nitrobenzene	ND	0.078	0.38		mg/Kg	1	7/28/2021 5:07:46 PM	61566

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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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-68-26
Project: Well Installations 2021 **Collection Date:** 7/20/2021 3:20:00 PM
Lab ID: 2107A83-006 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.082	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
4-Nitrophenol	ND	0.078	0.24		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Pentachlorophenol	ND	0.082	0.38		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Phenanthrene	ND	0.097	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Phenol	ND	0.073	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Pyrene	ND	0.072	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Pyridine	ND	0.15	0.38		mg/Kg	1	7/28/2021 5:07:46 PM	61566
1,2,4-Trichlorobenzene	ND	0.087	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
2,4,5-Trichlorophenol	ND	0.060	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
2,4,6-Trichlorophenol	ND	0.082	0.19		mg/Kg	1	7/28/2021 5:07:46 PM	61566
Surr: 2-Fluorophenol	40.4		20.3-74.1		%Rec	1	7/28/2021 5:07:46 PM	61566
Surr: Phenol-d5	53.7		23.1-92.7		%Rec	1	7/28/2021 5:07:46 PM	61566
Surr: 2,4,6-Tribromophenol	77.9		17.3-122		%Rec	1	7/28/2021 5:07:46 PM	61566
Surr: Nitrobenzene-d5	40.3		24.7-73.2		%Rec	1	7/28/2021 5:07:46 PM	61566
Surr: 2-Fluorobiphenyl	40.6		21.5-90.1		%Rec	1	7/28/2021 5:07:46 PM	61566
Surr: 4-Terphenyl-d14	63.2		15-140		%Rec	1	7/28/2021 5:07:46 PM	61566
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0054	0.014		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Toluene	ND	0.0029	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Ethylbenzene	ND	0.0068	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Methyl tert-butyl ether (MTBE)	0.0057	0.0055	0.028	J	mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,2,4-Trimethylbenzene	ND	0.0039	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,3,5-Trimethylbenzene	ND	0.0063	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,2-Dichloroethane (EDC)	ND	0.0063	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,2-Dibromoethane (EDB)	ND	0.011	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Naphthalene	ND	0.0051	0.056		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1-Methylnaphthalene	ND	0.032	0.11		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
2-Methylnaphthalene	ND	0.026	0.11		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Acetone	0.075	0.025	0.42	J	mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Bromobenzene	ND	0.0022	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Bromodichloromethane	ND	0.0026	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Bromoform	ND	0.0067	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Bromomethane	ND	0.024	0.084		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
2-Butanone	0.098	0.043	0.28	J	mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Carbon disulfide	ND	0.0068	0.28		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Carbon tetrachloride	ND	0.0025	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Chlorobenzene	ND	0.0044	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Chloroethane	ND	0.010	0.056		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Chloroform	ND	0.0038	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017

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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-68-26
Project: Well Installations 2021
Collection Date: 7/20/2021 3:20:00 PM
Lab ID: 2107A83-006
Matrix: MEOH (SOIL)
Received Date: 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.0027	0.084		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
2-Chlorotoluene	ND	0.0058	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
4-Chlorotoluene	ND	0.018	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
cis-1,2-DCE	ND	0.014	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
cis-1,3-Dichloropropene	ND	0.0037	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,2-Dibromo-3-chloropropane	ND	0.012	0.056		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Dibromochloromethane	ND	0.0037	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Dibromomethane	ND	0.0042	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,2-Dichlorobenzene	ND	0.0058	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,3-Dichlorobenzene	ND	0.0053	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,4-Dichlorobenzene	ND	0.0074	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Dichlorodifluoromethane	ND	0.0085	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,1-Dichloroethane	ND	0.0047	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,1-Dichloroethene	ND	0.0041	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,2-Dichloropropane	ND	0.0048	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,3-Dichloropropane	ND	0.0061	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
2,2-Dichloropropane	ND	0.0033	0.056		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,1-Dichloropropene	ND	0.0029	0.056		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Hexachlorobutadiene	ND	0.0073	0.056		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
2-Hexanone	ND	0.0053	0.28		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Isopropylbenzene	ND	0.0052	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
4-Isopropyltoluene	ND	0.0072	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
4-Methyl-2-pentanone	ND	0.032	0.28		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Methylene chloride	ND	0.020	0.084		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
n-Butylbenzene	ND	0.0074	0.084		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
n-Propylbenzene	ND	0.0045	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
sec-Butylbenzene	ND	0.023	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Styrene	ND	0.0035	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
tert-Butylbenzene	ND	0.0064	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,1,1,2-Tetrachloroethane	ND	0.0024	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,1,2,2-Tetrachloroethane	ND	0.0090	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Tetrachloroethene (PCE)	ND	0.0076	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
trans-1,2-DCE	ND	0.0048	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
trans-1,3-Dichloropropene	ND	0.0065	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,2,3-Trichlorobenzene	ND	0.0019	0.056		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,2,4-Trichlorobenzene	ND	0.0097	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,1,1-Trichloroethane	ND	0.0061	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,1,2-Trichloroethane	ND	0.0025	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Trichloroethene (TCE)	ND	0.0043	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-68-26
Project: Well Installations 2021 **Collection Date:** 7/20/2021 3:20:00 PM
Lab ID: 2107A83-006 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0063	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
1,2,3-Trichloropropane	ND	0.012	0.056		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Vinyl chloride	ND	0.0023	0.028		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Xylenes, Total	ND	0.015	0.056		mg/Kg	1	7/22/2021 9:36:37 PM	A80017
Surr: Dibromofluoromethane	100		70-130		%Rec	1	7/22/2021 9:36:37 PM	A80017
Surr: 1,2-Dichloroethane-d4	99.8		70-130		%Rec	1	7/22/2021 9:36:37 PM	A80017
Surr: Toluene-d8	95.2		70-130		%Rec	1	7/22/2021 9:36:37 PM	A80017
Surr: 4-Bromofluorobenzene	103		70-130		%Rec	1	7/22/2021 9:36:37 PM	A80017
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.77	2.8		mg/Kg	1	7/22/2021 9:36:37 PM	C80017
Surr: BFB	100	0	70-130		%Rec	1	7/22/2021 9:36:37 PM	C80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-67-17
Project: Well Installations 2021 **Collection Date:** 7/20/2021 12:10:00 PM
Lab ID: 2107A83-007 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 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	7/23/2021 7:57:27 PM	61498
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	7/23/2021 7:57:27 PM	61498
Surr: DNOP	107	0	70-130		%Rec	1	7/23/2021 7:57:27 PM	61498
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.012	0.16		mg/Kg	5	7/23/2021 10:38:09 AM	61495
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.7	4.8		mg/Kg	2	7/23/2021 4:45:30 PM	61509
Barium	650	1.1	1.9		mg/Kg	20	7/29/2021 2:47:17 PM	61509
Cadmium	ND	0.095	0.19		mg/Kg	2	7/23/2021 4:45:30 PM	61509
Chromium	5.4	0.29	0.57		mg/Kg	2	7/29/2021 2:45:11 PM	61509
Iron	8400	48	48	E	mg/Kg	20	7/29/2021 2:47:17 PM	61509
Lead	1.7	0.51	0.57		mg/Kg	2	7/29/2021 2:45:11 PM	61509
Manganese	420	0.32	0.38		mg/Kg	2	7/23/2021 4:45:30 PM	61509
Selenium	ND	4.2	4.8		mg/Kg	2	7/29/2021 2:45:11 PM	61509
Silver	ND	0.28	0.48		mg/Kg	2	7/23/2021 4:45:30 PM	61509
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.087	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Acenaphthylene	ND	0.088	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Aniline	ND	0.068	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Anthracene	ND	0.088	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Azobenzene	ND	0.098	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Benzo(a)pyrene	ND	0.092	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Benzo(k)fluoranthene	ND	0.073	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Benzoic acid	ND	0.12	0.49		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Benzyl alcohol	ND	0.080	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Bis(2-chloroisopropyl)ether	ND	0.099	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	7/28/2021 5:50:05 PM	61566
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Butyl benzyl phthalate	ND	0.059	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Carbazole	ND	0.086	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
4-Chloro-3-methylphenol	ND	0.082	0.49		mg/Kg	1	7/28/2021 5:50:05 PM	61566
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	7/28/2021 5:50:05 PM	61566
2-Chloronaphthalene	ND	0.093	0.24		mg/Kg	1	7/28/2021 5:50:05 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-67-17
Project: Well Installations 2021 **Collection Date:** 7/20/2021 12:10:00 PM
Lab ID: 2107A83-007 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Chrysene	ND	0.086	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Diethyl phthalate	0.80	0.32	0.49	B	mg/Kg	1	7/28/2021 5:50:05 PM	61566
Dimethyl phthalate	ND	0.090	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	7/28/2021 5:50:05 PM	61566
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	7/28/2021 5:50:05 PM	61566
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	7/28/2021 5:50:05 PM	61566
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	7/28/2021 5:50:05 PM	61566
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	7/28/2021 5:50:05 PM	61566
2,6-Dinitrotoluene	ND	0.099	0.49		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Fluoranthene	ND	0.079	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Fluorene	ND	0.087	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Hexachloroethane	ND	0.086	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Isophorone	ND	0.080	0.39		mg/Kg	1	7/28/2021 5:50:05 PM	61566
1-Methylnaphthalene	ND	0.090	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
2-Methylphenol	ND	0.082	0.39		mg/Kg	1	7/28/2021 5:50:05 PM	61566
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
N-Nitrosodi-n-propylamine	ND	0.090	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Naphthalene	ND	0.092	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	7/28/2021 5:50:05 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-67-17
Project: Well Installations 2021 **Collection Date:** 7/20/2021 12:10:00 PM
Lab ID: 2107A83-007 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.084	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Pentachlorophenol	ND	0.084	0.39		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Phenanthrene	ND	0.10	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Phenol	ND	0.075	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Pyrene	ND	0.074	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Pyridine	ND	0.16	0.39		mg/Kg	1	7/28/2021 5:50:05 PM	61566
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
2,4,5-Trichlorophenol	ND	0.062	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
2,4,6-Trichlorophenol	ND	0.084	0.20		mg/Kg	1	7/28/2021 5:50:05 PM	61566
Surr: 2-Fluorophenol	51.6		20.3-74.1		%Rec	1	7/28/2021 5:50:05 PM	61566
Surr: Phenol-d5	63.7		23.1-92.7		%Rec	1	7/28/2021 5:50:05 PM	61566
Surr: 2,4,6-Tribromophenol	79.1		17.3-122		%Rec	1	7/28/2021 5:50:05 PM	61566
Surr: Nitrobenzene-d5	53.0		24.7-73.2		%Rec	1	7/28/2021 5:50:05 PM	61566
Surr: 2-Fluorobiphenyl	53.4		21.5-90.1		%Rec	1	7/28/2021 5:50:05 PM	61566
Surr: 4-Terphenyl-d14	58.2		15-140		%Rec	1	7/28/2021 5:50:05 PM	61566
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0055	0.014		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Toluene	ND	0.0030	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Ethylbenzene	ND	0.0070	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Methyl tert-butyl ether (MTBE)	ND	0.0057	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,2,4-Trimethylbenzene	ND	0.0040	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,3,5-Trimethylbenzene	ND	0.0064	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,2-Dichloroethane (EDC)	ND	0.0065	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,2-Dibromoethane (EDB)	ND	0.011	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Naphthalene	ND	0.0052	0.057		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1-Methylnaphthalene	ND	0.033	0.11		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
2-Methylnaphthalene	ND	0.026	0.11		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Acetone	ND	0.026	0.43		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Bromobenzene	ND	0.0023	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Bromodichloromethane	ND	0.0027	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Bromoform	ND	0.0069	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Bromomethane	ND	0.025	0.086		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
2-Butanone	0.080	0.044	0.29	J	mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Carbon disulfide	ND	0.0070	0.29		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Carbon tetrachloride	ND	0.0025	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Chlorobenzene	ND	0.0045	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Chloroethane	ND	0.011	0.057		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Chloroform	ND	0.0039	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-67-17
Project: Well Installations 2021 **Collection Date:** 7/20/2021 12:10:00 PM
Lab ID: 2107A83-007 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.0028	0.086		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
2-Chlorotoluene	ND	0.0059	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
4-Chlorotoluene	ND	0.018	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
cis-1,2-DCE	ND	0.014	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
cis-1,3-Dichloropropene	ND	0.0038	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,2-Dibromo-3-chloropropane	ND	0.012	0.057		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Dibromochloromethane	ND	0.0038	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Dibromomethane	ND	0.0044	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,2-Dichlorobenzene	ND	0.0060	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,3-Dichlorobenzene	ND	0.0054	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,4-Dichlorobenzene	ND	0.0077	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Dichlorodifluoromethane	ND	0.0088	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,1-Dichloroethane	ND	0.0048	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,1-Dichloroethene	ND	0.0042	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,2-Dichloropropane	ND	0.0049	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,3-Dichloropropane	ND	0.0063	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
2,2-Dichloropropane	ND	0.0034	0.057		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,1-Dichloropropene	ND	0.0030	0.057		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Hexachlorobutadiene	ND	0.0075	0.057		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
2-Hexanone	ND	0.0055	0.29		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Isopropylbenzene	ND	0.0053	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
4-Isopropyltoluene	ND	0.0074	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
4-Methyl-2-pentanone	ND	0.033	0.29		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Methylene chloride	ND	0.021	0.086		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
n-Butylbenzene	ND	0.0077	0.086		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
n-Propylbenzene	ND	0.0046	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
sec-Butylbenzene	ND	0.024	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Styrene	ND	0.0036	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
tert-Butylbenzene	ND	0.0066	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,1,1,2-Tetrachloroethane	ND	0.0025	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,1,2,2-Tetrachloroethane	ND	0.0093	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Tetrachloroethene (PCE)	ND	0.0078	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
trans-1,2-DCE	ND	0.0049	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
trans-1,3-Dichloropropene	ND	0.0067	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,2,3-Trichlorobenzene	ND	0.0019	0.057		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,2,4-Trichlorobenzene	ND	0.010	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,1,1-Trichloroethane	ND	0.0063	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,1,2-Trichloroethane	ND	0.0025	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Trichloroethene (TCE)	ND	0.0044	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-67-17
Project: Well Installations 2021 **Collection Date:** 7/20/2021 12:10:00 PM
Lab ID: 2107A83-007 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0065	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
1,2,3-Trichloropropane	ND	0.012	0.057		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Vinyl chloride	ND	0.0024	0.029		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Xylenes, Total	ND	0.015	0.057		mg/Kg	1	7/22/2021 10:05:14 PM	A80017
Surr: Dibromofluoromethane	99.8		70-130		%Rec	1	7/22/2021 10:05:14 PM	A80017
Surr: 1,2-Dichloroethane-d4	105		70-130		%Rec	1	7/22/2021 10:05:14 PM	A80017
Surr: Toluene-d8	94.8		70-130		%Rec	1	7/22/2021 10:05:14 PM	A80017
Surr: 4-Bromofluorobenzene	102		70-130		%Rec	1	7/22/2021 10:05:14 PM	A80017
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.80	2.9		mg/Kg	1	7/22/2021 10:05:14 PM	C80017
Surr: BFB	97.5	0	70-130		%Rec	1	7/22/2021 10:05:14 PM	C80017

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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-67-26
Project: Well Installations 2021 **Collection Date:** 7/20/2021 12:25:00 PM
Lab ID: 2107A83-008 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 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	7/23/2021 8:09:30 PM	61498
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	7/23/2021 8:09:30 PM	61498
Surr: DNOP	111	0	70-130		%Rec	1	7/23/2021 8:09:30 PM	61498
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0026	0.033		mg/Kg	1	7/23/2021 10:27:39 AM	61495
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.7	4.8		mg/Kg	2	7/23/2021 4:47:41 PM	61509
Barium	340	0.12	0.19		mg/Kg	2	7/29/2021 2:49:28 PM	61509
Cadmium	ND	0.096	0.19		mg/Kg	2	7/23/2021 4:47:41 PM	61509
Chromium	7.1	0.29	0.58		mg/Kg	2	7/29/2021 2:49:28 PM	61509
Iron	10000	48	48	E	mg/Kg	20	7/29/2021 3:00:19 PM	61509
Lead	1.3	0.51	0.58		mg/Kg	2	7/29/2021 2:49:28 PM	61509
Manganese	450	0.32	0.38		mg/Kg	2	7/23/2021 4:47:41 PM	61509
Selenium	ND	4.2	4.8		mg/Kg	2	7/29/2021 2:49:28 PM	61509
Silver	ND	0.28	0.48		mg/Kg	2	7/23/2021 4:47:41 PM	61509
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Aniline	ND	0.068	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Anthracene	ND	0.089	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Azobenzene	ND	0.098	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Benzo(a)pyrene	ND	0.092	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Benzoic acid	ND	0.12	0.49		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Benzyl alcohol	ND	0.080	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Bis(2-ethylhexyl)phthalate	0.22	0.21	0.49	J	mg/Kg	1	7/28/2021 6:32:14 PM	61566
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Carbazole	ND	0.086	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	7/28/2021 6:32:14 PM	61566
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	7/28/2021 6:32:14 PM	61566
2-Chloronaphthalene	ND	0.093	0.25		mg/Kg	1	7/28/2021 6:32:14 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-67-26
Project: Well Installations 2021 **Collection Date:** 7/20/2021 12:25:00 PM
Lab ID: 2107A83-008 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Chrysene	ND	0.087	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Di-n-butyl phthalate	0.30	0.27	0.39	J	mg/Kg	1	7/28/2021 6:32:14 PM	61566
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Diethyl phthalate	0.92	0.32	0.49	B	mg/Kg	1	7/28/2021 6:32:14 PM	61566
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	7/28/2021 6:32:14 PM	61566
2,4-Dimethylphenol	ND	0.070	0.29		mg/Kg	1	7/28/2021 6:32:14 PM	61566
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	7/28/2021 6:32:14 PM	61566
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	7/28/2021 6:32:14 PM	61566
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	7/28/2021 6:32:14 PM	61566
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Fluoranthene	ND	0.079	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Fluorene	ND	0.088	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Isophorone	ND	0.080	0.39		mg/Kg	1	7/28/2021 6:32:14 PM	61566
1-Methylnaphthalene	ND	0.090	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
2-Methylnaphthalene	ND	0.081	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
2-Methylphenol	ND	0.083	0.39		mg/Kg	1	7/28/2021 6:32:14 PM	61566
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Naphthalene	ND	0.092	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Nitrobenzene	ND	0.081	0.39		mg/Kg	1	7/28/2021 6:32:14 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-67-26
Project: Well Installations 2021 **Collection Date:** 7/20/2021 12:25:00 PM
Lab ID: 2107A83-008 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.085	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
4-Nitrophenol	ND	0.081	0.25		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Phenanthrene	ND	0.10	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Phenol	ND	0.076	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Pyrene	ND	0.074	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Pyridine	ND	0.16	0.39		mg/Kg	1	7/28/2021 6:32:14 PM	61566
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
2,4,6-Trichlorophenol	ND	0.085	0.20		mg/Kg	1	7/28/2021 6:32:14 PM	61566
Surr: 2-Fluorophenol	55.1		20.3-74.1		%Rec	1	7/28/2021 6:32:14 PM	61566
Surr: Phenol-d5	69.8		23.1-92.7		%Rec	1	7/28/2021 6:32:14 PM	61566
Surr: 2,4,6-Tribromophenol	75.9		17.3-122		%Rec	1	7/28/2021 6:32:14 PM	61566
Surr: Nitrobenzene-d5	52.2		24.7-73.2		%Rec	1	7/28/2021 6:32:14 PM	61566
Surr: 2-Fluorobiphenyl	47.7		21.5-90.1		%Rec	1	7/28/2021 6:32:14 PM	61566
Surr: 4-Terphenyl-d14	61.0		15-140		%Rec	1	7/28/2021 6:32:14 PM	61566
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0044	0.012		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Toluene	ND	0.0024	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Ethylbenzene	ND	0.0056	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Methyl tert-butyl ether (MTBE)	ND	0.0046	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,2,4-Trimethylbenzene	ND	0.0033	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,3,5-Trimethylbenzene	ND	0.0052	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,2-Dichloroethane (EDC)	ND	0.0053	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,2-Dibromoethane (EDB)	ND	0.0091	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Naphthalene	ND	0.0042	0.046		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1-Methylnaphthalene	ND	0.027	0.092		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
2-Methylnaphthalene	ND	0.021	0.092		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Acetone	ND	0.021	0.35		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Bromobenzene	ND	0.0018	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Bromodichloromethane	ND	0.0021	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Bromoform	ND	0.0056	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Bromomethane	ND	0.020	0.069		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
2-Butanone	0.057	0.036	0.23	J	mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Carbon disulfide	ND	0.0056	0.23		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Carbon tetrachloride	ND	0.0020	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Chlorobenzene	ND	0.0037	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Chloroethane	ND	0.0086	0.046		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Chloroform	ND	0.0032	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-67-26
Project: Well Installations 2021 **Collection Date:** 7/20/2021 12:25:00 PM
Lab ID: 2107A83-008 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.0022	0.069		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
2-Chlorotoluene	ND	0.0048	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
4-Chlorotoluene	ND	0.015	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
cis-1,2-DCE	ND	0.011	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
cis-1,3-Dichloropropene	ND	0.0030	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,2-Dibromo-3-chloropropane	ND	0.010	0.046		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Dibromochloromethane	ND	0.0030	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Dibromomethane	ND	0.0035	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,2-Dichlorobenzene	ND	0.0048	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,3-Dichlorobenzene	ND	0.0044	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,4-Dichlorobenzene	ND	0.0062	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Dichlorodifluoromethane	ND	0.0071	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,1-Dichloroethane	ND	0.0039	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,1-Dichloroethene	ND	0.0034	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,2-Dichloropropane	ND	0.0040	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,3-Dichloropropane	ND	0.0051	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
2,2-Dichloropropane	ND	0.0027	0.046		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,1-Dichloropropene	ND	0.0024	0.046		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Hexachlorobutadiene	ND	0.0060	0.046		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
2-Hexanone	ND	0.0044	0.23		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Isopropylbenzene	ND	0.0043	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
4-Isopropyltoluene	ND	0.0060	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
4-Methyl-2-pentanone	ND	0.027	0.23		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Methylene chloride	ND	0.017	0.069		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
n-Butylbenzene	ND	0.0062	0.069		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
n-Propylbenzene	ND	0.0037	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
sec-Butylbenzene	ND	0.019	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Styrene	ND	0.0029	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
tert-Butylbenzene	ND	0.0054	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,1,1,2-Tetrachloroethane	ND	0.0020	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,1,2,2-Tetrachloroethane	ND	0.0075	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Tetrachloroethene (PCE)	ND	0.0063	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
trans-1,2-DCE	ND	0.0040	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
trans-1,3-Dichloropropene	ND	0.0054	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,2,3-Trichlorobenzene	ND	0.0016	0.046		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,2,4-Trichlorobenzene	ND	0.0080	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,1,1-Trichloroethane	ND	0.0051	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,1,2-Trichloroethane	ND	0.0020	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Trichloroethene (TCE)	ND	0.0036	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-67-26
Project: Well Installations 2021 **Collection Date:** 7/20/2021 12:25:00 PM
Lab ID: 2107A83-008 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0052	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
1,2,3-Trichloropropane	ND	0.0097	0.046		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Vinyl chloride	ND	0.0019	0.023		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Xylenes, Total	ND	0.012	0.046		mg/Kg	1	7/22/2021 10:33:50 PM	A80017
Surr: Dibromofluoromethane	103		70-130		%Rec	1	7/22/2021 10:33:50 PM	A80017
Surr: 1,2-Dichloroethane-d4	106		70-130		%Rec	1	7/22/2021 10:33:50 PM	A80017
Surr: Toluene-d8	95.7		70-130		%Rec	1	7/22/2021 10:33:50 PM	A80017
Surr: 4-Bromofluorobenzene	103		70-130		%Rec	1	7/22/2021 10:33:50 PM	A80017
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.64	2.3		mg/Kg	1	7/22/2021 10:33:50 PM	C80017
Surr: BFB	100	0	70-130		%Rec	1	7/22/2021 10:33:50 PM	C80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MeOH Blank
Project: Well Installations 2021 **Collection Date:**
Lab ID: 2107A83-009 **Matrix:** MEOH BLAN **Received Date:** 7/21/2021 4:10:00 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	7/23/2021 1:25:20 AM	A80017
Toluene	ND	0.0052	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Ethylbenzene	ND	0.012	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Methyl tert-butyl ether (MTBE)	0.017	0.010	0.050	J	mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,2,4-Trimethylbenzene	ND	0.0071	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,3,5-Trimethylbenzene	ND	0.011	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,2-Dichloroethane (EDC)	ND	0.011	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,2-Dibromoethane (EDB)	ND	0.020	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Naphthalene	ND	0.0092	0.10		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1-Methylnaphthalene	ND	0.057	0.20		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
2-Methylnaphthalene	ND	0.046	0.20		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Acetone	ND	0.045	0.75		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Bromobenzene	ND	0.0040	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Bromodichloromethane	ND	0.0046	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Bromoform	ND	0.012	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Bromomethane	ND	0.044	0.15		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
2-Butanone	0.15	0.077	0.50	J	mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Carbon disulfide	ND	0.012	0.50		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Carbon tetrachloride	ND	0.0044	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Chlorobenzene	ND	0.0079	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Chloroethane	ND	0.019	0.10		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Chloroform	ND	0.0069	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Chloromethane	ND	0.0048	0.15		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
2-Chlorotoluene	ND	0.010	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
4-Chlorotoluene	ND	0.032	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
cis-1,2-DCE	ND	0.025	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
cis-1,3-Dichloropropene	ND	0.0066	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,2-Dibromo-3-chloropropane	ND	0.022	0.10		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Dibromochloromethane	ND	0.0066	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Dibromomethane	ND	0.0076	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,2-Dichlorobenzene	ND	0.010	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,3-Dichlorobenzene	ND	0.0094	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,4-Dichlorobenzene	ND	0.013	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Dichlorodifluoromethane	ND	0.015	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,1-Dichloroethane	ND	0.0084	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,1-Dichloroethene	ND	0.0073	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,2-Dichloropropane	ND	0.0086	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,3-Dichloropropane	ND	0.011	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
2,2-Dichloropropane	ND	0.0059	0.10		mg/Kg	1	7/23/2021 1:25:20 AM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MeOH Blank
Project: Well Installations 2021 **Collection Date:**
Lab ID: 2107A83-009 **Matrix:** MEOH BLAN **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
1,1-Dichloropropene	ND	0.0053	0.10		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Hexachlorobutadiene	ND	0.013	0.10		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
2-Hexanone	ND	0.0095	0.50		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Isopropylbenzene	ND	0.0093	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
4-Isopropyltoluene	ND	0.013	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
4-Methyl-2-pentanone	ND	0.058	0.50		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Methylene chloride	ND	0.036	0.15		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
n-Butylbenzene	ND	0.013	0.15		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
n-Propylbenzene	ND	0.0081	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
sec-Butylbenzene	ND	0.041	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Styrene	ND	0.0063	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
tert-Butylbenzene	ND	0.012	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,1,1,2-Tetrachloroethane	ND	0.0044	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,1,2,2-Tetrachloroethane	ND	0.016	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Tetrachloroethene (PCE)	ND	0.014	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
trans-1,2-DCE	ND	0.0085	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
trans-1,3-Dichloropropene	ND	0.012	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,2,3-Trichlorobenzene	ND	0.0034	0.10		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,2,4-Trichlorobenzene	ND	0.017	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,1,1-Trichloroethane	ND	0.011	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,1,2-Trichloroethane	ND	0.0044	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Trichloroethene (TCE)	ND	0.0077	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Trichlorofluoromethane	ND	0.011	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
1,2,3-Trichloropropane	ND	0.021	0.10		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Vinyl chloride	ND	0.0042	0.050		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Xylenes, Total	ND	0.026	0.10		mg/Kg	1	7/23/2021 1:25:20 AM	A80017
Surr: Dibromofluoromethane	102		70-130		%Rec	1	7/23/2021 1:25:20 AM	A80017
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	7/23/2021 1:25:20 AM	A80017
Surr: Toluene-d8	97.4		70-130		%Rec	1	7/23/2021 1:25:20 AM	A80017
Surr: 4-Bromofluorobenzene	102		70-130		%Rec	1	7/23/2021 1:25:20 AM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-69-26
Project: Well Installations 2021 **Collection Date:** 7/21/2021 12:10:00 PM
Lab ID: 2107A83-010 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **CLP**	
Diesel Range Organics (DRO)	ND	4.6	9.3		mg/Kg	1	7/23/2021 10:52:22 AM	61499
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	7/23/2021 10:52:22 AM	61499
Surr: DNOP	173	0	70-130	S	%Rec	1	7/23/2021 10:52:22 AM	61499
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0025	0.032		mg/Kg	1	7/23/2021 10:29:45 AM	61495
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.9	5.1		mg/Kg	2	7/23/2021 4:49:49 PM	61509
Barium	160	0.12	0.20		mg/Kg	2	7/29/2021 3:02:32 PM	61509
Cadmium	ND	0.10	0.20		mg/Kg	2	7/23/2021 4:49:49 PM	61509
Chromium	18	0.31	0.61		mg/Kg	2	7/29/2021 3:02:32 PM	61509
Iron	19000	51	51	E	mg/Kg	20	7/29/2021 3:04:47 PM	61509
Lead	ND	0.54	0.61		mg/Kg	2	7/23/2021 4:49:49 PM	61509
Manganese	250	0.34	0.41		mg/Kg	2	7/23/2021 4:49:49 PM	61509
Selenium	ND	4.5	5.1		mg/Kg	2	7/29/2021 3:02:32 PM	61509
Silver	ND	0.30	0.51		mg/Kg	2	7/23/2021 4:49:49 PM	61509
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.085	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Acenaphthylene	ND	0.087	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Aniline	ND	0.066	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Anthracene	ND	0.087	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Azobenzene	ND	0.095	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Benz(a)anthracene	ND	0.062	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Benzo(a)pyrene	ND	0.090	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Benzo(g,h,i)perylene	ND	0.097	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Benzo(k)fluoranthene	ND	0.072	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Benzoic acid	ND	0.12	0.48		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Benzyl alcohol	ND	0.078	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Bis(2-chloroethoxy)methane	ND	0.073	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Bis(2-chloroisopropyl)ether	ND	0.097	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Bis(2-ethylhexyl)phthalate	0.31	0.21	0.48	J	mg/Kg	1	7/28/2021 7:14:20 PM	61566
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Butyl benzyl phthalate	ND	0.058	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Carbazole	ND	0.084	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
4-Chloro-3-methylphenol	ND	0.081	0.48		mg/Kg	1	7/28/2021 7:14:20 PM	61566
4-Chloroaniline	ND	0.093	0.48		mg/Kg	1	7/28/2021 7:14:20 PM	61566
2-Chloronaphthalene	ND	0.091	0.24		mg/Kg	1	7/28/2021 7:14:20 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-69-26
Project: Well Installations 2021 **Collection Date:** 7/21/2021 12:10:00 PM
Lab ID: 2107A83-010 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
4-Chlorophenyl phenyl ether	ND	0.081	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Chrysene	ND	0.084	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Di-n-butyl phthalate	0.35	0.27	0.38	J	mg/Kg	1	7/28/2021 7:14:20 PM	61566
Di-n-octyl phthalate	ND	0.12	0.38		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Dibenzofuran	ND	0.099	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
1,2-Dichlorobenzene	ND	0.077	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
1,3-Dichlorobenzene	ND	0.068	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
1,4-Dichlorobenzene	ND	0.081	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Diethyl phthalate	0.88	0.31	0.48	B	mg/Kg	1	7/28/2021 7:14:20 PM	61566
Dimethyl phthalate	ND	0.088	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
2,4-Dichlorophenol	ND	0.078	0.38		mg/Kg	1	7/28/2021 7:14:20 PM	61566
2,4-Dimethylphenol	ND	0.068	0.29		mg/Kg	1	7/28/2021 7:14:20 PM	61566
4,6-Dinitro-2-methylphenol	ND	0.081	0.38		mg/Kg	1	7/28/2021 7:14:20 PM	61566
2,4-Dinitrophenol	ND	0.048	0.48		mg/Kg	1	7/28/2021 7:14:20 PM	61566
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	7/28/2021 7:14:20 PM	61566
2,6-Dinitrotoluene	ND	0.097	0.48		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Fluoranthene	ND	0.077	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Fluorene	ND	0.085	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Hexachlorobenzene	ND	0.085	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Hexachlorobutadiene	ND	0.090	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Hexachloroethane	ND	0.085	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Isophorone	ND	0.078	0.38		mg/Kg	1	7/28/2021 7:14:20 PM	61566
1-Methylnaphthalene	ND	0.088	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
2-Methylnaphthalene	ND	0.079	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
2-Methylphenol	ND	0.080	0.38		mg/Kg	1	7/28/2021 7:14:20 PM	61566
3+4-Methylphenol	ND	0.079	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
N-Nitrosodi-n-propylamine	ND	0.089	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Naphthalene	ND	0.090	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
2-Nitroaniline	ND	0.098	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Nitrobenzene	ND	0.078	0.38		mg/Kg	1	7/28/2021 7:14:20 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-69-26
Project: Well Installations 2021 **Collection Date:** 7/21/2021 12:10:00 PM
Lab ID: 2107A83-010 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.082	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
4-Nitrophenol	ND	0.079	0.24		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Pentachlorophenol	ND	0.083	0.38		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Phenanthrene	ND	0.098	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Phenol	ND	0.074	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Pyrene	ND	0.072	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Pyridine	ND	0.15	0.38		mg/Kg	1	7/28/2021 7:14:20 PM	61566
1,2,4-Trichlorobenzene	ND	0.088	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
2,4,5-Trichlorophenol	ND	0.061	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
2,4,6-Trichlorophenol	ND	0.082	0.19		mg/Kg	1	7/28/2021 7:14:20 PM	61566
Surr: 2-Fluorophenol	61.5		20.3-74.1		%Rec	1	7/28/2021 7:14:20 PM	61566
Surr: Phenol-d5	70.7		23.1-92.7		%Rec	1	7/28/2021 7:14:20 PM	61566
Surr: 2,4,6-Tribromophenol	84.7		17.3-122		%Rec	1	7/28/2021 7:14:20 PM	61566
Surr: Nitrobenzene-d5	57.8		24.7-73.2		%Rec	1	7/28/2021 7:14:20 PM	61566
Surr: 2-Fluorobiphenyl	59.0		21.5-90.1		%Rec	1	7/28/2021 7:14:20 PM	61566
Surr: 4-Terphenyl-d14	69.5		15-140		%Rec	1	7/28/2021 7:14:20 PM	61566
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0068	0.018		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Toluene	ND	0.0037	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Ethylbenzene	ND	0.0086	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Methyl tert-butyl ether (MTBE)	ND	0.0070	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,2,4-Trimethylbenzene	ND	0.0050	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,3,5-Trimethylbenzene	ND	0.0079	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,2-Dichloroethane (EDC)	ND	0.0081	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,2-Dibromoethane (EDB)	ND	0.014	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Naphthalene	ND	0.0065	0.071		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1-Methylnaphthalene	ND	0.041	0.14		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
2-Methylnaphthalene	ND	0.033	0.14		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Acetone	ND	0.032	0.53		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Bromobenzene	ND	0.0028	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Bromodichloromethane	ND	0.0033	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Bromoform	ND	0.0085	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Bromomethane	ND	0.031	0.11		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
2-Butanone	0.16	0.055	0.35	J	mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Carbon disulfide	ND	0.0086	0.35		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Carbon tetrachloride	ND	0.0031	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Chlorobenzene	ND	0.0056	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Chloroethane	ND	0.013	0.071		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Chloroform	ND	0.0049	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-69-26
Project: Well Installations 2021 **Collection Date:** 7/21/2021 12:10:00 PM
Lab ID: 2107A83-010 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.0034	0.11		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
2-Chlorotoluene	ND	0.0073	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
4-Chlorotoluene	ND	0.022	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
cis-1,2-DCE	ND	0.018	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
cis-1,3-Dichloropropene	ND	0.0047	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,2-Dibromo-3-chloropropane	ND	0.015	0.071		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Dibromochloromethane	ND	0.0046	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Dibromomethane	ND	0.0054	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,2-Dichlorobenzene	ND	0.0074	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,3-Dichlorobenzene	ND	0.0067	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,4-Dichlorobenzene	ND	0.0095	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Dichlorodifluoromethane	ND	0.011	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,1-Dichloroethane	ND	0.0059	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,1-Dichloroethene	ND	0.0052	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,2-Dichloropropane	ND	0.0061	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,3-Dichloropropane	ND	0.0078	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
2,2-Dichloropropane	ND	0.0041	0.071		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,1-Dichloropropene	ND	0.0037	0.071		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Hexachlorobutadiene	ND	0.0092	0.071		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
2-Hexanone	ND	0.0067	0.35		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Isopropylbenzene	ND	0.0066	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
4-Isopropyltoluene	ND	0.0091	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
4-Methyl-2-pentanone	ND	0.041	0.35		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Methylene chloride	ND	0.026	0.11		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
n-Butylbenzene	ND	0.0094	0.11		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
n-Propylbenzene	ND	0.0057	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
sec-Butylbenzene	ND	0.029	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Styrene	ND	0.0044	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
tert-Butylbenzene	ND	0.0082	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,1,1,2-Tetrachloroethane	ND	0.0031	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,1,2,2-Tetrachloroethane	ND	0.011	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Tetrachloroethene (PCE)	ND	0.0097	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
trans-1,2-DCE	ND	0.0060	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
trans-1,3-Dichloropropene	ND	0.0083	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,2,3-Trichlorobenzene	ND	0.0024	0.071		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,2,4-Trichlorobenzene	ND	0.012	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,1,1-Trichloroethane	ND	0.0078	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,1,2-Trichloroethane	ND	0.0031	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Trichloroethene (TCE)	ND	0.0054	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-69-26
Project: Well Installations 2021 **Collection Date:** 7/21/2021 12:10:00 PM
Lab ID: 2107A83-010 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0080	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
1,2,3-Trichloropropane	ND	0.015	0.071		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Vinyl chloride	ND	0.0030	0.035		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Xylenes, Total	ND	0.019	0.071		mg/Kg	1	7/23/2021 1:53:54 AM	A80017
Surr: Dibromofluoromethane	104		70-130		%Rec	1	7/23/2021 1:53:54 AM	A80017
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	7/23/2021 1:53:54 AM	A80017
Surr: Toluene-d8	96.2		70-130		%Rec	1	7/23/2021 1:53:54 AM	A80017
Surr: 4-Bromofluorobenzene	98.9		70-130		%Rec	1	7/23/2021 1:53:54 AM	A80017
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.98	3.5		mg/Kg	1	7/23/2021 1:53:54 AM	C80017
Surr: BFB	95.8	0	70-130		%Rec	1	7/23/2021 1:53:54 AM	C80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-69-6
Project: Well Installations 2021 **Collection Date:** 7/21/2021 12:15:00 PM
Lab ID: 2107A83-011 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **CLP**	
Diesel Range Organics (DRO)	8.4	4.7	9.5	J	mg/Kg	1	7/23/2021 11:21:20 AM	61499
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	7/23/2021 11:21:20 AM	61499
Surr: DNOP	117	0	70-130		%Rec	1	7/23/2021 11:21:20 AM	61499
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0051	0.0028	0.035	J	mg/Kg	1	7/23/2021 10:31:50 AM	61495
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.8	4.9		mg/Kg	2	7/23/2021 4:52:01 PM	61509
Barium	290	0.12	0.20		mg/Kg	2	7/29/2021 3:06:50 PM	61509
Cadmium	ND	0.099	0.20		mg/Kg	2	7/23/2021 4:52:01 PM	61509
Chromium	5.5	0.30	0.59		mg/Kg	2	7/29/2021 3:06:50 PM	61509
Iron	9800	49	49	E	mg/Kg	20	7/29/2021 3:08:55 PM	61509
Lead	4.5	0.53	0.59		mg/Kg	2	7/29/2021 3:06:50 PM	61509
Manganese	220	0.33	0.40		mg/Kg	2	7/23/2021 4:52:01 PM	61509
Selenium	ND	4.3	4.9		mg/Kg	2	7/29/2021 3:06:50 PM	61509
Silver	ND	0.29	0.49		mg/Kg	2	7/23/2021 4:52:01 PM	61509
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.086	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Acenaphthylene	ND	0.087	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Aniline	ND	0.066	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Anthracene	ND	0.087	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Azobenzene	ND	0.096	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Benz(a)anthracene	ND	0.062	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Benzo(a)pyrene	ND	0.090	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Benzo(g,h,i)perylene	ND	0.098	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Benzo(k)fluoranthene	ND	0.072	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Benzoic acid	ND	0.12	0.48		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Benzyl alcohol	ND	0.079	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Bis(2-chloroethoxy)methane	ND	0.073	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Bis(2-chloroisopropyl)ether	ND	0.097	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Bis(2-ethylhexyl)phthalate	ND	0.21	0.48		mg/Kg	1	7/28/2021 7:56:12 PM	61566
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Butyl benzyl phthalate	ND	0.058	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Carbazole	ND	0.084	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
4-Chloro-3-methylphenol	ND	0.081	0.48		mg/Kg	1	7/28/2021 7:56:12 PM	61566
4-Chloroaniline	ND	0.093	0.48		mg/Kg	1	7/28/2021 7:56:12 PM	61566
2-Chloronaphthalene	ND	0.091	0.24		mg/Kg	1	7/28/2021 7:56:12 PM	61566

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-69-6
Project: Well Installations 2021 **Collection Date:** 7/21/2021 12:15:00 PM
Lab ID: 2107A83-011 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
4-Chlorophenyl phenyl ether	ND	0.081	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Chrysene	ND	0.085	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Di-n-butyl phthalate	ND	0.27	0.38		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Di-n-octyl phthalate	ND	0.12	0.38		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
1,2-Dichlorobenzene	ND	0.077	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
1,3-Dichlorobenzene	ND	0.068	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
1,4-Dichlorobenzene	ND	0.081	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Diethyl phthalate	0.69	0.31	0.48	B	mg/Kg	1	7/28/2021 7:56:12 PM	61566
Dimethyl phthalate	ND	0.089	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
2,4-Dichlorophenol	ND	0.078	0.38		mg/Kg	1	7/28/2021 7:56:12 PM	61566
2,4-Dimethylphenol	ND	0.068	0.29		mg/Kg	1	7/28/2021 7:56:12 PM	61566
4,6-Dinitro-2-methylphenol	ND	0.081	0.38		mg/Kg	1	7/28/2021 7:56:12 PM	61566
2,4-Dinitrophenol	ND	0.048	0.48		mg/Kg	1	7/28/2021 7:56:12 PM	61566
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	7/28/2021 7:56:12 PM	61566
2,6-Dinitrotoluene	ND	0.097	0.48		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Fluoranthene	ND	0.077	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Fluorene	ND	0.085	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Hexachlorobenzene	ND	0.085	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Hexachlorobutadiene	ND	0.090	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Hexachloroethane	ND	0.085	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Isophorone	ND	0.078	0.38		mg/Kg	1	7/28/2021 7:56:12 PM	61566
1-Methylnaphthalene	ND	0.088	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
2-Methylnaphthalene	ND	0.079	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
2-Methylphenol	ND	0.081	0.38		mg/Kg	1	7/28/2021 7:56:12 PM	61566
3+4-Methylphenol	ND	0.079	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
N-Nitrosodi-n-propylamine	ND	0.089	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Naphthalene	ND	0.090	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
2-Nitroaniline	ND	0.098	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Nitrobenzene	ND	0.079	0.38		mg/Kg	1	7/28/2021 7:56:12 PM	61566

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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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-69-6
Project: Well Installations 2021 **Collection Date:** 7/21/2021 12:15:00 PM
Lab ID: 2107A83-011 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.083	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
4-Nitrophenol	ND	0.079	0.24		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Pentachlorophenol	ND	0.083	0.38		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Phenanthrene	ND	0.098	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Phenol	ND	0.074	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Pyrene	ND	0.073	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Pyridine	ND	0.15	0.38		mg/Kg	1	7/28/2021 7:56:12 PM	61566
1,2,4-Trichlorobenzene	ND	0.088	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
2,4,5-Trichlorophenol	ND	0.061	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
2,4,6-Trichlorophenol	ND	0.082	0.19		mg/Kg	1	7/28/2021 7:56:12 PM	61566
Surr: 2-Fluorophenol	49.7		20.3-74.1		%Rec	1	7/28/2021 7:56:12 PM	61566
Surr: Phenol-d5	56.2		23.1-92.7		%Rec	1	7/28/2021 7:56:12 PM	61566
Surr: 2,4,6-Tribromophenol	91.4		17.3-122		%Rec	1	7/28/2021 7:56:12 PM	61566
Surr: Nitrobenzene-d5	48.0		24.7-73.2		%Rec	1	7/28/2021 7:56:12 PM	61566
Surr: 2-Fluorobiphenyl	51.0		21.5-90.1		%Rec	1	7/28/2021 7:56:12 PM	61566
Surr: 4-Terphenyl-d14	65.2		15-140		%Rec	1	7/28/2021 7:56:12 PM	61566
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0065	0.017		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Toluene	ND	0.0035	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Ethylbenzene	ND	0.0082	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Methyl tert-butyl ether (MTBE)	ND	0.0067	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,2,4-Trimethylbenzene	ND	0.0048	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,3,5-Trimethylbenzene	ND	0.0076	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,2-Dichloroethane (EDC)	ND	0.0077	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,2-Dibromoethane (EDB)	ND	0.013	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Naphthalene	ND	0.0062	0.068		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1-Methylnaphthalene	ND	0.039	0.14		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
2-Methylnaphthalene	ND	0.031	0.14		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Acetone	ND	0.030	0.51		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Bromobenzene	ND	0.0027	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Bromodichloromethane	ND	0.0031	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Bromoform	ND	0.0082	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Bromomethane	ND	0.030	0.10		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
2-Butanone	0.094	0.052	0.34	J	mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Carbon disulfide	ND	0.0082	0.34		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Carbon tetrachloride	ND	0.0030	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Chlorobenzene	ND	0.0054	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Chloroethane	ND	0.013	0.068		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Chloroform	ND	0.0047	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017

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 **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-69-6
Project: Well Installations 2021 **Collection Date:** 7/21/2021 12:15:00 PM
Lab ID: 2107A83-011 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.0033	0.10		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
2-Chlorotoluene	ND	0.0070	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
4-Chlorotoluene	ND	0.021	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
cis-1,2-DCE	ND	0.017	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
cis-1,3-Dichloropropene	ND	0.0045	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,2-Dibromo-3-chloropropane	ND	0.015	0.068		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Dibromochloromethane	ND	0.0044	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Dibromomethane	ND	0.0052	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,2-Dichlorobenzene	ND	0.0070	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,3-Dichlorobenzene	ND	0.0064	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,4-Dichlorobenzene	ND	0.0091	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Dichlorodifluoromethane	ND	0.010	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,1-Dichloroethane	ND	0.0057	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,1-Dichloroethene	ND	0.0049	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,2-Dichloropropane	ND	0.0058	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,3-Dichloropropane	ND	0.0074	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
2,2-Dichloropropane	ND	0.0040	0.068		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,1-Dichloropropene	ND	0.0036	0.068		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Hexachlorobutadiene	ND	0.0088	0.068		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
2-Hexanone	ND	0.0065	0.34		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Isopropylbenzene	ND	0.0063	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
4-Isopropyltoluene	ND	0.0087	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
4-Methyl-2-pentanone	ND	0.039	0.34		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Methylene chloride	ND	0.025	0.10		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
n-Butylbenzene	ND	0.0090	0.10		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
n-Propylbenzene	ND	0.0055	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
sec-Butylbenzene	ND	0.028	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Styrene	ND	0.0043	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
tert-Butylbenzene	ND	0.0078	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,1,1,2-Tetrachloroethane	ND	0.0030	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,1,2,2-Tetrachloroethane	ND	0.011	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Tetrachloroethene (PCE)	ND	0.0093	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
trans-1,2-DCE	ND	0.0058	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
trans-1,3-Dichloropropene	ND	0.0079	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,2,3-Trichlorobenzene	ND	0.0023	0.068		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,2,4-Trichlorobenzene	ND	0.012	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,1,1-Trichloroethane	ND	0.0075	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,1,2-Trichloroethane	ND	0.0030	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Trichloroethene (TCE)	ND	0.0052	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017

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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PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
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P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107A83**
Date Reported: **9/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** OW-69-6
Project: Well Installations 2021 **Collection Date:** 7/21/2021 12:15:00 PM
Lab ID: 2107A83-011 **Matrix:** MEOH (SOIL) **Received Date:** 7/21/2021 4:10:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0077	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
1,2,3-Trichloropropane	ND	0.014	0.068		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Vinyl chloride	ND	0.0028	0.034		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Xylenes, Total	ND	0.018	0.068		mg/Kg	1	7/23/2021 2:22:27 AM	A80017
Surr: Dibromofluoromethane	100		70-130		%Rec	1	7/23/2021 2:22:27 AM	A80017
Surr: 1,2-Dichloroethane-d4	103		70-130		%Rec	1	7/23/2021 2:22:27 AM	A80017
Surr: Toluene-d8	97.4		70-130		%Rec	1	7/23/2021 2:22:27 AM	A80017
Surr: 4-Bromofluorobenzene	101		70-130		%Rec	1	7/23/2021 2:22:27 AM	A80017
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.94	3.4		mg/Kg	1	7/23/2021 2:22:27 AM	C80017
Surr: BFB	102	0	70-130		%Rec	1	7/23/2021 2:22:27 AM	C80017

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **MB-61499**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **61499**	RunNo: **80042**
Prep Date: **7/22/2021**	Analysis Date: **7/23/2021**	SeqNo: **2816402** 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		129	70	130			

Sample ID: **LCS-61499**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **61499**	RunNo: **80042**
Prep Date: **7/22/2021**	Analysis Date: **7/23/2021**	SeqNo: **2816403** 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	103	68.9	141			
Surr: DNOP	4.4		5.000		87.3	70	130			

Sample ID: **2107A83-010AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **OW-69-26**	Batch ID: **61499**	RunNo: **80042**
Prep Date: **7/22/2021**	Analysis Date: **7/23/2021**	SeqNo: **2816405** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	9.1	45.45	0	109	15	184			
Surr: DNOP	4.9		4.545		108	70	130			

Sample ID: **MB-61498**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **61498**	RunNo: **80027**
Prep Date: **7/22/2021**	Analysis Date: **7/23/2021**	SeqNo: **2817071** 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		132	70	130			S

Sample ID: **LCS-61498**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **61498**	RunNo: **80027**
Prep Date: **7/22/2021**	Analysis Date: **7/23/2021**	SeqNo: **2817072** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	64	10	50.00	0	128	68.9	141			
Surr: DNOP	6.6		5.000		131	70	130			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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **2107A83-010AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **OW-69-26** Batch ID: **61499** RunNo: **80090**
Prep Date: **7/22/2021** Analysis Date: **7/26/2021** SeqNo: **2819394** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	8.6	42.77	0	102	15	184	12.7	23.9	
Surr: DNOP	5.0		4.277		116	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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**							
Client ID: **LCSS**	Batch ID: **A80017**	RunNo: **80017**							
Prep Date:	Analysis Date: **7/22/2021**	SeqNo: **2815786**	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	110	70	130			
Toluene	1.0	0.050	1.000	0	99.9	70	130			
Chlorobenzene	0.97	0.050	1.000	0	97.2	70	130			
1,1-Dichloroethene	1.0	0.050	1.000	0	105	70	130			
Trichloroethene (TCE)	0.93	0.050	1.000	0	93.4	70	130			
Surr: Dibromofluoromethane	0.49		0.5000		97.6	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		99.6	70	130			
Surr: Toluene-d8	0.49		0.5000		98.2	70	130			
Surr: 4-Bromofluorobenzene	0.54		0.5000		108	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**							
Client ID: **PBS**	Batch ID: **A80017**	RunNo: **80017**							
Prep Date:	Analysis Date: **7/22/2021**	SeqNo: **2815787**	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.	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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A80017**	RunNo: **80017**
Prep Date:	Analysis Date: **7/22/2021**	SeqNo: **2815787** 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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS** Batch ID: **A80017** RunNo: **80017**
Prep Date: Analysis Date: **7/22/2021** SeqNo: **2815787** 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		101	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		100	70	130			
Surr: Toluene-d8	0.49		0.5000		97.2	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		104	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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **mb-61566**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **61566**	RunNo: **80150**
Prep Date: **7/26/2021**	Analysis Date: **7/28/2021**	SeqNo: **2822045** 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	0.76	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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **mb-61566**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS**	Batch ID: **61566**	RunNo: **80150**
Prep Date: **7/26/2021**	Analysis Date: **7/28/2021**	SeqNo: **2822045** 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	1.7		3.330		50.7	20.3	74.1			
Surr: Phenol-d5	2.1		3.330		63.0	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.4		3.330		73.2	17.3	122			
Surr: Nitrobenzene-d5	0.85		1.670		51.2	24.7	73.2			
Surr: 2-Fluorobiphenyl	0.97		1.670		57.9	21.5	90.1			
Surr: 4-Terphenyl-d14	2.1		1.670		123	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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **lcs-61566** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **61566** RunNo: **80150**
Prep Date: **7/26/2021** Analysis Date: **7/28/2021** SeqNo: **2822046** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.670	0	68.3	22.9	109			
4-Chloro-3-methylphenol	2.3	0.50	3.330	0	68.5	24.2	109			
2-Chlorophenol	1.8	0.20	3.330	0	55.5	18.8	103			
1,4-Dichlorobenzene	0.83	0.20	1.670	0	49.5	18.8	89.5			
2,4-Dinitrotoluene	1.1	0.50	1.670	0	66.1	20.2	94.5			
N-Nitrosodi-n-propylamine	1.1	0.20	1.670	0	64.4	19.2	96.9			
4-Nitrophenol	3.0	0.25	3.330	0	90.9	25	118			
Pentachlorophenol	2.5	0.40	3.330	0	74.1	24.1	107			
Phenol	2.1	0.20	3.330	0	62.8	17.8	112			
Pyrene	1.8	0.20	1.670	0	110	25.9	125			
1,2,4-Trichlorobenzene	0.91	0.20	1.670	0	54.4	18.5	92.8			
Surr: 2-Fluorophenol	1.7		3.330		52.3	20.3	74.1			
Surr: Phenol-d5	2.1		3.330		63.7	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.5		3.330		75.2	17.3	122			
Surr: Nitrobenzene-d5	0.95		1.670		57.1	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.1		1.670		63.3	21.5	90.1			
Surr: 4-Terphenyl-d14	2.1		1.670		124	15	140			

Sample ID: **2107a83-001ams** SampType: **MS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **OW-66-18** Batch ID: **61566** RunNo: **80150**
Prep Date: **7/26/2021** Analysis Date: **7/28/2021** SeqNo: **2822048** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.95	0.19	1.625	0	58.5	24.8	111			
4-Chloro-3-methylphenol	2.2	0.49	3.239	0	67.1	40.7	97.8			
2-Chlorophenol	1.9	0.19	3.239	0	57.5	21.2	91.6			
1,4-Dichlorobenzene	0.57	0.19	1.625	0	35.3	17.8	74.2			
2,4-Dinitrotoluene	0.94	0.49	1.625	0	58.0	36.5	81.5			
N-Nitrosodi-n-propylamine	1.1	0.19	1.625	0	66.9	25.5	85.2			
4-Nitrophenol	3.0	0.24	3.239	0	92.5	15	143			
Pentachlorophenol	2.8	0.39	3.239	0	87.9	15	116			
Phenol	2.2	0.19	3.239	0.1480	64.1	24.8	94.5			
Pyrene	1.7	0.19	1.625	0	108	42	112			
1,2,4-Trichlorobenzene	0.80	0.19	1.625	0	49.1	18.5	85.3			
Surr: 2-Fluorophenol	0		3.239		0	20.3	74.1			S
Surr: Phenol-d5	2.2		3.239		67.3	23.1	92.7			
Surr: 2,4,6-Tribromophenol	3.0		3.239		93.1	17.3	122			
Surr: Nitrobenzene-d5	0.86		1.625		53.1	24.7	73.2			
Surr: 2-Fluorobiphenyl	0.83		1.625		51.2	21.5	90.1			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **2107a83-001ams**	SampType: **MS**	TestCode: **EPA Method 8270C: Semivolatiles**							
Client ID: **OW-66-18**	Batch ID: **61566**	RunNo: **80150**							
Prep Date: **7/26/2021**	Analysis Date: **7/28/2021**	SeqNo: **2822048**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	0.85		1.625		52.5	15	140			

Sample ID: **2107a83-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8270C: Semivolatiles**							
Client ID: **OW-66-18**	Batch ID: **61566**	RunNo: **80150**							
Prep Date: **7/26/2021**	Analysis Date: **7/28/2021**	SeqNo: **2822049**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.0	0.20	1.661	0	62.7	24.8	111	9.01	20	
4-Chloro-3-methylphenol	2.2	0.50	3.311	0	66.5	40.7	97.8	1.30	20	
2-Chlorophenol	2.0	0.20	3.311	0	60.2	21.2	91.6	6.66	20	
1,4-Dichlorobenzene	0.69	0.20	1.661	0	41.5	17.8	74.2	18.2	20	
2,4-Dinitrotoluene	0.94	0.50	1.661	0	56.8	36.5	81.5	0.0592	20	
N-Nitrosodi-n-propylamine	1.2	0.20	1.661	0	72.0	25.5	85.2	9.48	20	
4-Nitrophenol	2.9	0.25	3.311	0	89.0	15	143	1.72	20	
Pentachlorophenol	2.9	0.40	3.311	0	88.5	15	116	2.97	20	
Phenol	2.3	0.20	3.311	0.1480	65.4	24.8	94.5	3.95	20	
Pyrene	1.8	0.20	1.661	0	108	42	112	2.16	20	
1,2,4-Trichlorobenzene	0.92	0.20	1.661	0	55.2	18.5	85.3	13.9	20	
Surr: 2-Fluorophenol	0		3.311		0	20.3	74.1	0	0	S
Surr: Phenol-d5	2.2		3.311		67.4	23.1	92.7	0	0	
Surr: 2,4,6-Tribromophenol	3.0		3.311		90.3	17.3	122	0	0	
Surr: Nitrobenzene-d5	0.93		1.661		56.2	24.7	73.2	0	0	
Surr: 2-Fluorobiphenyl	0.97		1.661		58.6	21.5	90.1	0	0	
Surr: 4-Terphenyl-d14	0.96		1.661		57.7	15	140	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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **MB-61495**	SampType: **MBLK**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **PBS**	Batch ID: **61495**	RunNo: **80020**							
Prep Date: **7/22/2021**	Analysis Date: **7/23/2021**	SeqNo: **2815962**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LLLCS-61495**	SampType: **LCSLL**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **BatchQC**	Batch ID: **61495**	RunNo: **80020**							
Prep Date: **7/22/2021**	Analysis Date: **7/23/2021**	SeqNo: **2815963**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0063	0.033	0.006660	0	94.2	70	130			J

Sample ID: **LCS-61495**	SampType: **LCS**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **LCSS**	Batch ID: **61495**	RunNo: **80020**							
Prep Date: **7/22/2021**	Analysis Date: **7/23/2021**	SeqNo: **2815964**	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: **2107A83-007AMS**	SampType: **MS**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **OW-67-17**	Batch ID: **61495**	RunNo: **80020**							
Prep Date: **7/22/2021**	Analysis Date: **7/23/2021**	SeqNo: **2816001**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.17	0.18	0.1802	0	93.5	80	120			J

Sample ID: **2107A83-007AMSD**	SampType: **MSD**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **OW-67-17**	Batch ID: **61495**	RunNo: **80020**							
Prep Date: **7/22/2021**	Analysis Date: **7/23/2021**	SeqNo: **2816002**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.21	0.17	0.1761	0	117	80	120	19.9	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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **MB-61509** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **61509** RunNo: **80056**
Prep Date: **7/22/2021** Analysis Date: **7/23/2021** SeqNo: **2817187** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								
Barium	ND	0.10								
Cadmium	0.059	0.10								J
Chromium	ND	0.30								
Iron	ND	2.5								
Lead	ND	0.30								
Manganese	ND	0.20								
Silver	ND	0.25								

Sample ID: **LCS-61509** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **61509** RunNo: **80056**
Prep Date: **7/22/2021** Analysis Date: **7/23/2021** SeqNo: **2817189** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	24	2.5	25.00	0	95.5	80	120			
Barium	24	0.10	25.00	0	97.0	80	120			
Cadmium	24	0.10	25.00	0	95.8	80	120			
Chromium	24	0.30	25.00	0	97.4	80	120			
Iron	25	2.5	25.00	0	99.8	80	120			
Lead	25	0.30	25.00	0	98.8	80	120			
Manganese	24	0.20	25.00	0	95.3	80	120			
Silver	4.8	0.25	5.000	0	95.6	80	120			

Sample ID: **2107A83-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **OW-66-18** Batch ID: **61509** RunNo: **80056**
Prep Date: **7/22/2021** Analysis Date: **7/23/2021** SeqNo: **2817240** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	23	5.2	25.83	2.912	78.4	75	125			
Cadmium	23	0.21	25.83	0	89.5	75	125			
Chromium	28	0.62	25.83	4.279	92.6	75	125			
Lead	26	0.62	25.83	1.205	97.0	75	125			
Silver	5.0	0.52	5.165	0	96.2	75	125			

Sample ID: **2107A83-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **OW-66-18** Batch ID: **61509** RunNo: **80056**
Prep Date: **7/22/2021** Analysis Date: **7/23/2021** SeqNo: **2817244** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	27	5.2	25.83	2.912	92.4	75	125	14.4	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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **2107A83-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **OW-66-18** Batch ID: **61509** RunNo: **80056**
Prep Date: **7/22/2021** Analysis Date: **7/23/2021** SeqNo: **2817244** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	24	0.21	25.83	0	92.9	75	125	3.81	20	
Chromium	31	0.62	25.83	4.279	102	75	125	7.88	20	
Lead	26	0.62	25.83	1.205	94.4	75	125	2.57	20	
Silver	4.5	0.52	5.165	0	87.6	75	125	9.40	20	

Sample ID: **MB-61509** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **61509** RunNo: **80177**
Prep Date: **7/22/2021** Analysis Date: **7/29/2021** SeqNo: **2823029** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	2.5								

Sample ID: **LCS-61509** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **61509** RunNo: **80177**
Prep Date: **7/22/2021** Analysis Date: **7/29/2021** SeqNo: **2823031** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	22	2.5	25.00	0	89.2	80	120			

Sample ID: **2107A83-001AMS** SampType: **MS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **OW-66-18** Batch ID: **61509** RunNo: **80177**
Prep Date: **7/22/2021** Analysis Date: **7/29/2021** SeqNo: **2823077** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	21	5.2	25.83	0	80.2	75	125			

Sample ID: **2107A83-001AMSD** SampType: **MSD** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **OW-66-18** Batch ID: **61509** RunNo: **80177**
Prep Date: **7/22/2021** Analysis Date: **7/29/2021** SeqNo: **2823078** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	23	5.2	25.83	0	87.9	75	125	9.15	20	

Sample ID: **2107A83-001APS** SampType: **PS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **OW-66-18** Batch ID: **61509** RunNo: **80177**
Prep Date: Analysis Date: **7/29/2021** SeqNo: **2823082** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	490	26	129.1	343.2	110	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#: **2107A83**
22-Sep-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **C80017**	RunNo: **80017**
Prep Date:	Analysis Date: **7/22/2021**	SeqNo: **2815823** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	93.8	70	130			
Surr: BFB	480		500.0		96.8	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **C80017**	RunNo: **80017**
Prep Date:	Analysis Date: **7/22/2021**	SeqNo: **2815824** 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	490		500.0		98.9	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **R80062**	RunNo: **80062**
Prep Date:	Analysis Date: **7/23/2021**	SeqNo: **2817654** 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	510		500.0		102	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: **2107A83** RcptNo: **1**

Received By: **Kasandra Payan** **7/21/2021 4:10:00 PM**

Completed By: **Desiree Dominguez** **7/21/2021 4:30:26 PM**

Reviewed By: KPG 7/22/21

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 ☐
   Approved by client.
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 7/22/21

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	11.6	Good				

Released to Imaging: 11/23/2022 2:26:56 PM

Received by OCD: 10/21/2022 2:38:50 PM

Chain-of-Custody Record

Client: Marathon - Gallup Refinery

Mailing Address:

Phone #: 970-481-0718

email or Fax#: Lalexander@trihydro.com

QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☒ EDD (Type)

Turn-Around Time:
☐ Standard ☐ Rush

Project Name: Well Installations - 2021

Project #: 697-092-001

Project Manager: Lesli Alexander

Sampler: M. Swift, W. Glenn

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 11.8 - 0.2 = 11.6 (°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. 2107A83
7/19/21	1200	S	OW-66-18	glass/4	Methanol	-001
↓	1150	↓	OW-66-26	↓	↓	-002
↓	1555	↓	OW-13A-14	↓	↓	-003
↓	1545	↓	OW-13A-25.5	↓	↓	-004
7/20/21	1715	↓	OW-68-22	↓	↓	-005
↓	1520	↓	OW-68-26	↓	↓	-006
↓	1210	↓	OW-67-17	↓	↓	-007
↓	1225	↓	OW-67-26	↓	↓	-008
			trip blank	glass/1	MeOH	-009
7/21/21	1210	S	OW-69-26	glass/a	↓	-010
↓	1215	↓	OW-69-6	glass/a	↓	-011

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		X	X	
	↓				↓		↓	↓	
	↓				↓		↓	↓	
	↓				↓		↓	↓	
	↓				↓		↓	↓	
	↓				↓		↓	↓	
	↓				↓		↓	↓	
	↓				↓		↓	↓	
	↓				↓		↓	↓	
	X				X		X	X	
	↓				↓		↓	↓	

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
7/21/21	1400	M. Swift		Courier	7/21/21	16:10
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.

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

October 21, 2021

Lesli Alexander

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: Well Installations 2021 OrderNo.: 2107C60

Dear Lesli Alexander:

Hall Environmental Analysis Laboratory received 5 sample(s) on 7/23/2021 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued August 18, 2021.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-01R-6
Project: Well Installations 2021 **Collection Date:** 7/22/2021 7:50:00 AM
Lab ID: 2107C60-001 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 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)	26	4.5	9.0		mg/Kg	1	7/28/2021 10:17:17 AM	61603
Motor Oil Range Organics (MRO)	ND	45	45		mg/Kg	1	7/28/2021 10:17:17 AM	61603
Surr: DNOP	113	0	70-130		%Rec	1	7/28/2021 10:17:17 AM	61603
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0041	0.0025	0.032	J	mg/Kg	1	7/28/2021 5:17:38 PM	61615
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.7	4.8		mg/Kg	2	7/29/2021 3:42:46 PM	61606
Barium	350	0.12	0.19		mg/Kg	2	7/29/2021 3:42:46 PM	61606
Cadmium	ND	0.096	0.19		mg/Kg	2	7/29/2021 3:42:46 PM	61606
Chromium	9.7	0.29	0.58		mg/Kg	2	7/29/2021 3:42:46 PM	61606
Iron	14000	260	260		mg/Kg	100	10/15/2021 2:25:05 PM	63296
Lead	2.6	0.51	0.58		mg/Kg	2	7/29/2021 3:42:46 PM	61606
Manganese	310	0.32	0.38		mg/Kg	2	7/29/2021 3:42:46 PM	61606
Selenium	ND	4.2	4.8		mg/Kg	2	8/4/2021 4:16:06 PM	61606
Silver	ND	0.28	0.48		mg/Kg	2	7/29/2021 3:42:46 PM	61606
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Aniline	ND	0.068	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Anthracene	ND	0.089	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Azobenzene	ND	0.099	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Benzo(a)pyrene	ND	0.093	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Benzoic acid	ND	0.12	0.49		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Benzyl alcohol	ND	0.081	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	7/29/2021 6:18:02 PM	61594
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Butyl benzyl phthalate	0.075	0.060	0.20	J	mg/Kg	1	7/29/2021 6:18:02 PM	61594
Carbazole	ND	0.087	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	7/29/2021 6:18:02 PM	61594
4-Chloroaniline	ND	0.096	0.49		mg/Kg	1	7/29/2021 6:18:02 PM	61594
2-Chloronaphthalene	ND	0.093	0.25		mg/Kg	1	7/29/2021 6:18:02 PM	61594

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-01R-6
Project: Well Installations 2021 **Collection Date:** 7/22/2021 7:50:00 AM
Lab ID: 2107C60-001 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
4-Chlorophenyl phenyl ether	ND	0.084	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Chrysene	ND	0.087	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Di-n-butyl phthalate	0.41	0.28	0.39	B	mg/Kg	1	7/29/2021 6:18:02 PM	61594
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
1,2-Dichlorobenzene	ND	0.080	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Diethyl phthalate	1.7	0.32	0.49	B	mg/Kg	1	7/29/2021 6:18:02 PM	61594
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	7/29/2021 6:18:02 PM	61594
2,4-Dimethylphenol	ND	0.070	0.30		mg/Kg	1	7/29/2021 6:18:02 PM	61594
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	7/29/2021 6:18:02 PM	61594
2,4-Dinitrophenol	ND	0.050	0.49		mg/Kg	1	7/29/2021 6:18:02 PM	61594
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	7/29/2021 6:18:02 PM	61594
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Fluoranthene	ND	0.080	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Fluorene	ND	0.088	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Hexachlorobenzene	ND	0.088	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Hexachlorobutadiene	ND	0.093	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Isophorone	ND	0.081	0.39		mg/Kg	1	7/29/2021 6:18:02 PM	61594
1-Methylnaphthalene	0.38	0.091	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
2-Methylnaphthalene	0.66	0.081	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
2-Methylphenol	ND	0.083	0.39		mg/Kg	1	7/29/2021 6:18:02 PM	61594
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Naphthalene	0.28	0.093	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Nitrobenzene	ND	0.081	0.39		mg/Kg	1	7/29/2021 6:18:02 PM	61594

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-01R-6
Project: Well Installations 2021 **Collection Date:** 7/22/2021 7:50:00 AM
Lab ID: 2107C60-001 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.085	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
4-Nitrophenol	ND	0.081	0.25		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Phenanthrene	ND	0.10	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Phenol	0.093	0.076	0.20	J	mg/Kg	1	7/29/2021 6:18:02 PM	61594
Pyrene	ND	0.075	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Pyridine	ND	0.16	0.39		mg/Kg	1	7/29/2021 6:18:02 PM	61594
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
2,4,6-Trichlorophenol	ND	0.085	0.20		mg/Kg	1	7/29/2021 6:18:02 PM	61594
Surr: 2-Fluorophenol	45.1		20.3-74.1		%Rec	1	7/29/2021 6:18:02 PM	61594
Surr: Phenol-d5	56.1		23.1-92.7		%Rec	1	7/29/2021 6:18:02 PM	61594
Surr: 2,4,6-Tribromophenol	75.7		17.3-122		%Rec	1	7/29/2021 6:18:02 PM	61594
Surr: Nitrobenzene-d5	36.0		24.7-73.2		%Rec	1	7/29/2021 6:18:02 PM	61594
Surr: 2-Fluorobiphenyl	41.7		21.5-90.1		%Rec	1	7/29/2021 6:18:02 PM	61594
Surr: 4-Terphenyl-d14	87.7		15-140		%Rec	1	7/29/2021 6:18:02 PM	61594
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	7.0	0.093	0.24		mg/Kg	20	8/1/2021 12:01:01 AM	R80239
Toluene	24	0.062	0.48		mg/Kg	20	8/1/2021 12:01:01 AM	R80239
Ethylbenzene	9.6	0.12	0.48		mg/Kg	20	8/1/2021 12:01:01 AM	R80239
Methyl tert-butyl ether (MTBE)	ND	0.014	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,2,4-Trimethylbenzene	21	0.068	0.48		mg/Kg	20	8/1/2021 12:01:01 AM	R80239
1,3,5-Trimethylbenzene	4.1	0.11	0.48		mg/Kg	20	8/1/2021 12:01:01 AM	R80239
1,2-Dichloroethane (EDC)	ND	0.0055	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,2-Dibromoethane (EDB)	ND	0.0095	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Naphthalene	1.2	0.0090	0.048		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1-Methylnaphthalene	2.0	0.028	0.097		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
2-Methylnaphthalene	3.3	0.45	1.9		mg/Kg	20	8/1/2021 12:01:01 AM	R80239
Acetone	ND	0.079	0.36		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Bromobenzene	ND	0.0051	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Bromodichloromethane	ND	0.0031	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Bromoform	ND	0.0058	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Bromomethane	ND	0.040	0.072		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
2-Butanone	ND	0.10	0.24		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Carbon disulfide	ND	0.0099	0.24		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Carbon tetrachloride	ND	0.0027	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Chlorobenzene	ND	0.0043	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Chloroethane	ND	0.0090	0.048		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Chloroform	ND	0.0034	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-01R-6
Project: Well Installations 2021
Collection Date: 7/22/2021 7:50:00 AM
Lab ID: 2107C60-001
Matrix: MEOH (SOIL)
Received Date: 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.0085	0.072		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
2-Chlorotoluene	ND	0.0032	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
4-Chlorotoluene	ND	0.013	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
cis-1,2-DCE	ND	0.012	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
cis-1,3-Dichloropropene	0.0072	0.0036	0.024	J	mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,2-Dibromo-3-chloropropane	ND	0.010	0.048		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Dibromochloromethane	ND	0.0039	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Dibromomethane	ND	0.0056	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,2-Dichlorobenzene	ND	0.0050	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,3-Dichlorobenzene	ND	0.0046	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,4-Dichlorobenzene	ND	0.0065	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Dichlorodifluoromethane	ND	0.0093	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,1-Dichloroethane	ND	0.0070	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,1-Dichloroethene	ND	0.0052	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,2-Dichloropropane	ND	0.0047	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,3-Dichloropropane	ND	0.0053	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
2,2-Dichloropropane	0.021	0.0034	0.048	J	mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,1-Dichloropropene	ND	0.0029	0.048		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Hexachlorobutadiene	ND	0.016	0.048		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
2-Hexanone	ND	0.011	0.24		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Isopropylbenzene	1.1	0.0045	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
4-Isopropyltoluene	0.24	0.0062	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
4-Methyl-2-pentanone	0.13	0.028	0.24	J	mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Methylene chloride	ND	0.017	0.072		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
n-Butylbenzene	2.3	0.0065	0.072		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
n-Propylbenzene	5.3	0.078	0.48		mg/Kg	20	8/1/2021 12:01:01 AM	R80239
sec-Butylbenzene	0.61	0.020	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Styrene	ND	0.0033	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
tert-Butylbenzene	ND	0.0056	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,1,1,2-Tetrachloroethane	ND	0.0035	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,1,2,2-Tetrachloroethane	ND	0.0078	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Tetrachloroethene (PCE)	0.0069	0.0066	0.024	J	mg/Kg	1	7/31/2021 4:46:37 AM	A80215
trans-1,2-DCE	ND	0.0047	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
trans-1,3-Dichloropropene	ND	0.0057	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,2,3-Trichlorobenzene	ND	0.0037	0.048		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,2,4-Trichlorobenzene	ND	0.0084	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,1,1-Trichloroethane	ND	0.0053	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,1,2-Trichloroethane	ND	0.0060	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Trichloroethene (TCE)	ND	0.0047	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215

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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 **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-01R-6
Project: Well Installations 2021 **Collection Date:** 7/22/2021 7:50:00 AM
Lab ID: 2107C60-001 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0055	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
1,2,3-Trichloropropane	ND	0.010	0.048		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Vinyl chloride	ND	0.0046	0.024		mg/Kg	1	7/31/2021 4:46:37 AM	A80215
Xylenes, Total	42	0.25	0.97		mg/Kg	20	8/1/2021 12:01:01 AM	R80239
Surr: Dibromofluoromethane	87.1		70-130		%Rec	1	7/31/2021 4:46:37 AM	A80215
Surr: 1,2-Dichloroethane-d4	95.8		70-130		%Rec	1	7/31/2021 4:46:37 AM	A80215
Surr: Toluene-d8	102		70-130		%Rec	1	7/31/2021 4:46:37 AM	A80215
Surr: 4-Bromofluorobenzene	91.5		70-130		%Rec	1	7/31/2021 4:46:37 AM	A80215
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	1100	13	48		mg/Kg	20	8/1/2021 12:01:01 AM	R80239
Surr: BFB	99.0	0	70-130		%Rec	20	8/1/2021 12:01:01 AM	R80239

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 **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-01R-18
Project: Well Installations 2021 **Collection Date:** 7/22/2021 7:45:00 AM
Lab ID: 2107C60-002 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 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	4.4	8.9		mg/Kg	1	7/28/2021 10:46:01 AM	61603
Motor Oil Range Organics (MRO)	ND	44	44		mg/Kg	1	7/28/2021 10:46:01 AM	61603
Surr: DNOP	117	0	70-130		%Rec	1	7/28/2021 10:46:01 AM	61603
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0027	0.034		mg/Kg	1	7/28/2021 5:19:44 PM	61615
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.8	4.9		mg/Kg	2	7/29/2021 3:44:50 PM	61606
Barium	390	0.12	0.20		mg/Kg	2	7/29/2021 3:44:50 PM	61606
Cadmium	ND	0.098	0.20		mg/Kg	2	7/29/2021 3:44:50 PM	61606
Chromium	11	0.29	0.59		mg/Kg	2	7/29/2021 3:44:50 PM	61606
Iron	19000	260	260		mg/Kg	100	10/15/2021 2:28:56 PM	63296
Lead	ND	0.52	0.59		mg/Kg	2	7/29/2021 3:44:50 PM	61606
Manganese	1600	1.7	2.1		mg/Kg	10	10/15/2021 2:27:02 PM	63296
Selenium	ND	4.3	4.9		mg/Kg	2	8/4/2021 4:18:22 PM	61606
Silver	ND	0.29	0.49		mg/Kg	2	7/29/2021 3:44:50 PM	61606
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.089	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Acenaphthylene	ND	0.090	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Aniline	ND	0.069	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Anthracene	ND	0.090	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Azobenzene	ND	0.099	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Benz(a)anthracene	ND	0.064	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Benzo(a)pyrene	ND	0.094	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Benzo(b)fluoranthene	ND	0.11	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Benzo(k)fluoranthene	ND	0.075	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Benzoic acid	ND	0.12	0.50		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Benzyl alcohol	ND	0.082	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Bis(2-chloroethoxy)methane	ND	0.076	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Bis(2-ethylhexyl)phthalate	ND	0.21	0.50		mg/Kg	1	7/30/2021 8:23:28 PM	61594
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Butyl benzyl phthalate	0.080	0.061	0.20	J	mg/Kg	1	7/30/2021 8:23:28 PM	61594
Carbazole	ND	0.088	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
4-Chloro-3-methylphenol	ND	0.084	0.50		mg/Kg	1	7/30/2021 8:23:28 PM	61594
4-Chloroaniline	ND	0.097	0.50		mg/Kg	1	7/30/2021 8:23:28 PM	61594
2-Chloronaphthalene	ND	0.094	0.25		mg/Kg	1	7/30/2021 8:23:28 PM	61594

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-01R-18
Project: Well Installations 2021 **Collection Date:** 7/22/2021 7:45:00 AM
Lab ID: 2107C60-002 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
4-Chlorophenyl phenyl ether	ND	0.084	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Chrysene	ND	0.088	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Di-n-butyl phthalate	ND	0.28	0.40		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Di-n-octyl phthalate	ND	0.13	0.40		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
1,2-Dichlorobenzene	ND	0.081	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
1,3-Dichlorobenzene	ND	0.071	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Diethyl phthalate	1.6	0.32	0.50	B	mg/Kg	1	7/30/2021 8:23:28 PM	61594
Dimethyl phthalate	ND	0.092	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
2,4-Dichlorophenol	ND	0.081	0.40		mg/Kg	1	7/30/2021 8:23:28 PM	61594
2,4-Dimethylphenol	ND	0.071	0.30		mg/Kg	1	7/30/2021 8:23:28 PM	61594
4,6-Dinitro-2-methylphenol	ND	0.084	0.40		mg/Kg	1	7/30/2021 8:23:28 PM	61594
2,4-Dinitrophenol	ND	0.050	0.50		mg/Kg	1	7/30/2021 8:23:28 PM	61594
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	7/30/2021 8:23:28 PM	61594
2,6-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Fluoranthene	ND	0.081	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Fluorene	ND	0.089	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Hexachlorobenzene	ND	0.089	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Hexachlorobutadiene	ND	0.093	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Hexachloroethane	ND	0.088	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Isophorone	ND	0.081	0.40		mg/Kg	1	7/30/2021 8:23:28 PM	61594
1-Methylnaphthalene	ND	0.092	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
2-Methylnaphthalene	ND	0.082	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
2-Methylphenol	ND	0.084	0.40		mg/Kg	1	7/30/2021 8:23:28 PM	61594
3+4-Methylphenol	ND	0.082	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
N-Nitrosodi-n-propylamine	ND	0.092	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Naphthalene	ND	0.094	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
3-Nitroaniline	ND	0.12	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Nitrobenzene	ND	0.082	0.40		mg/Kg	1	7/30/2021 8:23:28 PM	61594

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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 **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-01R-18
Project: Well Installations 2021 **Collection Date:** 7/22/2021 7:45:00 AM
Lab ID: 2107C60-002 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.086	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
4-Nitrophenol	ND	0.082	0.25		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Pentachlorophenol	ND	0.086	0.40		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Phenanthrene	ND	0.10	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Phenol	ND	0.077	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Pyrene	ND	0.075	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Pyridine	ND	0.16	0.40		mg/Kg	1	7/30/2021 8:23:28 PM	61594
1,2,4-Trichlorobenzene	ND	0.091	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
2,4,6-Trichlorophenol	ND	0.086	0.20		mg/Kg	1	7/30/2021 8:23:28 PM	61594
Surr: 2-Fluorophenol	46.1		20.3-74.1		%Rec	1	7/30/2021 8:23:28 PM	61594
Surr: Phenol-d5	54.0		23.1-92.7		%Rec	1	7/30/2021 8:23:28 PM	61594
Surr: 2,4,6-Tribromophenol	91.1		17.3-122		%Rec	1	7/30/2021 8:23:28 PM	61594
Surr: Nitrobenzene-d5	44.7		24.7-73.2		%Rec	1	7/30/2021 8:23:28 PM	61594
Surr: 2-Fluorobiphenyl	48.1		21.5-90.1		%Rec	1	7/30/2021 8:23:28 PM	61594
Surr: 4-Terphenyl-d14	93.8		15-140		%Rec	1	7/30/2021 8:23:28 PM	61594
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	0.11	0.0052	0.013		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Toluene	0.082	0.0035	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Ethylbenzene	0.055	0.0066	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Methyl tert-butyl ether (MTBE)	0.017	0.015	0.027	J	mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,2,4-Trimethylbenzene	0.11	0.0038	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,3,5-Trimethylbenzene	0.017	0.0060	0.027	J	mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,2-Dichloroethane (EDC)	ND	0.0061	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,2-Dibromoethane (EDB)	ND	0.011	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Naphthalene	0.013	0.010	0.054	J	mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1-Methylnaphthalene	ND	0.031	0.11		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
2-Methylnaphthalene	ND	0.025	0.11		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Acetone	ND	0.088	0.40		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Bromobenzene	ND	0.0057	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Bromodichloromethane	ND	0.0034	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Bromoform	ND	0.0065	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Bromomethane	ND	0.045	0.081		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
2-Butanone	ND	0.12	0.27		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Carbon disulfide	ND	0.011	0.27		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Carbon tetrachloride	ND	0.0030	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Chlorobenzene	ND	0.0048	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Chloroethane	0.016	0.010	0.054	J	mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Chloroform	ND	0.0038	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239

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 **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-01R-18
Project: Well Installations 2021 **Collection Date:** 7/22/2021 7:45:00 AM
Lab ID: 2107C60-002 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.0094	0.081		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
2-Chlorotoluene	ND	0.0036	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
4-Chlorotoluene	ND	0.014	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
cis-1,2-DCE	ND	0.013	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
cis-1,3-Dichloropropene	ND	0.0040	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,2-Dibromo-3-chloropropane	ND	0.012	0.054		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Dibromochloromethane	ND	0.0043	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Dibromomethane	ND	0.0063	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,2-Dichlorobenzene	ND	0.0056	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,3-Dichlorobenzene	ND	0.0051	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,4-Dichlorobenzene	ND	0.0072	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Dichlorodifluoromethane	ND	0.010	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,1-Dichloroethane	0.016	0.0078	0.027	J	mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,1-Dichloroethene	0.010	0.0058	0.027	J	mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,2-Dichloropropane	ND	0.0052	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,3-Dichloropropane	ND	0.0059	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
2,2-Dichloropropane	ND	0.0038	0.054		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,1-Dichloropropene	ND	0.0032	0.054		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Hexachlorobutadiene	ND	0.018	0.054		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
2-Hexanone	ND	0.012	0.27		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Isopropylbenzene	0.0068	0.0050	0.027	J	mg/Kg	1	8/1/2021 4:17:57 AM	R80239
4-Isopropyltoluene	ND	0.0069	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
4-Methyl-2-pentanone	ND	0.031	0.27		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Methylene chloride	ND	0.019	0.081		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
n-Butylbenzene	0.011	0.0072	0.081	J	mg/Kg	1	8/1/2021 4:17:57 AM	R80239
n-Propylbenzene	0.023	0.0043	0.027	J	mg/Kg	1	8/1/2021 4:17:57 AM	R80239
sec-Butylbenzene	ND	0.022	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Styrene	ND	0.0037	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
tert-Butylbenzene	ND	0.0062	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,1,1,2-Tetrachloroethane	ND	0.0039	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,1,2,2-Tetrachloroethane	ND	0.0087	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Tetrachloroethene (PCE)	ND	0.0074	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
trans-1,2-DCE	ND	0.0052	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
trans-1,3-Dichloropropene	ND	0.0063	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,2,3-Trichlorobenzene	ND	0.0042	0.054		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,2,4-Trichlorobenzene	ND	0.0094	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,1,1-Trichloroethane	ND	0.0059	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,1,2-Trichloroethane	ND	0.0067	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Trichloroethene (TCE)	ND	0.0053	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239

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 **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-01R-18
Project: Well Installations 2021 **Collection Date:** 7/22/2021 7:45:00 AM
Lab ID: 2107C60-002 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0061	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
1,2,3-Trichloropropane	ND	0.011	0.054		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Vinyl chloride	ND	0.0051	0.027		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Xylenes, Total	0.23	0.014	0.054		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Surr: Dibromofluoromethane	96.1		70-130		%Rec	1	8/1/2021 4:17:57 AM	R80239
Surr: 1,2-Dichloroethane-d4	95.3		70-130		%Rec	1	8/1/2021 4:17:57 AM	R80239
Surr: Toluene-d8	103		70-130		%Rec	1	8/1/2021 4:17:57 AM	R80239
Surr: 4-Bromofluorobenzene	96.4		70-130		%Rec	1	8/1/2021 4:17:57 AM	R80239
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	6.9	0.75	2.7		mg/Kg	1	8/1/2021 4:17:57 AM	R80239
Surr: BFB	98.7	0	70-130		%Rec	1	8/1/2021 4:17:57 AM	R80239

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 **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-02R-6
Project: Well Installations 2021 **Collection Date:** 7/22/2021 12:15:00 PM
Lab ID: 2107C60-003 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 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)	41	4.7	9.5		mg/Kg	1	7/28/2021 10:55:40 AM	61603
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	7/28/2021 10:55:40 AM	61603
Surr: DNOP	112	0	70-130		%Rec	1	7/28/2021 10:55:40 AM	61603
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0069	0.0026	0.032	J	mg/Kg	1	7/28/2021 5:21:50 PM	61615
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.8	4.9		mg/Kg	2	7/29/2021 3:46:56 PM	61606
Barium	410	0.12	0.19		mg/Kg	2	7/29/2021 3:46:56 PM	61606
Cadmium	ND	0.097	0.19		mg/Kg	2	7/29/2021 3:46:56 PM	61606
Chromium	9.9	0.29	0.58		mg/Kg	2	7/29/2021 3:46:56 PM	61606
Iron	16000	250	250		mg/Kg	100	10/15/2021 2:30:54 PM	63296
Lead	1.9	0.52	0.58		mg/Kg	2	7/29/2021 3:46:56 PM	61606
Manganese	270	0.32	0.39		mg/Kg	2	7/29/2021 3:46:56 PM	61606
Selenium	ND	4.3	4.9		mg/Kg	2	8/4/2021 4:27:49 PM	61606
Silver	ND	0.28	0.49		mg/Kg	2	7/29/2021 3:46:56 PM	61606
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.089	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Acenaphthylene	ND	0.090	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Aniline	ND	0.069	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Anthracene	ND	0.090	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Azobenzene	ND	0.099	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Benz(a)anthracene	ND	0.064	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Benzo(a)pyrene	ND	0.094	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Benzo(b)fluoranthene	ND	0.11	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Benzo(k)fluoranthene	ND	0.075	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Benzoic acid	ND	0.12	0.50		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Benzyl alcohol	ND	0.081	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Bis(2-chloroethoxy)methane	ND	0.076	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Bis(2-ethylhexyl)phthalate	ND	0.21	0.50		mg/Kg	1	8/17/2021 2:38:24 PM	61594
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Carbazole	ND	0.087	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
4-Chloro-3-methylphenol	ND	0.084	0.50		mg/Kg	1	8/17/2021 2:38:24 PM	61594
4-Chloroaniline	ND	0.097	0.50		mg/Kg	1	8/17/2021 2:38:24 PM	61594
2-Chloronaphthalene	ND	0.094	0.25		mg/Kg	1	8/17/2021 2:38:24 PM	61594

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-02R-6
Project: Well Installations 2021 **Collection Date:** 7/22/2021 12:15:00 PM
Lab ID: 2107C60-003 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
4-Chlorophenyl phenyl ether	ND	0.084	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Chrysene	ND	0.088	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Di-n-butyl phthalate	0.29	0.28	0.40	J	mg/Kg	1	8/17/2021 2:38:24 PM	61594
Di-n-octyl phthalate	ND	0.13	0.40		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
1,2-Dichlorobenzene	ND	0.080	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
1,3-Dichlorobenzene	ND	0.071	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Diethyl phthalate	1.3	0.32	0.50	B	mg/Kg	1	8/17/2021 2:38:24 PM	61594
Dimethyl phthalate	ND	0.092	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
2,4-Dichlorophenol	ND	0.081	0.40		mg/Kg	1	8/17/2021 2:38:24 PM	61594
2,4-Dimethylphenol	ND	0.071	0.30		mg/Kg	1	8/17/2021 2:38:24 PM	61594
4,6-Dinitro-2-methylphenol	ND	0.084	0.40		mg/Kg	1	8/17/2021 2:38:24 PM	61594
2,4-Dinitrophenol	ND	0.050	0.50		mg/Kg	1	8/17/2021 2:38:24 PM	61594
2,4-Dinitrotoluene	ND	0.12	0.50		mg/Kg	1	8/17/2021 2:38:24 PM	61594
2,6-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Fluoranthene	ND	0.080	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Fluorene	ND	0.089	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Hexachlorobenzene	ND	0.088	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Hexachlorobutadiene	ND	0.093	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Hexachloroethane	ND	0.088	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Isophorone	ND	0.081	0.40		mg/Kg	1	8/17/2021 2:38:24 PM	61594
1-Methylnaphthalene	0.19	0.091	0.20	J	mg/Kg	1	8/17/2021 2:38:24 PM	61594
2-Methylnaphthalene	ND	0.082	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
2-Methylphenol	ND	0.084	0.40		mg/Kg	1	8/17/2021 2:38:24 PM	61594
3+4-Methylphenol	ND	0.082	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
N-Nitrosodi-n-propylamine	ND	0.092	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Naphthalene	0.19	0.094	0.20	J	mg/Kg	1	8/17/2021 2:38:24 PM	61594
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
3-Nitroaniline	ND	0.12	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
4-Nitroaniline	ND	0.13	0.40		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Nitrobenzene	ND	0.081	0.40		mg/Kg	1	8/17/2021 2:38:24 PM	61594

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-02R-6
Project: Well Installations 2021 **Collection Date:** 7/22/2021 12:15:00 PM
Lab ID: 2107C60-003 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
2-Nitrophenol	ND	0.086	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
4-Nitrophenol	ND	0.082	0.25		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Pentachlorophenol	ND	0.086	0.40		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Phenanthrene	ND	0.10	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Phenol	ND	0.077	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Pyrene	ND	0.075	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Pyridine	ND	0.16	0.40		mg/Kg	1	8/17/2021 2:38:24 PM	61594
1,2,4-Trichlorobenzene	ND	0.091	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
2,4,6-Trichlorophenol	ND	0.086	0.20		mg/Kg	1	8/17/2021 2:38:24 PM	61594
Surr: 2-Fluorophenol	44.3		20.3-74.1		%Rec	1	8/17/2021 2:38:24 PM	61594
Surr: Phenol-d5	48.3		23.1-92.7		%Rec	1	8/17/2021 2:38:24 PM	61594
Surr: 2,4,6-Tribromophenol	75.1		17.3-122		%Rec	1	8/17/2021 2:38:24 PM	61594
Surr: Nitrobenzene-d5	39.1		24.7-73.2		%Rec	1	8/17/2021 2:38:24 PM	61594
Surr: 2-Fluorobiphenyl	42.0		21.5-90.1		%Rec	1	8/17/2021 2:38:24 PM	61594
Surr: 4-Terphenyl-d14	75.9		15-140		%Rec	1	8/17/2021 2:38:24 PM	61594
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	0.027	0.0057	0.015		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Toluene	0.014	0.0038	0.030	J	mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Ethylbenzene	0.79	0.0072	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Methyl tert-butyl ether (MTBE)	ND	0.017	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,2,4-Trimethylbenzene	12	0.042	0.30		mg/Kg	10	8/1/2021 4:46:28 AM	R80239
1,3,5-Trimethylbenzene	0.022	0.0066	0.030	J	mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,2-Dichloroethane (EDC)	ND	0.0067	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,2-Dibromoethane (EDB)	ND	0.012	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Naphthalene	0.68	0.011	0.059		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1-Methylnaphthalene	0.94	0.034	0.12		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
2-Methylnaphthalene	0.28	0.027	0.12		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Acetone	ND	0.096	0.44		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Bromobenzene	ND	0.0063	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Bromodichloromethane	ND	0.0038	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Bromoform	ND	0.0071	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Bromomethane	ND	0.049	0.089		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
2-Butanone	ND	0.13	0.30		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Carbon disulfide	ND	0.012	0.30		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Carbon tetrachloride	ND	0.0033	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Chlorobenzene	ND	0.0053	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Chloroethane	0.046	0.011	0.059	J	mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Chloroform	ND	0.0042	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215

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 **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-02R-6
Project: Well Installations 2021
Collection Date: 7/22/2021 12:15:00 PM
Lab ID: 2107C60-003
Matrix: MEOH (SOIL)
Received Date: 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.010	0.089		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
2-Chlorotoluene	ND	0.0040	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
4-Chlorotoluene	ND	0.016	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
cis-1,2-DCE	ND	0.015	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
cis-1,3-Dichloropropene	ND	0.0044	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,2-Dibromo-3-chloropropane	ND	0.013	0.059		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Dibromochloromethane	ND	0.0047	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Dibromomethane	ND	0.0069	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,2-Dichlorobenzene	ND	0.0061	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,3-Dichlorobenzene	ND	0.0056	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,4-Dichlorobenzene	ND	0.0079	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Dichlorodifluoromethane	ND	0.011	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,1-Dichloroethane	0.021	0.0086	0.030	J	mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,1-Dichloroethene	ND	0.0063	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,2-Dichloropropane	ND	0.0058	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,3-Dichloropropane	ND	0.0065	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
2,2-Dichloropropane	ND	0.0042	0.059		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,1-Dichloropropene	ND	0.0036	0.059		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Hexachlorobutadiene	ND	0.020	0.059		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
2-Hexanone	ND	0.013	0.30		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Isopropylbenzene	0.24	0.0055	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
4-Isopropyltoluene	0.17	0.0076	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
4-Methyl-2-pentanone	ND	0.034	0.30		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Methylene chloride	ND	0.021	0.089		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
n-Butylbenzene	0.88	0.0079	0.089		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
n-Propylbenzene	1.2	0.0048	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
sec-Butylbenzene	0.24	0.024	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Styrene	ND	0.0040	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
tert-Butylbenzene	ND	0.0068	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,1,1,2-Tetrachloroethane	ND	0.0043	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,1,2,2-Tetrachloroethane	ND	0.0096	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Tetrachloroethene (PCE)	ND	0.0081	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
trans-1,2-DCE	ND	0.0057	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
trans-1,3-Dichloropropene	ND	0.0069	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,2,3-Trichlorobenzene	ND	0.0046	0.059		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,2,4-Trichlorobenzene	ND	0.010	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,1,1-Trichloroethane	ND	0.0065	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,1,2-Trichloroethane	ND	0.0074	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Trichloroethene (TCE)	ND	0.0058	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215

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 **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-02R-6
Project: Well Installations 2021 **Collection Date:** 7/22/2021 12:15:00 PM
Lab ID: 2107C60-003 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0067	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
1,2,3-Trichloropropane	ND	0.012	0.059		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Vinyl chloride	ND	0.0056	0.030		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Xylenes, Total	1.7	0.016	0.059		mg/Kg	1	7/31/2021 6:40:56 AM	A80215
Surr: Dibromofluoromethane	89.6		70-130		%Rec	1	7/31/2021 6:40:56 AM	A80215
Surr: 1,2-Dichloroethane-d4	93.1		70-130		%Rec	1	7/31/2021 6:40:56 AM	A80215
Surr: Toluene-d8	96.5		70-130		%Rec	1	7/31/2021 6:40:56 AM	A80215
Surr: 4-Bromofluorobenzene	98.0		70-130		%Rec	1	7/31/2021 6:40:56 AM	A80215
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	260	8.2	30		mg/Kg	10	8/1/2021 4:46:28 AM	R80239
Surr: BFB	102	0	70-130		%Rec	10	8/1/2021 4:46:28 AM	R80239

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-02R-18
Project: Well Installations 2021 **Collection Date:** 7/22/2021 12:25:00 PM
Lab ID: 2107C60-004 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 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	7/28/2021 11:05:18 AM	61603
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	7/28/2021 11:05:18 AM	61603
Surr: DNOP	114	0	70-130		%Rec	1	7/28/2021 11:05:18 AM	61603
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0024	0.031		mg/Kg	1	7/28/2021 5:23:56 PM	61615
EPA METHOD 6010B: SOIL METALS							Analyst: **ags**	
Arsenic	ND	2.8	5.0		mg/Kg	2	7/29/2021 3:57:20 PM	61606
Barium	230	0.12	0.20		mg/Kg	2	7/29/2021 3:57:20 PM	61606
Cadmium	ND	0.099	0.20		mg/Kg	2	7/29/2021 3:57:20 PM	61606
Chromium	11	0.30	0.60		mg/Kg	2	7/29/2021 3:57:20 PM	61606
Iron	22000	250	250		mg/Kg	100	10/15/2021 2:41:31 PM	63296
Lead	1.3	0.53	0.60		mg/Kg	2	7/29/2021 3:57:20 PM	61606
Manganese	950	1.6	2.0		mg/Kg	10	10/15/2021 2:39:32 PM	63296
Selenium	ND	4.4	5.0		mg/Kg	2	8/4/2021 4:30:04 PM	61606
Silver	ND	0.29	0.50		mg/Kg	2	7/29/2021 3:57:20 PM	61606
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
Acenaphthene	ND	0.086	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Acenaphthylene	ND	0.087	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Aniline	ND	0.067	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Anthracene	ND	0.087	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Azobenzene	ND	0.096	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Benz(a)anthracene	ND	0.062	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Benzo(a)pyrene	ND	0.091	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Benzo(g,h,i)perylene	ND	0.098	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Benzo(k)fluoranthene	ND	0.072	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Benzoic acid	ND	0.12	0.48		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Benzyl alcohol	ND	0.079	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Bis(2-chloroethoxy)methane	ND	0.074	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Bis(2-chloroisopropyl)ether	ND	0.098	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Bis(2-ethylhexyl)phthalate	ND	0.21	0.48		mg/Kg	1	8/17/2021 3:19:55 PM	61594
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Butyl benzyl phthalate	ND	0.059	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Carbazole	ND	0.085	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
4-Chloro-3-methylphenol	ND	0.081	0.48		mg/Kg	1	8/17/2021 3:19:55 PM	61594
4-Chloroaniline	ND	0.094	0.48		mg/Kg	1	8/17/2021 3:19:55 PM	61594
2-Chloronaphthalene	ND	0.091	0.24		mg/Kg	1	8/17/2021 3:19:55 PM	61594

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-02R-18
Project: Well Installations 2021 **Collection Date:** 7/22/2021 12:25:00 PM
Lab ID: 2107C60-004 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
4-Chlorophenyl phenyl ether	ND	0.082	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Chrysene	ND	0.085	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Di-n-butyl phthalate	0.38	0.27	0.39	J	mg/Kg	1	8/17/2021 3:19:55 PM	61594
Di-n-octyl phthalate	ND	0.12	0.39		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
1,2-Dichlorobenzene	ND	0.078	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
1,3-Dichlorobenzene	ND	0.069	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
1,4-Dichlorobenzene	ND	0.082	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Diethyl phthalate	1.6	0.31	0.48	B	mg/Kg	1	8/17/2021 3:19:55 PM	61594
Dimethyl phthalate	ND	0.089	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
2,4-Dichlorophenol	ND	0.078	0.39		mg/Kg	1	8/17/2021 3:19:55 PM	61594
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	8/17/2021 3:19:55 PM	61594
4,6-Dinitro-2-methylphenol	ND	0.081	0.39		mg/Kg	1	8/17/2021 3:19:55 PM	61594
2,4-Dinitrophenol	ND	0.048	0.48		mg/Kg	1	8/17/2021 3:19:55 PM	61594
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	8/17/2021 3:19:55 PM	61594
2,6-Dinitrotoluene	ND	0.098	0.48		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Fluoranthene	ND	0.078	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Fluorene	ND	0.086	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Hexachlorobenzene	ND	0.086	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Hexachlorobutadiene	ND	0.090	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Hexachloroethane	ND	0.085	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Isophorone	ND	0.079	0.39		mg/Kg	1	8/17/2021 3:19:55 PM	61594
1-Methylnaphthalene	ND	0.089	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
2-Methylnaphthalene	ND	0.080	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
2-Methylphenol	ND	0.081	0.39		mg/Kg	1	8/17/2021 3:19:55 PM	61594
3+4-Methylphenol	ND	0.080	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
N-Nitrosodi-n-propylamine	ND	0.089	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Naphthalene	ND	0.091	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
2-Nitroaniline	ND	0.099	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Nitrobenzene	ND	0.079	0.39		mg/Kg	1	8/17/2021 3:19:55 PM	61594

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-02R-18
Project: Well Installations 2021 **Collection Date:** 7/22/2021 12:25:00 PM
Lab ID: 2107C60-004 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **JME**	
2-Nitrophenol	ND	0.083	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
4-Nitrophenol	ND	0.079	0.24		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Pentachlorophenol	ND	0.083	0.39		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Phenanthrene	ND	0.098	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Phenol	ND	0.074	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Pyrene	ND	0.073	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Pyridine	ND	0.16	0.39		mg/Kg	1	8/17/2021 3:19:55 PM	61594
1,2,4-Trichlorobenzene	ND	0.088	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
2,4,5-Trichlorophenol	ND	0.061	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
2,4,6-Trichlorophenol	ND	0.083	0.19		mg/Kg	1	8/17/2021 3:19:55 PM	61594
Surr: 2-Fluorophenol	39.0		20.3-74.1		%Rec	1	8/17/2021 3:19:55 PM	61594
Surr: Phenol-d5	41.7		23.1-92.7		%Rec	1	8/17/2021 3:19:55 PM	61594
Surr: 2,4,6-Tribromophenol	71.4		17.3-122		%Rec	1	8/17/2021 3:19:55 PM	61594
Surr: Nitrobenzene-d5	38.1		24.7-73.2		%Rec	1	8/17/2021 3:19:55 PM	61594
Surr: 2-Fluorobiphenyl	40.6		21.5-90.1		%Rec	1	8/17/2021 3:19:55 PM	61594
Surr: 4-Terphenyl-d14	78.9		15-140		%Rec	1	8/17/2021 3:19:55 PM	61594
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Benzene	ND	0.0068	0.018		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Toluene	0.0062	0.0046	0.036	J	mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Ethylbenzene	ND	0.0087	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Methyl tert-butyl ether (MTBE)	ND	0.020	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,2,4-Trimethylbenzene	0.026	0.0050	0.036	J	mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,3,5-Trimethylbenzene	ND	0.0080	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,2-Dichloroethane (EDC)	0.014	0.0081	0.036	J	mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,2-Dibromoethane (EDB)	ND	0.014	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Naphthalene	ND	0.013	0.071		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1-Methylnaphthalene	ND	0.041	0.14		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
2-Methylnaphthalene	ND	0.033	0.14		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Acetone	ND	0.12	0.53		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Bromobenzene	ND	0.0075	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Bromodichloromethane	ND	0.0045	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Bromoform	ND	0.0086	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Bromomethane	ND	0.059	0.11		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
2-Butanone	ND	0.15	0.36		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Carbon disulfide	ND	0.015	0.36		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Carbon tetrachloride	ND	0.0040	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Chlorobenzene	ND	0.0064	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Chloroethane	ND	0.013	0.071		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Chloroform	0.015	0.0050	0.036	J	mg/Kg	1	7/31/2021 7:09:34 AM	A80215

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-02R-18
Project: Well Installations 2021 **Collection Date:** 7/22/2021 12:25:00 PM
Lab ID: 2107C60-004 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Chloromethane	ND	0.012	0.11		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
2-Chlorotoluene	ND	0.0048	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
4-Chlorotoluene	ND	0.019	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
cis-1,2-DCE	ND	0.018	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
cis-1,3-Dichloropropene	ND	0.0053	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,2-Dibromo-3-chloropropane	ND	0.015	0.071		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Dibromochloromethane	ND	0.0057	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Dibromomethane	ND	0.0083	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,2-Dichlorobenzene	ND	0.0074	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,3-Dichlorobenzene	ND	0.0067	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,4-Dichlorobenzene	ND	0.0095	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Dichlorodifluoromethane	ND	0.014	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,1-Dichloroethane	ND	0.010	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,1-Dichloroethene	ND	0.0076	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,2-Dichloropropane	ND	0.0069	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,3-Dichloropropane	ND	0.0078	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
2,2-Dichloropropane	ND	0.0051	0.071		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,1-Dichloropropene	ND	0.0043	0.071		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Hexachlorobutadiene	ND	0.024	0.071		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
2-Hexanone	ND	0.016	0.36		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Isopropylbenzene	ND	0.0066	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
4-Isopropyltoluene	ND	0.0092	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
4-Methyl-2-pentanone	ND	0.041	0.36		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Methylene chloride	ND	0.026	0.11		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
n-Butylbenzene	ND	0.0095	0.11		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
n-Propylbenzene	ND	0.0057	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
sec-Butylbenzene	ND	0.029	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Styrene	ND	0.0048	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
tert-Butylbenzene	ND	0.0082	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,1,1,2-Tetrachloroethane	ND	0.0052	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,1,2,2-Tetrachloroethane	ND	0.011	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Tetrachloroethene (PCE)	ND	0.0097	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
trans-1,2-DCE	ND	0.0069	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
trans-1,3-Dichloropropene	ND	0.0083	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,2,3-Trichlorobenzene	ND	0.0055	0.071		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,2,4-Trichlorobenzene	ND	0.012	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,1,1-Trichloroethane	ND	0.0078	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,1,2-Trichloroethane	ND	0.0089	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Trichloroethene (TCE)	ND	0.0070	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215

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 **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-02R-18
Project: Well Installations 2021 **Collection Date:** 7/22/2021 12:25:00 PM
Lab ID: 2107C60-004 **Matrix:** MEOH (SOIL) **Received Date:** 7/23/2021 4:57:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **JMR**	
Trichlorofluoromethane	ND	0.0081	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
1,2,3-Trichloropropane	ND	0.015	0.071		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Vinyl chloride	ND	0.0068	0.036		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Xylenes, Total	ND	0.019	0.071		mg/Kg	1	7/31/2021 7:09:34 AM	A80215
Surr: Dibromofluoromethane	101		70-130		%Rec	1	7/31/2021 7:09:34 AM	A80215
Surr: 1,2-Dichloroethane-d4	102		70-130		%Rec	1	7/31/2021 7:09:34 AM	A80215
Surr: Toluene-d8	99.2		70-130		%Rec	1	7/31/2021 7:09:34 AM	A80215
Surr: 4-Bromofluorobenzene	97.9		70-130		%Rec	1	7/31/2021 7:09:34 AM	A80215
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	0.99	3.6		mg/Kg	1	8/1/2021 5:15:03 AM	R80239
Surr: BFB	98.6	0	70-130		%Rec	1	8/1/2021 5:15:03 AM	R80239

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH BLank
Project: Well Installations 2021
Collection Date:
Lab ID: 2107C60-005 **Matrix:** MEOH BLAN **Received Date:** 7/23/2021 4:57:00 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	7/31/2021 7:38:07 AM	A80215
Toluene	ND	0.0064	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Ethylbenzene	ND	0.012	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Methyl tert-butyl ether (MTBE)	ND	0.028	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,2,4-Trimethylbenzene	0.016	0.0071	0.050	J	mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,3,5-Trimethylbenzene	ND	0.011	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,2-Dichloroethane (EDC)	ND	0.011	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,2-Dibromoethane (EDB)	ND	0.020	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Naphthalene	ND	0.019	0.10		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1-Methylnaphthalene	ND	0.057	0.20		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
2-Methylnaphthalene	ND	0.046	0.20		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Acetone	ND	0.16	0.75		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Bromobenzene	ND	0.011	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Bromodichloromethane	ND	0.0064	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Bromoform	ND	0.012	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Bromomethane	ND	0.083	0.15		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
2-Butanone	ND	0.22	0.50		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Carbon disulfide	ND	0.021	0.50		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Carbon tetrachloride	ND	0.0056	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Chlorobenzene	ND	0.0090	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Chloroethane	ND	0.019	0.10		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Chloroform	ND	0.0071	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Chloromethane	ND	0.018	0.15		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
2-Chlorotoluene	ND	0.0067	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
4-Chlorotoluene	ND	0.026	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
cis-1,2-DCE	ND	0.025	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
cis-1,3-Dichloropropene	ND	0.0074	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,2-Dibromo-3-chloropropane	ND	0.022	0.10		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Dibromochloromethane	ND	0.0080	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Dibromomethane	ND	0.012	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,2-Dichlorobenzene	ND	0.010	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,3-Dichlorobenzene	ND	0.0094	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,4-Dichlorobenzene	ND	0.013	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Dichlorodifluoromethane	ND	0.019	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,1-Dichloroethane	ND	0.015	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,1-Dichloroethene	ND	0.011	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,2-Dichloropropane	ND	0.0097	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,3-Dichloropropane	ND	0.011	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
2,2-Dichloropropane	ND	0.0071	0.10		mg/Kg	1	7/31/2021 7:38:07 AM	A80215

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2107C60**
Date Reported: **10/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MeOH BLank
Project: Well Installations 2021
Collection Date:
Lab ID: 2107C60-005 **Matrix:** MEOH BLAN **Received Date:** 7/23/2021 4:57:00 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	7/31/2021 7:38:07 AM	A80215
Hexachlorobutadiene	ND	0.034	0.10		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
2-Hexanone	ND	0.022	0.50		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Isopropylbenzene	ND	0.0093	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
4-Isopropyltoluene	ND	0.013	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
4-Methyl-2-pentanone	ND	0.058	0.50		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Methylene chloride	ND	0.036	0.15		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
n-Butylbenzene	ND	0.013	0.15		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
n-Propylbenzene	ND	0.0081	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
sec-Butylbenzene	ND	0.041	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Styrene	ND	0.0068	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
tert-Butylbenzene	ND	0.012	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,1,1,2-Tetrachloroethane	ND	0.0073	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,1,2,2-Tetrachloroethane	ND	0.016	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Tetrachloroethene (PCE)	ND	0.014	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
trans-1,2-DCE	ND	0.0097	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
trans-1,3-Dichloropropene	ND	0.012	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,2,3-Trichlorobenzene	ND	0.0077	0.10		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,2,4-Trichlorobenzene	ND	0.017	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,1,1-Trichloroethane	ND	0.011	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,1,2-Trichloroethane	ND	0.013	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Trichloroethene (TCE)	ND	0.0098	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Trichlorofluoromethane	ND	0.011	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
1,2,3-Trichloropropane	ND	0.021	0.10		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Vinyl chloride	ND	0.0095	0.050		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Xylenes, Total	ND	0.026	0.10		mg/Kg	1	7/31/2021 7:38:07 AM	A80215
Surr: Dibromofluoromethane	98.3		70-130		%Rec	1	7/31/2021 7:38:07 AM	A80215
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	7/31/2021 7:38:07 AM	A80215
Surr: Toluene-d8	98.3		70-130		%Rec	1	7/31/2021 7:38:07 AM	A80215
Surr: 4-Bromofluorobenzene	98.5		70-130		%Rec	1	7/31/2021 7:38:07 AM	A80215

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2107C60**
21-Oct-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **MB-61603** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **61603** RunNo: **80141**
Prep Date: **7/27/2021** Analysis Date: **7/28/2021** SeqNo: **2821624** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.8		10.00		98.1	70	130			

Sample ID: **LCS-61603** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **61603** RunNo: **80141**
Prep Date: **7/27/2021** Analysis Date: **7/28/2021** SeqNo: **2821625** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	101	68.9	141			
Surr: DNOP	5.8		5.000		116	70	130			

Sample ID: **2107C60-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **MKTF-01R-6** Batch ID: **61603** RunNo: **80142**
Prep Date: **7/27/2021** Analysis Date: **7/28/2021** SeqNo: **2821658** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	73	9.2	45.91	26.36	101	15	184			
Surr: DNOP	5.2		4.591		113	70	130			

Sample ID: **2107C60-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **MKTF-01R-6** Batch ID: **61603** RunNo: **80142**
Prep Date: **7/27/2021** Analysis Date: **7/28/2021** SeqNo: **2821659** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	82	9.9	49.70	26.36	111	15	184	11.9	23.9	
Surr: DNOP	5.6		4.970		112	70	130	0	0	

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2107C60**
21-Oct-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **LCSS**	Batch ID: **A80215**	RunNo: **80215**
Prep Date:	Analysis Date: **7/30/2021**	SeqNo: **2824898** 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	109	70	130			
Chlorobenzene	1.0	0.050	1.000	0	102	70	130			
1,1-Dichloroethene	1.0	0.050	1.000	0	104	70	130			
Trichloroethene (TCE)	1.1	0.050	1.000	0	105	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: 1,2-Dichloroethane-d4	0.53		0.5000		105	70	130			
Surr: Toluene-d8	0.53		0.5000		105	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		100	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A80215**	RunNo: **80215**
Prep Date:	Analysis Date: **7/30/2021**	SeqNo: **2824900** 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#: **2107C60**
21-Oct-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A80215**	RunNo: **80215**
Prep Date:	Analysis Date: **7/30/2021**	SeqNo: **2824900** 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#: **2107C60**
21-Oct-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **PBS**	Batch ID: **A80215**	RunNo: **80215**
Prep Date:	Analysis Date: **7/30/2021**	SeqNo: **2824900** 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	0.53		0.5000		106	70	130			
Surr: 1,2-Dichloroethane-d4	0.53		0.5000		106	70	130			
Surr: Toluene-d8	0.49		0.5000		98.9	70	130			
Surr: 4-Bromofluorobenzene	0.51		0.5000		101	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#: **2107C60**
21-Oct-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **mb-61594**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**							
Client ID: **PBS**	Batch ID: **61594**	RunNo: **80191**							
Prep Date: **7/27/2021**	Analysis Date: **7/29/2021**	SeqNo: **2823725**	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	0.24	0.50								J
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.52	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	2.7	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#: **2107C60**
21-Oct-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **mb-61594**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**			
Client ID: **PBS**	Batch ID: **61594**	RunNo: **80191**			
Prep Date: **7/27/2021**	Analysis Date: **7/29/2021**	SeqNo: **2823725**	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	1.4		3.330		41.4	20.3	74.1			
Surr: Phenol-d5	1.8		3.330		53.6	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.5		3.330		74.9	17.3	122			
Surr: Nitrobenzene-d5	0.67		1.670		40.0	24.7	73.2			
Surr: 2-Fluorobiphenyl	0.83		1.670		49.9	21.5	90.1			
Surr: 4-Terphenyl-d14	1.4		1.670		86.4	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#: **2107C60**
21-Oct-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **lcs-61594** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **61594** RunNo: **80191**
Prep Date: **7/27/2021** Analysis Date: **7/29/2021** SeqNo: **2823726** 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	76.1	22.9	109			
4-Chloro-3-methylphenol	2.4	0.50	3.330	0	72.5	24.2	109			
2-Chlorophenol	2.2	0.20	3.330	0	65.2	18.8	103			
1,4-Dichlorobenzene	0.96	0.20	1.670	0	57.7	18.8	89.5			
2,4-Dinitrotoluene	1.3	0.50	1.670	0	77.5	20.2	94.5			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	73.5	19.2	96.9			
4-Nitrophenol	3.7	0.25	3.330	0	113	25	118			
Pentachlorophenol	2.7	0.40	3.330	0	81.9	24.1	107			
Phenol	2.5	0.20	3.330	0	76.3	17.8	112			
Pyrene	1.7	0.20	1.670	0	103	25.9	125			
1,2,4-Trichlorobenzene	0.91	0.20	1.670	0	54.4	18.5	92.8			
Surr: 2-Fluorophenol	1.6		3.330		48.2	20.3	74.1			
Surr: Phenol-d5	2.1		3.330		63.7	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.6		3.330		79.5	17.3	122			
Surr: Nitrobenzene-d5	0.83		1.670		50.0	24.7	73.2			
Surr: 2-Fluorobiphenyl	0.98		1.670		58.7	21.5	90.1			
Surr: 4-Terphenyl-d14	1.5		1.670		87.9	15	140			

Sample ID: **2107c60-001ams** SampType: **MS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **MKTF-01R-6** Batch ID: **61594** RunNo: **80191**
Prep Date: **7/27/2021** Analysis Date: **7/29/2021** SeqNo: **2823728** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.66	0.20	1.666	0	39.7	24.8	111			
4-Chloro-3-methylphenol	1.5	0.50	3.322	0	46.5	40.7	97.8			
2-Chlorophenol	1.4	0.20	3.322	0	42.0	21.2	91.6			
1,4-Dichlorobenzene	0.45	0.20	1.666	0	26.8	17.8	74.2			
2,4-Dinitrotoluene	0.61	0.50	1.666	0	36.4	36.5	81.5			S
N-Nitrosodi-n-propylamine	0.71	0.20	1.666	0	42.7	25.5	85.2			
4-Nitrophenol	2.8	0.25	3.322	0	83.8	15	143			
Pentachlorophenol	2.6	0.40	3.322	0	78.5	15	116			
Phenol	1.6	0.20	3.322	0.09255	44.8	24.8	94.5			
Pyrene	1.4	0.20	1.666	0	85.0	42	112			
1,2,4-Trichlorobenzene	0.57	0.20	1.666	0	33.9	18.5	85.3			
Surr: 2-Fluorophenol	1.3		3.322		39.7	20.3	74.1			
Surr: Phenol-d5	1.5		3.322		45.8	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.5		3.322		75.8	17.3	122			
Surr: Nitrobenzene-d5	0.60		1.666		36.2	24.7	73.2			
Surr: 2-Fluorobiphenyl	0.61		1.666		36.8	21.5	90.1			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2107C60**
21-Oct-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **2107c60-001ams** SampType: **MS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **MKTF-01R-6** Batch ID: **61594** RunNo: **80191**
Prep Date: **7/27/2021** Analysis Date: **7/29/2021** SeqNo: **2823728** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	1.5		1.666		88.5	15	140			

Sample ID: **2107C60-001AMSD** SampType: **MSD** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **MKTF-01R-6** Batch ID: **61594** RunNo: **80233**
Prep Date: **7/27/2021** Analysis Date: **7/30/2021** SeqNo: **2825940** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.78	0.20	1.638	0	47.9	24.8	111	17.0	20	
4-Chloro-3-methylphenol	1.7	0.49	3.266	0	53.5	40.7	97.8	12.3	20	
2-Chlorophenol	1.5	0.20	3.266	0	45.8	21.2	91.6	6.90	20	
1,4-Dichlorobenzene	0.50	0.20	1.638	0	30.3	17.8	74.2	10.7	20	
2,4-Dinitrotoluene	0.56	0.49	1.638	0	34.5	36.5	81.5	6.98	20	S
N-Nitrosodi-n-propylamine	0.85	0.20	1.638	0	52.1	25.5	85.2	18.3	20	
4-Nitrophenol	2.9	0.25	3.266	0	89.6	15	143	4.96	20	
Pentachlorophenol	2.3	0.39	3.266	0	70.9	15	116	11.8	20	
Phenol	1.8	0.20	3.266	0.09255	53.7	24.8	94.5	15.5	20	
Pyrene	1.2	0.20	1.638	0	72.2	42	112	18.0	20	
1,2,4-Trichlorobenzene	0.62	0.20	1.638	0	37.6	18.5	85.3	8.45	20	
Surr: 2-Fluorophenol	1.4		3.266		42.4	20.3	74.1	0	0	
Surr: Phenol-d5	1.8		3.266		55.5	23.1	92.7	0	0	
Surr: 2,4,6-Tribromophenol	2.4		3.266		74.1	17.3	122	0	0	
Surr: Nitrobenzene-d5	0.62		1.638		37.9	24.7	73.2	0	0	
Surr: 2-Fluorobiphenyl	0.72		1.638		43.8	21.5	90.1	0	0	
Surr: 4-Terphenyl-d14	1.3		1.638		81.6	15	140	0	0	

Sample ID: **MB-61917** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBS** Batch ID: **61917** RunNo: **80565**
Prep Date: **8/11/2021** Analysis Date: **8/17/2021** SeqNo: **2842284** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	2.4		3.330		72.8	20.3	74.1			
Surr: Phenol-d5	2.8		3.330		84.3	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		68.2	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.3		1.670		78.4	21.5	90.1			
Surr: 4-Terphenyl-d14	1.6		1.670		93.8	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#: **2107C60**
21-Oct-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **LCS-61917** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS** Batch ID: **61917** RunNo: **80565**
Prep Date: **8/11/2021** Analysis Date: **8/17/2021** SeqNo: **2843316** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	2.3		3.330		68.1	20.3	74.1			
Surr: Phenol-d5	2.7		3.330		80.8	23.1	92.7			
Surr: 2,4,6-Tribromophenol	2.4		3.330		70.6	17.3	122			
Surr: Nitrobenzene-d5	1.2		1.670		69.1	24.7	73.2			
Surr: 2-Fluorobiphenyl	1.3		1.670		76.5	21.5	90.1			
Surr: 4-Terphenyl-d14	1.6		1.670		93.0	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#: **2107C60**

21-Oct-21

Client: Marathon

Project: Well Installations 2021

Sample ID: **MB-61615**	SampType: **MBLK**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **PBS**	Batch ID: **61615**	RunNo: **80155**							
Prep Date: **7/28/2021**	Analysis Date: **7/28/2021**	SeqNo: **2822326**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: **LLLCS-61615**	SampType: **LCSLL**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **BatchQC**	Batch ID: **61615**	RunNo: **80155**							
Prep Date: **7/28/2021**	Analysis Date: **7/28/2021**	SeqNo: **2822327**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0073	0.033	0.006660	0	110	70	130			J

Sample ID: **LCS-61615**	SampType: **LCS**	TestCode: **EPA Method 7471B: Mercury**							
Client ID: **LCSS**	Batch ID: **61615**	RunNo: **80155**							
Prep Date: **7/28/2021**	Analysis Date: **7/28/2021**	SeqNo: **2822328**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.16	0.033	0.1667	0	97.5	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#: **2107C60**
21-Oct-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **MB-61606** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **61606** RunNo: **80177**
Prep Date: **7/27/2021** Analysis Date: **7/29/2021** SeqNo: **2823032** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Lead	0.27	0.30								J
Manganese	ND	0.20								
Silver	ND	0.25								

Sample ID: **LCS-61606** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **61606** RunNo: **80177**
Prep Date: **7/27/2021** Analysis Date: **7/29/2021** SeqNo: **2823034** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	21	2.5	25.00	0	83.6	80	120			
Barium	23	0.10	25.00	0	90.1	80	120			
Cadmium	23	0.10	25.00	0	91.0	80	120			
Chromium	23	0.30	25.00	0	91.1	80	120			
Lead	22	0.30	25.00	0	88.7	80	120			
Manganese	22	0.20	25.00	0	89.9	80	120			
Silver	4.5	0.25	5.000	0	90.1	80	120			

Sample ID: **MB-61606** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **61606** RunNo: **80278**
Prep Date: **7/27/2021** Analysis Date: **8/3/2021** SeqNo: **2828128** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	2.5								

Sample ID: **LCS-61606** SampType: **LCS** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS** Batch ID: **61606** RunNo: **80278**
Prep Date: **7/27/2021** Analysis Date: **8/3/2021** SeqNo: **2828130** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	22	2.5	25.00	0	87.8	80	120			

Sample ID: **MB-61606** SampType: **MBLK** TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS** Batch ID: **61606** RunNo: **80309**
Prep Date: **7/27/2021** Analysis Date: **8/4/2021** SeqNo: **2829277** 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#: **2107C60**

21-Oct-21

Client: Marathon

Project: Well Installations 2021

Sample ID: **MB-61606**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **61606**	RunNo: **80309**
Prep Date: **7/27/2021**	Analysis Date: **8/4/2021**	SeqNo: **2829277** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	2.5								

Sample ID: **LCS-61606**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **61606**	RunNo: **80309**
Prep Date: **7/27/2021**	Analysis Date: **8/4/2021**	SeqNo: **2829279** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	21	2.5	25.00	0	83.4	80	120			

Sample ID: **MB-63296**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **63296**	RunNo: **82121**
Prep Date: **10/13/2021**	Analysis Date: **10/15/2021**	SeqNo: **2909447** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	2.5								
Manganese	ND	0.20								

Sample ID: **LCS-63296**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **63296**	RunNo: **82121**
Prep Date: **10/13/2021**	Analysis Date: **10/15/2021**	SeqNo: **2909449** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	24	2.5	25.00	0	97.6	80	120			
Manganese	23	0.20	25.00	0	90.5	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#: **2107C60**
21-Oct-21

Client: Marathon
Project: Well Installations 2021

Sample ID: **2107c60-001ams** SampType: **MS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **MKTF-01R-6** Batch ID: **R80239** RunNo: **80239**
Prep Date: Analysis Date: **8/1/2021** SeqNo: **2826335** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1200	48	241.4	1086	61.2	64.4	124			S
Surr: BFB	4700		4829		96.7	70	130			

Sample ID: **2107c60-001amsd** SampType: **MSD** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **MKTF-01R-6** Batch ID: **R80239** RunNo: **80239**
Prep Date: Analysis Date: **8/1/2021** SeqNo: **2826336** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1300	48	241.4	1086	86.1	64.4	124	4.76	20	
Surr: BFB	4700		4829		97.8	70	130	0	0	

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **R80239** RunNo: **80239**
Prep Date: Analysis Date: **7/31/2021** SeqNo: **2830117** 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	490		500.0		98.9	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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: **2107C60** RcptNo: **1**

Received By: **Desiree Dominguez** **7/23/2021 4:57:00 PM** DD

Completed By: **Isaiah Ortiz** **7/26/2021 9:18:14 AM** I-O

Reviewed By: JR 7/26/21

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: SPA 7.26.21

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	5.1	Good	Not Present			

Released to Imaging: 11/23/2022 2:26:56 PM

Received by OCD: 10/21/2022 2:38:50 PM

Chain-of-Custody Record

Client: Marathon- Gallup Refinery

Mailing Address: 92 Giant Crossing
Gallup, NM

Phone #: 970 - 481 - 0718

email or Fax#: lalexander@trihydro.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☒ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: Well Installations - 2021

Project #: 697-092-001

Project Manager: Leslie Alexander

Sampler: M. Swift, W. Glenn

On Ice: ☒ Yes ☐ No

Sample Temperature: 5.2 - 0.1 = 5.1°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2107C60	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
7/22/21	0750	S	MKTF-01R-6	glass 14	MeOH	001			X				X			X	X	
	0745		MKTF-01R-18			002												
	1215		MKTF-02R-6			003												
	1225		MKTF-02R-18			004												
			trip blank	glass 1		005												
			R in sample ID Per Lesli DAD 7/26/21															

Remarks:

Date	Time	Relinquished by:	Received by:	Date	Time
7/23/21	1400	M Swift	Courier	7/23/21	16:57

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

October 08, 2021

Brian McLoughlin

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL:
FAX

RE: Additional Well Install OrderNo.: 2109A01

Dear Brian McLoughlin:

Hall Environmental Analysis Laboratory received 12 sample(s) on 9/18/2021 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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-001A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	ND	0.23	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Toluene	ND	0.20	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Naphthalene	ND	0.50	2.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Acetone	3.8	2.5	10	J	µg/L	1	9/23/2021 3:27:41 AM	R81501
Bromobenzene	ND	0.28	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Bromodichloromethane	ND	0.20	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Bromoform	ND	0.31	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Bromomethane	ND	0.85	3.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
2-Butanone	ND	2.0	10		µg/L	1	9/23/2021 3:27:41 AM	R81501
Carbon disulfide	ND	0.59	10		µg/L	1	9/23/2021 3:27:41 AM	R81501
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Chloroethane	ND	0.38	2.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Chloroform	ND	0.13	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Chloromethane	ND	0.41	3.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Dibromochloromethane	ND	0.28	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Dibromomethane	ND	0.31	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-001A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
2-Hexanone	ND	1.8	10		µg/L	1	9/23/2021 3:27:41 AM	R81501
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/23/2021 3:27:41 AM	R81501
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Styrene	ND	0.14	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/23/2021 3:27:41 AM	R81501
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/23/2021 3:27:41 AM	R81501
Surr: 1,2-Dichloroethane-d4	111	0	70-130		%Rec	1	9/23/2021 3:27:41 AM	R81501
Surr: 4-Bromofluorobenzene	100	0	70-130		%Rec	1	9/23/2021 3:27:41 AM	R81501
Surr: Dibromofluoromethane	103	0	70-130		%Rec	1	9/23/2021 3:27:41 AM	R81501
Surr: Toluene-d8	105	0	70-130		%Rec	1	9/23/2021 3:27:41 AM	R81501
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	ND	0.012	0.050		mg/L	1	9/23/2021 3:27:41 AM	R81501
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	1	9/23/2021 3:27:41 AM	R81501

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-001C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	0.019	0.016	0.064	J	mg/L	1	9/28/2021 2:04:04 PM	62729
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	9/28/2021 2:04:04 PM	62729
Surr: DNOP	94.9	0	15-142		%Rec	1	9/28/2021 2:04:04 PM	62729

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-001D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Aniline	ND	0.50	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Azobenzene	ND	0.55	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Benzoic acid	ND	1.1	20		µg/L	1	9/24/2021 5:36:15 PM	62689
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/24/2021 5:36:15 PM	62689
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Carbazole	ND	0.56	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/24/2021 5:36:15 PM	62689
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/24/2021 5:36:15 PM	62689
Dibenz(a,h)anthracene	ND	0.83	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Diethyl phthalate	ND	3.9	10		µg/L	1	9/24/2021 5:36:15 PM	62689
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/24/2021 5:36:15 PM	62689
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Isophorone	ND	0.40	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
2-Methylphenol	ND	0.51	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-001D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Pentachlorophenol	ND	0.59	20		µg/L	1	9/24/2021 5:36:15 PM	62689
Phenol	ND	0.33	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Pyridine	ND	0.93	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/24/2021 5:36:15 PM	62689
Surr: 2-Fluorophenol	55.9	0	15-87		%Rec	1	9/24/2021 5:36:15 PM	62689
Surr: Phenol-d5	41.0	0	15-67.5		%Rec	1	9/24/2021 5:36:15 PM	62689
Surr: 2,4,6-Tribromophenol	67.3	0	15-122		%Rec	1	9/24/2021 5:36:15 PM	62689
Surr: Nitrobenzene-d5	62.1	0	15-103		%Rec	1	9/24/2021 5:36:15 PM	62689
Surr: 2-Fluorobiphenyl	60.0	0	15-103		%Rec	1	9/24/2021 5:36:15 PM	62689
Surr: 4-Terphenyl-d14	119	0	45-137		%Rec	1	9/24/2021 5:36:15 PM	62689
EPA METHOD 8270SIM							Analyst: **DAM**	
Naphthalene	ND	0.034	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Acenaphthylene	ND	0.043	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Acenaphthene	ND	0.031	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Fluorene	ND	0.031	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Phenanthrene	ND	0.057	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Anthracene	ND	0.034	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Fluoranthene	ND	0.10	0.20		µg/L	1	9/27/2021 4:02:00 PM	62703
Pyrene	ND	0.16	0.20		µg/L	1	9/27/2021 4:02:00 PM	62703
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Chrysene	ND	0.024	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Benzo(k)fluoranthene	ND	0.036	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Benzo(a)pyrene	ND	0.034	0.070		µg/L	1	9/27/2021 4:02:00 PM	62703
Dibenz(a,h)anthracene	ND	0.034	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Benzo(g,h,i)perylene	ND	0.034	0.10		µg/L	1	9/27/2021 4:02:00 PM	62703
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	9/27/2021 4:02:00 PM	62703
Surr: Nitrobenzene-d5	59.5	0	21.9-89.8		%Rec	1	9/27/2021 4:02:00 PM	62703

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-001D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: **DAM**	
Surr: 2,4,6-Tribromophenol	51.5	0	23.4-71.6		%Rec	1	9/27/2021 4:02:00 PM	62703
Surr: 2-Fluorobiphenyl	49.0	0	15-84.5		%Rec	1	9/27/2021 4:02:00 PM	62703
Surr: 4-Terphenyl-d14	94.5	0	73.1-152		%Rec	1	9/27/2021 4:02:00 PM	62703

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-001E
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Fluoride	ND	0.040	0.10		mg/L	1	9/18/2021 11:57:15 AM	R81380
Chloride	0.29	0.25	0.50	J	mg/L	1	9/18/2021 11:57:15 AM	R81380
Nitrogen, Nitrite (As N)	ND	0.0053	0.10		mg/L	1	9/18/2021 11:57:15 AM	R81380
Nitrogen, Nitrate (As N)	0.31	0.010	0.10		mg/L	1	9/18/2021 11:57:15 AM	R81380
Sulfate	1.7	0.25	0.50		mg/L	1	9/18/2021 11:57:15 AM	R81380
SM2320B: ALKALINITY							Analyst: **CAS**	
Bicarbonate (As CaCO3)	ND	20.00	20.00		mg/L Ca	1	9/21/2021 7:05:37 PM	R81457
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	9/21/2021 7:05:37 PM	R81457
Total Alkalinity (as CaCO3)	ND	20.00	20.00		mg/L Ca	1	9/21/2021 7:05:37 PM	R81457

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-001F
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Barium	ND	0.0016	0.0030		mg/L	1	9/24/2021 1:25:08 PM	62792
Beryllium	ND	0.00088	0.0020		mg/L	1	9/24/2021 1:25:08 PM	62792
Cadmium	ND	0.0015	0.0020		mg/L	1	9/24/2021 1:25:08 PM	62792
Calcium	ND	0.11	1.0		mg/L	1	9/24/2021 1:25:08 PM	62792
Chromium	ND	0.0021	0.0060		mg/L	1	9/24/2021 1:25:08 PM	62792
Cobalt	ND	0.0024	0.0060		mg/L	1	9/24/2021 1:25:08 PM	62792
Iron	ND	0.013	0.050		mg/L	1	9/24/2021 1:25:08 PM	62792
Magnesium	ND	0.067	1.0		mg/L	1	9/24/2021 1:25:08 PM	62792
Manganese	ND	0.00081	0.0020		mg/L	1	9/24/2021 1:25:08 PM	62792
Nickel	ND	0.0033	0.010		mg/L	1	9/24/2021 1:25:08 PM	62792
Potassium	ND	0.16	1.0		mg/L	1	9/24/2021 1:25:08 PM	62792
Silver	ND	0.0013	0.0050		mg/L	1	9/24/2021 1:25:08 PM	62792
Sodium	ND	0.19	1.0		mg/L	1	9/24/2021 1:25:08 PM	62792
Vanadium	ND	0.0024	0.050		mg/L	1	9/24/2021 1:25:08 PM	62792
Zinc	ND	0.0064	0.010		mg/L	1	9/24/2021 1:25:08 PM	62792
EPA 200.8: METALS							Analyst: **bcv**	
Antimony	ND	0.0022	0.0050		mg/L	5	9/30/2021 3:21:39 PM	62792
Arsenic	ND	0.00063	0.0050		mg/L	5	9/30/2021 3:21:39 PM	62792
Lead	0.00052	0.00031	0.0025	J	mg/L	5	9/30/2021 3:21:39 PM	62792
Selenium	ND	0.0019	0.0050		mg/L	5	9/30/2021 3:21:39 PM	62792
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:17:35 PM	62854

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: EB-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-001G
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Barium	ND	0.0011	0.0020		mg/L	1	9/21/2021 11:45:04 AM	B81434
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2021 11:45:04 AM	B81434
Cadmium	ND	0.0012	0.0020		mg/L	1	9/21/2021 11:45:04 AM	B81434
Chromium	ND	0.0020	0.0060		mg/L	1	9/21/2021 11:45:04 AM	B81434
Cobalt	ND	0.0024	0.0060		mg/L	1	9/21/2021 11:45:04 AM	B81434
Iron	ND	0.010	0.020		mg/L	1	9/21/2021 11:45:04 AM	B81434
Manganese	ND	0.00058	0.0020		mg/L	1	9/21/2021 11:45:04 AM	B81434
Nickel	ND	0.0033	0.010		mg/L	1	9/21/2021 11:45:04 AM	B81434
Silver	ND	0.0013	0.0050		mg/L	1	9/21/2021 11:45:04 AM	B81434
Vanadium	ND	0.0020	0.050		mg/L	1	9/21/2021 11:45:04 AM	B81434
Zinc	0.0071	0.0060	0.010	J	mg/L	1	9/21/2021 11:45:04 AM	B81434
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Antimony	ND	0.0044	0.010		mg/L	10	9/29/2021 3:45:17 PM	C81686
Arsenic	ND	0.0012	0.010		mg/L	10	9/29/2021 3:45:17 PM	C81686
Lead	ND	0.00057	0.0050		mg/L	10	9/29/2021 3:45:17 PM	C81686
Selenium	ND	0.0034	0.010		mg/L	10	9/29/2021 3:45:17 PM	C81686
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:20:03 PM	62854

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-17R
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-002A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	1600	23	100		µg/L	100	9/23/2021 3:26:43 PM	R81542
Toluene	5400	20	100		µg/L	100	9/23/2021 3:26:43 PM	R81542
Ethylbenzene	280	1.1	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Methyl tert-butyl ether (MTBE)	3900	39	100		µg/L	100	9/23/2021 3:26:43 PM	R81542
1,2,4-Trimethylbenzene	430	0.61	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,3,5-Trimethylbenzene	120	0.91	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,2-Dichloroethane (EDC)	ND	1.3	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,2-Dibromoethane (EDB)	ND	1.5	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Naphthalene	72	2.5	10		µg/L	5	9/23/2021 3:56:20 AM	R81501
1-Methylnaphthalene	27	4.2	20		µg/L	5	9/23/2021 3:56:20 AM	R81501
2-Methylnaphthalene	34	3.5	20		µg/L	5	9/23/2021 3:56:20 AM	R81501
Acetone	16	13	50	J	µg/L	5	9/23/2021 3:56:20 AM	R81501
Bromobenzene	ND	1.4	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Bromodichloromethane	ND	1.0	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Bromoform	ND	1.6	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Bromomethane	ND	4.3	15		µg/L	5	9/23/2021 3:56:20 AM	R81501
2-Butanone	11	10	50	J	µg/L	5	9/23/2021 3:56:20 AM	R81501
Carbon disulfide	ND	3.0	50		µg/L	5	9/23/2021 3:56:20 AM	R81501
Carbon Tetrachloride	ND	0.88	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Chlorobenzene	ND	0.78	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Chloroethane	ND	1.9	10		µg/L	5	9/23/2021 3:56:20 AM	R81501
Chloroform	ND	0.67	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Chloromethane	ND	2.1	15		µg/L	5	9/23/2021 3:56:20 AM	R81501
2-Chlorotoluene	ND	0.66	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
4-Chlorotoluene	ND	1.7	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
cis-1,2-DCE	ND	1.9	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
cis-1,3-Dichloropropene	ND	1.8	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,2-Dibromo-3-chloropropane	ND	2.9	10		µg/L	5	9/23/2021 3:56:20 AM	R81501
Dibromochloromethane	ND	1.4	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Dibromomethane	ND	1.5	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,2-Dichlorobenzene	ND	0.77	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,3-Dichlorobenzene	ND	0.81	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,4-Dichlorobenzene	ND	1.0	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Dichlorodifluoromethane	ND	2.0	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,1-Dichloroethane	3.3	1.4	5.0	J	µg/L	5	9/23/2021 3:56:20 AM	R81501
1,1-Dichloroethene	ND	1.0	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,2-Dichloropropane	ND	1.0	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,3-Dichloropropane	ND	0.90	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
2,2-Dichloropropane	ND	1.3	10		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,1-Dichloropropene	ND	0.90	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-17R
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-002A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Hexachlorobutadiene	ND	2.8	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
2-Hexanone	ND	9.0	50		µg/L	5	9/23/2021 3:56:20 AM	R81501
Isopropylbenzene	18	0.91	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
4-Isopropyltoluene	3.4	1.0	5.0	J	µg/L	5	9/23/2021 3:56:20 AM	R81501
4-Methyl-2-pentanone	ND	4.4	50		µg/L	5	9/23/2021 3:56:20 AM	R81501
Methylene Chloride	ND	2.5	15		µg/L	5	9/23/2021 3:56:20 AM	R81501
n-Butylbenzene	4.9	1.3	15	J	µg/L	5	9/23/2021 3:56:20 AM	R81501
n-Propylbenzene	28	0.91	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
sec-Butylbenzene	2.8	0.72	5.0	J	µg/L	5	9/23/2021 3:56:20 AM	R81501
Styrene	ND	0.68	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
tert-Butylbenzene	ND	1.2	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,1,1,2-Tetrachloroethane	ND	1.3	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,1,2,2-Tetrachloroethane	ND	1.4	10		µg/L	5	9/23/2021 3:56:20 AM	R81501
Tetrachloroethene (PCE)	ND	1.8	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
trans-1,2-DCE	ND	0.97	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
trans-1,3-Dichloropropene	ND	1.7	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,2,3-Trichlorobenzene	ND	1.2	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,2,4-Trichlorobenzene	ND	1.2	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,1,1-Trichloroethane	ND	1.5	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,1,2-Trichloroethane	ND	0.99	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Trichloroethene (TCE)	ND	1.0	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Trichlorofluoromethane	ND	0.79	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
1,2,3-Trichloropropane	ND	2.2	10		µg/L	5	9/23/2021 3:56:20 AM	R81501
Vinyl chloride	ND	1.6	5.0		µg/L	5	9/23/2021 3:56:20 AM	R81501
Xylenes, Total	2700	37	150		µg/L	100	9/23/2021 3:26:43 PM	R81542
Surr: 1,2-Dichloroethane-d4	111	0	70-130		%Rec	5	9/23/2021 3:56:20 AM	R81501
Surr: 4-Bromofluorobenzene	76.0	0	70-130		%Rec	5	9/23/2021 3:56:20 AM	R81501
Surr: Dibromofluoromethane	95.4	0	70-130		%Rec	5	9/23/2021 3:56:20 AM	R81501
Surr: Toluene-d8	109	0	70-130		%Rec	5	9/23/2021 3:56:20 AM	R81501
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	29	0.061	0.25		mg/L	5	9/23/2021 3:56:20 AM	R81501
Surr: 4-Bromofluorobenzene	87.0	0	70-130		%Rec	5	9/23/2021 3:56:20 AM	R81501

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-17R
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-002C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	1.8	0.16	0.64		mg/L	10	9/27/2021 10:13:09 PM	62729
Motor Oil Range Organics (MRO)	ND	0.52	0.80	D	mg/L	10	9/27/2021 10:13:09 PM	62729
Surr: DNOP	0	0	15-142	S	%Rec	10	9/27/2021 10:13:09 PM	62729

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-17R
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-002D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Aniline	ND	0.50	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Anthracene	ND	0.75	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Azobenzene	ND	0.55	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Benzoic acid	ND	1.1	20		µg/L	1	9/24/2021 6:17:43 PM	62689
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/24/2021 6:17:43 PM	62689
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Carbazole	ND	0.56	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/24/2021 6:17:43 PM	62689
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/24/2021 6:17:43 PM	62689
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Diethyl phthalate	ND	3.9	10		µg/L	1	9/24/2021 6:17:43 PM	62689
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/24/2021 6:17:43 PM	62689
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
2,4-Dimethylphenol	13	0.97	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Isophorone	ND	0.40	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
2-Methylphenol	280	5.1	50		µg/L	10	9/30/2021 7:58:48 AM	62689
3+4-Methylphenol	29	0.45	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-17R
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-002D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Pentachlorophenol	ND	0.59	20		µg/L	1	9/24/2021 6:17:43 PM	62689
Phenol	150	0.33	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Pyridine	ND	0.93	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/24/2021 6:17:43 PM	62689
Surr: 2-Fluorophenol	0	0	15-87	S	%Rec	1	9/24/2021 6:17:43 PM	62689
Surr: Phenol-d5	41.5	0	15-67.5		%Rec	1	9/24/2021 6:17:43 PM	62689
Surr: 2,4,6-Tribromophenol	79.8	0	15-122		%Rec	1	9/24/2021 6:17:43 PM	62689
Surr: Nitrobenzene-d5	61.0	0	15-103		%Rec	1	9/24/2021 6:17:43 PM	62689
Surr: 2-Fluorobiphenyl	59.4	0	15-103		%Rec	1	9/24/2021 6:17:43 PM	62689
Surr: 4-Terphenyl-d14	69.3	0	45-137		%Rec	1	9/24/2021 6:17:43 PM	62689
EPA METHOD 8270SIM							Analyst: **DAM**	
Naphthalene	38	0.34	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
1-Methylnaphthalene	15	0.24	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
2-Methylnaphthalene	16	0.34	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Acenaphthylene	ND	0.43	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Acenaphthene	1.2	0.31	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Fluorene	2.4	0.31	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Phenanthrene	0.80	0.57	1.0	JD	µg/L	10	9/27/2021 4:46:00 PM	62703
Anthracene	3.0	0.34	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Fluoranthene	ND	1.0	2.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Pyrene	ND	1.6	2.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Benz(a)anthracene	ND	0.36	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Chrysene	ND	0.24	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Benzo(b)fluoranthene	ND	0.57	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Benzo(k)fluoranthene	ND	0.36	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Benzo(a)pyrene	ND	0.34	0.70	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Dibenz(a,h)anthracene	ND	0.34	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Benzo(g,h,i)perylene	ND	0.34	1.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Indeno(1,2,3-cd)pyrene	ND	0.43	3.0	D	µg/L	10	9/27/2021 4:46:00 PM	62703
Surr: Nitrobenzene-d5	0	0	21.9-89.8	SD	%Rec	10	9/27/2021 4:46:00 PM	62703

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-17R
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-002D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: **DAM**	
Surr: 2,4,6-Tribromophenol	0	0	23.4-71.6	SD	%Rec	10	9/27/2021 4:46:00 PM	62703
Surr: 2-Fluorobiphenyl	0	0	15-84.5	SD	%Rec	10	9/27/2021 4:46:00 PM	62703
Surr: 4-Terphenyl-d14	0	0	73.1-152	SD	%Rec	10	9/27/2021 4:46:00 PM	62703

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-17R
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-002E
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Fluoride	0.79	0.20	0.50		mg/L	5	9/18/2021 12:48:47 PM	R81380
Chloride	170	5.0	10		mg/L	20	9/18/2021 1:01:41 PM	R81380
Nitrogen, Nitrite (As N)	ND	0.027	0.50		mg/L	5	9/18/2021 12:48:47 PM	R81380
Nitrogen, Nitrate (As N)	0.39	0.050	0.50	J	mg/L	5	9/18/2021 12:48:47 PM	R81380
Sulfate	10	1.2	2.5		mg/L	5	9/18/2021 12:48:47 PM	R81380
SM2320B: ALKALINITY							Analyst: **CAS**	
Bicarbonate (As CaCO3)	697.2	20.00	20.00		mg/L Ca	1	9/21/2021 7:11:37 PM	R81457
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	9/21/2021 7:11:37 PM	R81457
Total Alkalinity (as CaCO3)	697.2	20.00	20.00		mg/L Ca	1	9/21/2021 7:11:37 PM	R81457

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
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Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-17R
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-002F
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Barium	0.32	0.0016	0.0030		mg/L	1	9/24/2021 1:34:56 PM	62792
Beryllium	ND	0.00088	0.0020		mg/L	1	9/24/2021 1:34:56 PM	62792
Cadmium	ND	0.0015	0.0020		mg/L	1	9/24/2021 1:34:56 PM	62792
Calcium	110	1.1	10		mg/L	10	9/24/2021 1:36:20 PM	62792
Chromium	ND	0.0021	0.0060		mg/L	1	9/24/2021 1:34:56 PM	62792
Cobalt	0.0045	0.0024	0.0060	J	mg/L	1	9/24/2021 1:34:56 PM	62792
Iron	1.4	0.13	0.50	*	mg/L	10	9/24/2021 1:36:20 PM	62792
Magnesium	21	0.067	1.0		mg/L	1	9/24/2021 1:34:56 PM	62792
Manganese	3.4	0.0081	0.020	*	mg/L	10	9/24/2021 1:36:20 PM	62792
Nickel	0.0062	0.0033	0.010	J	mg/L	1	9/24/2021 1:34:56 PM	62792
Potassium	0.88	0.16	1.0	J	mg/L	1	9/24/2021 1:34:56 PM	62792
Silver	ND	0.0013	0.0050		mg/L	1	9/24/2021 1:34:56 PM	62792
Sodium	310	1.9	10		mg/L	10	9/24/2021 1:36:20 PM	62792
Vanadium	ND	0.0024	0.050		mg/L	1	9/24/2021 1:34:56 PM	62792
Zinc	ND	0.0064	0.010		mg/L	1	9/24/2021 1:34:56 PM	62792
EPA 200.8: METALS							Analyst: **bcv**	
Antimony	ND	0.0022	0.0050		mg/L	5	9/30/2021 3:24:04 PM	62792
Arsenic	0.0055	0.00063	0.0050		mg/L	5	9/30/2021 3:24:04 PM	62792
Lead	0.00039	0.00031	0.0025	J	mg/L	5	9/30/2021 3:24:04 PM	62792
Selenium	ND	0.0019	0.0050		mg/L	5	9/30/2021 3:24:04 PM	62792
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:27:18 PM	62854

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-17R
Project: Additional Well Install
Collection Date: 9/17/2021 9:00:00 AM
Lab ID: 2109A01-002G
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Barium	0.23	0.0011	0.0020		mg/L	1	9/21/2021 11:58:53 AM	B81434
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2021 11:58:53 AM	B81434
Cadmium	ND	0.0012	0.0020		mg/L	1	9/21/2021 11:58:53 AM	B81434
Chromium	ND	0.0020	0.0060		mg/L	1	9/21/2021 11:58:53 AM	B81434
Cobalt	0.0028	0.0024	0.0060	J	mg/L	1	9/21/2021 11:58:53 AM	B81434
Iron	0.16	0.010	0.020		mg/L	1	9/21/2021 11:58:53 AM	B81434
Manganese	2.8	0.0029	0.010	*	mg/L	5	9/21/2021 12:00:33 PM	B81434
Nickel	ND	0.0033	0.010		mg/L	1	9/21/2021 11:58:53 AM	B81434
Silver	ND	0.0013	0.0050		mg/L	1	9/21/2021 11:58:53 AM	B81434
Vanadium	ND	0.0020	0.050		mg/L	1	9/21/2021 11:58:53 AM	B81434
Zinc	0.0096	0.0060	0.010	J	mg/L	1	9/21/2021 11:58:53 AM	B81434
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Antimony	ND	0.0044	0.010		mg/L	10	9/29/2021 3:47:56 PM	C81686
Arsenic	0.0046	0.0012	0.010	J	mg/L	10	9/29/2021 3:47:56 PM	C81686
Lead	ND	0.00057	0.0050		mg/L	10	9/29/2021 3:47:56 PM	C81686
Selenium	ND	0.0034	0.010		mg/L	10	9/29/2021 3:47:56 PM	C81686
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:29:44 PM	62854

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-18R
Project: Additional Well Install
Collection Date: 9/17/2021 9:25:00 AM
Lab ID: 2109A01-003A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	3700	23	100		µg/L	100	9/23/2021 3:55:18 PM	R81542
Toluene	1800	20	100		µg/L	100	9/23/2021 3:55:18 PM	R81542
Ethylbenzene	39	1.1	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Methyl tert-butyl ether (MTBE)	200	2.0	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,2,4-Trimethylbenzene	30	0.61	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,3,5-Trimethylbenzene	8.8	0.91	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,2-Dichloroethane (EDC)	1.5	1.3	5.0	J	µg/L	5	9/23/2021 4:25:00 AM	R81501
1,2-Dibromoethane (EDB)	ND	1.5	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Naphthalene	170	2.5	10		µg/L	5	9/23/2021 4:25:00 AM	R81501
1-Methylnaphthalene	200	4.2	20		µg/L	5	9/23/2021 4:25:00 AM	R81501
2-Methylnaphthalene	300	3.5	20		µg/L	5	9/23/2021 4:25:00 AM	R81501
Acetone	20	13	50	J	µg/L	5	9/23/2021 4:25:00 AM	R81501
Bromobenzene	ND	1.4	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Bromodichloromethane	ND	1.0	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Bromoform	ND	1.6	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Bromomethane	ND	4.3	15		µg/L	5	9/23/2021 4:25:00 AM	R81501
2-Butanone	13	10	50	J	µg/L	5	9/23/2021 4:25:00 AM	R81501
Carbon disulfide	ND	3.0	50		µg/L	5	9/23/2021 4:25:00 AM	R81501
Carbon Tetrachloride	ND	0.88	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Chlorobenzene	ND	0.78	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Chloroethane	ND	1.9	10		µg/L	5	9/23/2021 4:25:00 AM	R81501
Chloroform	ND	0.67	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Chloromethane	ND	2.1	15		µg/L	5	9/23/2021 4:25:00 AM	R81501
2-Chlorotoluene	ND	0.66	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
4-Chlorotoluene	ND	1.7	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
cis-1,2-DCE	7.7	1.9	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
cis-1,3-Dichloropropene	ND	1.8	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,2-Dibromo-3-chloropropane	ND	2.9	10		µg/L	5	9/23/2021 4:25:00 AM	R81501
Dibromochloromethane	ND	1.4	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Dibromomethane	ND	1.5	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,2-Dichlorobenzene	ND	0.77	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,3-Dichlorobenzene	ND	0.81	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,4-Dichlorobenzene	ND	1.0	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Dichlorodifluoromethane	ND	2.0	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,1-Dichloroethane	ND	1.4	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,1-Dichloroethene	ND	1.0	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,2-Dichloropropane	ND	1.0	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,3-Dichloropropane	ND	0.90	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
2,2-Dichloropropane	ND	1.3	10		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,1-Dichloropropene	ND	0.90	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-18R
Project: Additional Well Install
Collection Date: 9/17/2021 9:25:00 AM
Lab ID: 2109A01-003A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Hexachlorobutadiene	ND	2.8	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
2-Hexanone	ND	9.0	50		µg/L	5	9/23/2021 4:25:00 AM	R81501
Isopropylbenzene	4.3	0.91	5.0	J	µg/L	5	9/23/2021 4:25:00 AM	R81501
4-Isopropyltoluene	2.6	1.0	5.0	J	µg/L	5	9/23/2021 4:25:00 AM	R81501
4-Methyl-2-pentanone	ND	4.4	50		µg/L	5	9/23/2021 4:25:00 AM	R81501
Methylene Chloride	ND	2.5	15		µg/L	5	9/23/2021 4:25:00 AM	R81501
n-Butylbenzene	3.1	1.3	15	J	µg/L	5	9/23/2021 4:25:00 AM	R81501
n-Propylbenzene	6.6	0.91	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
sec-Butylbenzene	1.9	0.72	5.0	J	µg/L	5	9/23/2021 4:25:00 AM	R81501
Styrene	ND	0.68	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
tert-Butylbenzene	ND	1.2	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,1,1,2-Tetrachloroethane	ND	1.3	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,1,2,2-Tetrachloroethane	ND	1.4	10		µg/L	5	9/23/2021 4:25:00 AM	R81501
Tetrachloroethene (PCE)	ND	1.8	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
trans-1,2-DCE	ND	0.97	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
trans-1,3-Dichloropropene	ND	1.7	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,2,3-Trichlorobenzene	ND	1.2	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,2,4-Trichlorobenzene	ND	1.2	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,1,1-Trichloroethane	ND	1.5	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,1,2-Trichloroethane	ND	0.99	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Trichloroethene (TCE)	ND	1.0	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Trichlorofluoromethane	ND	0.79	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
1,2,3-Trichloropropane	ND	2.2	10		µg/L	5	9/23/2021 4:25:00 AM	R81501
Vinyl chloride	ND	1.6	5.0		µg/L	5	9/23/2021 4:25:00 AM	R81501
Xylenes, Total	370	1.9	7.5		µg/L	5	9/23/2021 4:25:00 AM	R81501
Surr: 1,2-Dichloroethane-d4	106	0	70-130		%Rec	5	9/23/2021 4:25:00 AM	R81501
Surr: 4-Bromofluorobenzene	96.1	0	70-130		%Rec	5	9/23/2021 4:25:00 AM	R81501
Surr: Dibromofluoromethane	94.1	0	70-130		%Rec	5	9/23/2021 4:25:00 AM	R81501
Surr: Toluene-d8	108	0	70-130		%Rec	5	9/23/2021 4:25:00 AM	R81501
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	13	0.061	0.25		mg/L	5	9/23/2021 4:25:00 AM	R81501
Surr: 4-Bromofluorobenzene	102	0	70-130		%Rec	5	9/23/2021 4:25:00 AM	R81501

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Qualifiers:

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-18R
Project: Additional Well Install
Collection Date: 9/17/2021 9:25:00 AM
Lab ID: 2109A01-003C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	4.6	0.16	0.64		mg/L	10	9/27/2021 10:36:53 PM	62729
Motor Oil Range Organics (MRO)	ND	0.52	0.80	D	mg/L	10	9/27/2021 10:36:53 PM	62729
Surr: DNOP	0	0	15-142	S	%Rec	10	9/27/2021 10:36:53 PM	62729

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-18R
Project: Additional Well Install
Collection Date: 9/17/2021 9:25:00 AM
Lab ID: 2109A01-003D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Aniline	ND	0.50	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Azobenzene	ND	0.55	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Benzoic acid	ND	1.1	20		µg/L	1	9/24/2021 6:59:20 PM	62689
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/24/2021 6:59:20 PM	62689
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Carbazole	ND	0.56	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/24/2021 6:59:20 PM	62689
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/24/2021 6:59:20 PM	62689
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Diethyl phthalate	ND	3.9	10		µg/L	1	9/24/2021 6:59:20 PM	62689
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/24/2021 6:59:20 PM	62689
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
2,4-Dimethylphenol	13	0.97	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Isophorone	ND	0.40	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
2-Methylphenol	130	0.51	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
3+4-Methylphenol	35	0.45	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-18R
Project: Additional Well Install
Collection Date: 9/17/2021 9:25:00 AM
Lab ID: 2109A01-003D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Pentachlorophenol	ND	0.59	20		µg/L	1	9/24/2021 6:59:20 PM	62689
Phenol	120	0.33	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Pyridine	ND	0.93	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/24/2021 6:59:20 PM	62689
Surr: 2-Fluorophenol	58.4	0	15-87		%Rec	1	9/24/2021 6:59:20 PM	62689
Surr: Phenol-d5	43.4	0	15-67.5		%Rec	1	9/24/2021 6:59:20 PM	62689
Surr: 2,4,6-Tribromophenol	88.2	0	15-122		%Rec	1	9/24/2021 6:59:20 PM	62689
Surr: Nitrobenzene-d5	68.7	0	15-103		%Rec	1	9/24/2021 6:59:20 PM	62689
Surr: 2-Fluorobiphenyl	62.9	0	15-103		%Rec	1	9/24/2021 6:59:20 PM	62689
Surr: 4-Terphenyl-d14	69.2	0	45-137		%Rec	1	9/24/2021 6:59:20 PM	62689
EPA METHOD 8270SIM							Analyst: **DAM**	
Naphthalene	87	0.34	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
1-Methylnaphthalene	110	0.24	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
2-Methylnaphthalene	130	0.34	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Acenaphthylene	ND	0.43	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Acenaphthene	5.4	0.31	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Fluorene	8.4	0.31	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Phenanthrene	6.2	0.57	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Anthracene	ND	0.34	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Fluoranthene	ND	1.0	2.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Pyrene	ND	1.6	2.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Benz(a)anthracene	ND	0.36	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Chrysene	ND	0.24	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Benzo(b)fluoranthene	ND	0.57	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Benzo(k)fluoranthene	ND	0.36	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Benzo(a)pyrene	ND	0.34	0.70	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Dibenz(a,h)anthracene	ND	0.34	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Benzo(g,h,i)perylene	ND	0.34	1.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Indeno(1,2,3-cd)pyrene	ND	0.43	3.0	D	µg/L	10	9/27/2021 5:30:00 PM	62703
Surr: Nitrobenzene-d5	0	0	21.9-89.8	SD	%Rec	10	9/27/2021 5:30:00 PM	62703
Surr: 2,4,6-Tribromophenol	0	0	23.4-71.6	SD	%Rec	10	9/27/2021 5:30:00 PM	62703

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-18R
Project: Additional Well Install
Collection Date: 9/17/2021 9:25:00 AM
Lab ID: 2109A01-003D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: **DAM**	
Surr: 2-Fluorobiphenyl	0	0	15-84.5	SD	%Rec	10	9/27/2021 5:30:00 PM	62703
Surr: 4-Terphenyl-d14	0	0	73.1-152	SD	%Rec	10	9/27/2021 5:30:00 PM	62703

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-18R
Project: Additional Well Install
Collection Date: 9/17/2021 9:25:00 AM
Lab ID: 2109A01-003E
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Fluoride	0.68	0.20	0.50		mg/L	5	9/18/2021 1:40:20 PM	R81380
Chloride	290	5.0	10	*	mg/L	20	9/18/2021 1:53:13 PM	R81380
Nitrogen, Nitrite (As N)	ND	0.027	0.50		mg/L	5	9/18/2021 1:40:20 PM	R81380
Nitrogen, Nitrate (As N)	ND	0.050	0.50		mg/L	5	9/18/2021 1:40:20 PM	R81380
Sulfate	10	1.2	2.5		mg/L	5	9/18/2021 1:40:20 PM	R81380
SM2320B: ALKALINITY							Analyst: **CAS**	
Bicarbonate (As CaCO3)	619.7	20.00	20.00		mg/L Ca	1	9/21/2021 7:36:18 PM	R81457
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	9/21/2021 7:36:18 PM	R81457
Total Alkalinity (as CaCO3)	619.7	20.00	20.00		mg/L Ca	1	9/21/2021 7:36:18 PM	R81457

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-18R
Project: Additional Well Install
Collection Date: 9/17/2021 9:25:00 AM
Lab ID: 2109A01-003F
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Barium	1.8	0.016	0.030		mg/L	10	9/24/2021 1:39:21 PM	62792
Beryllium	ND	0.00088	0.0020		mg/L	1	9/24/2021 1:37:59 PM	62792
Cadmium	ND	0.0015	0.0020		mg/L	1	9/24/2021 1:37:59 PM	62792
Calcium	110	1.1	10		mg/L	10	9/24/2021 1:39:21 PM	62792
Chromium	ND	0.0021	0.0060		mg/L	1	9/24/2021 1:37:59 PM	62792
Cobalt	0.012	0.0024	0.0060		mg/L	1	9/24/2021 1:37:59 PM	62792
Iron	3.3	0.13	0.50	*	mg/L	10	9/24/2021 1:39:21 PM	62792
Magnesium	32	0.067	1.0		mg/L	1	9/24/2021 1:37:59 PM	62792
Manganese	1.8	0.0081	0.020	*	mg/L	10	9/24/2021 1:39:21 PM	62792
Nickel	0.0086	0.0033	0.010	J	mg/L	1	9/24/2021 1:37:59 PM	62792
Potassium	2.9	0.16	1.0		mg/L	1	9/24/2021 1:37:59 PM	62792
Silver	ND	0.0013	0.0050		mg/L	1	9/24/2021 1:37:59 PM	62792
Sodium	300	1.9	10		mg/L	10	9/24/2021 1:39:21 PM	62792
Vanadium	0.0031	0.0024	0.050	J	mg/L	1	9/24/2021 1:37:59 PM	62792
Zinc	ND	0.0064	0.010		mg/L	1	9/24/2021 1:37:59 PM	62792
EPA 200.8: METALS							Analyst: **bcv**	
Antimony	ND	0.0022	0.0050		mg/L	5	9/30/2021 3:36:12 PM	62792
Arsenic	0.0075	0.00063	0.0050		mg/L	5	9/30/2021 3:36:12 PM	62792
Lead	0.0019	0.00031	0.0025	J	mg/L	5	9/30/2021 3:36:12 PM	62792
Selenium	ND	0.0019	0.0050		mg/L	5	9/30/2021 3:36:12 PM	62792
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:32:10 PM	62854

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-18R
Project: Additional Well Install
Collection Date: 9/17/2021 9:25:00 AM
Lab ID: 2109A01-003G
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Barium	1.6	0.0056	0.010		mg/L	5	9/21/2021 12:03:34 PM	B81434
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2021 12:02:10 PM	B81434
Cadmium	ND	0.0012	0.0020		mg/L	1	9/21/2021 12:02:10 PM	B81434
Chromium	ND	0.0020	0.0060		mg/L	1	9/21/2021 12:02:10 PM	B81434
Cobalt	0.0088	0.0024	0.0060		mg/L	1	9/21/2021 12:02:10 PM	B81434
Iron	1.5	0.052	0.10	*	mg/L	5	9/21/2021 12:03:34 PM	B81434
Manganese	1.7	0.0029	0.010	*	mg/L	5	9/21/2021 12:03:34 PM	B81434
Nickel	0.0048	0.0033	0.010	J	mg/L	1	9/21/2021 12:02:10 PM	B81434
Silver	ND	0.0013	0.0050		mg/L	1	9/21/2021 12:02:10 PM	B81434
Vanadium	ND	0.0020	0.050		mg/L	1	9/21/2021 12:02:10 PM	B81434
Zinc	0.0093	0.0060	0.010	J	mg/L	1	9/21/2021 12:02:10 PM	B81434
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Antimony	ND	0.0044	0.010		mg/L	10	9/29/2021 3:50:36 PM	C81686
Arsenic	0.0071	0.0012	0.010	J	mg/L	10	9/29/2021 3:50:36 PM	C81686
Lead	ND	0.00057	0.0050		mg/L	10	9/29/2021 3:50:36 PM	C81686
Selenium	ND	0.0034	0.010		mg/L	10	9/29/2021 3:50:36 PM	C81686
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:39:26 PM	62854

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-04R
Project: Additional Well Install
Collection Date: 9/17/2021 10:00:00 AM
Lab ID: 2109A01-004A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	1100	23	100		µg/L	100	9/23/2021 4:23:54 PM	R81542
Toluene	13	1.0	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Ethylbenzene	200	1.1	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Methyl tert-butyl ether (MTBE)	1600	39	100		µg/L	100	9/23/2021 4:23:54 PM	R81542
1,2,4-Trimethylbenzene	160	0.61	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,3,5-Trimethylbenzene	29	0.91	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,2-Dichloroethane (EDC)	2.3	1.3	5.0	J	µg/L	5	9/23/2021 4:53:31 AM	R81501
1,2-Dibromoethane (EDB)	ND	1.5	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Naphthalene	81	2.5	10		µg/L	5	9/23/2021 4:53:31 AM	R81501
1-Methylnaphthalene	48	4.2	20		µg/L	5	9/23/2021 4:53:31 AM	R81501
2-Methylnaphthalene	59	3.5	20		µg/L	5	9/23/2021 4:53:31 AM	R81501
Acetone	26	13	50	J	µg/L	5	9/23/2021 4:53:31 AM	R81501
Bromobenzene	ND	1.4	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Bromodichloromethane	ND	1.0	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Bromoform	ND	1.6	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Bromomethane	ND	4.3	15		µg/L	5	9/23/2021 4:53:31 AM	R81501
2-Butanone	17	10	50	J	µg/L	5	9/23/2021 4:53:31 AM	R81501
Carbon disulfide	ND	3.0	50		µg/L	5	9/23/2021 4:53:31 AM	R81501
Carbon Tetrachloride	ND	0.88	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Chlorobenzene	ND	0.78	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Chloroethane	ND	1.9	10		µg/L	5	9/23/2021 4:53:31 AM	R81501
Chloroform	1.2	0.67	5.0	J	µg/L	5	9/23/2021 4:53:31 AM	R81501
Chloromethane	2.6	2.1	15	J	µg/L	5	9/23/2021 4:53:31 AM	R81501
2-Chlorotoluene	ND	0.66	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
4-Chlorotoluene	ND	1.7	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
cis-1,2-DCE	18	1.9	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
cis-1,3-Dichloropropene	ND	1.8	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,2-Dibromo-3-chloropropane	ND	2.9	10		µg/L	5	9/23/2021 4:53:31 AM	R81501
Dibromochloromethane	ND	1.4	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Dibromomethane	ND	1.5	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,2-Dichlorobenzene	ND	0.77	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,3-Dichlorobenzene	ND	0.81	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,4-Dichlorobenzene	ND	1.0	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Dichlorodifluoromethane	ND	2.0	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,1-Dichloroethane	35	1.4	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,1-Dichloroethene	45	1.0	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,2-Dichloropropane	1.3	1.0	5.0	J	µg/L	5	9/23/2021 4:53:31 AM	R81501
1,3-Dichloropropane	ND	0.90	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
2,2-Dichloropropane	ND	1.3	10		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,1-Dichloropropene	ND	0.90	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-04R
Project: Additional Well Install
Collection Date: 9/17/2021 10:00:00 AM
Lab ID: 2109A01-004A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Hexachlorobutadiene	ND	2.8	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
2-Hexanone	ND	9.0	50		µg/L	5	9/23/2021 4:53:31 AM	R81501
Isopropylbenzene	11	0.91	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
4-Isopropyltoluene	2.2	1.0	5.0	J	µg/L	5	9/23/2021 4:53:31 AM	R81501
4-Methyl-2-pentanone	ND	4.4	50		µg/L	5	9/23/2021 4:53:31 AM	R81501
Methylene Chloride	ND	2.5	15		µg/L	5	9/23/2021 4:53:31 AM	R81501
n-Butylbenzene	3.6	1.3	15	J	µg/L	5	9/23/2021 4:53:31 AM	R81501
n-Propylbenzene	28	0.91	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
sec-Butylbenzene	1.8	0.72	5.0	J	µg/L	5	9/23/2021 4:53:31 AM	R81501
Styrene	ND	0.68	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
tert-Butylbenzene	ND	1.2	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,1,1,2-Tetrachloroethane	ND	1.3	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,1,2,2-Tetrachloroethane	ND	1.4	10		µg/L	5	9/23/2021 4:53:31 AM	R81501
Tetrachloroethene (PCE)	ND	1.8	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
trans-1,2-DCE	ND	0.97	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
trans-1,3-Dichloropropene	ND	1.7	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,2,3-Trichlorobenzene	ND	1.2	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,2,4-Trichlorobenzene	ND	1.2	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,1,1-Trichloroethane	ND	1.5	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,1,2-Trichloroethane	ND	0.99	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Trichloroethene (TCE)	2.1	1.0	5.0	J	µg/L	5	9/23/2021 4:53:31 AM	R81501
Trichlorofluoromethane	ND	0.79	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
1,2,3-Trichloropropane	ND	2.2	10		µg/L	5	9/23/2021 4:53:31 AM	R81501
Vinyl chloride	ND	1.6	5.0		µg/L	5	9/23/2021 4:53:31 AM	R81501
Xylenes, Total	250	1.9	7.5		µg/L	5	9/23/2021 4:53:31 AM	R81501
Surr: 1,2-Dichloroethane-d4	106	0	70-130		%Rec	5	9/23/2021 4:53:31 AM	R81501
Surr: 4-Bromofluorobenzene	88.1	0	70-130		%Rec	5	9/23/2021 4:53:31 AM	R81501
Surr: Dibromofluoromethane	94.4	0	70-130		%Rec	5	9/23/2021 4:53:31 AM	R81501
Surr: Toluene-d8	103	0	70-130		%Rec	5	9/23/2021 4:53:31 AM	R81501
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	5.2	0.061	0.25		mg/L	5	9/23/2021 4:53:31 AM	R81501
Surr: 4-Bromofluorobenzene	88.4	0	70-130		%Rec	5	9/23/2021 4:53:31 AM	R81501

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-04R
Project: Additional Well Install
Collection Date: 9/17/2021 10:00:00 AM
Lab ID: 2109A01-004C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	2.2	0.016	0.064		mg/L	1	9/28/2021 2:28:02 PM	62729
Motor Oil Range Organics (MRO)	0.096	0.052	0.080		mg/L	1	9/28/2021 2:28:02 PM	62729
Surr: DNOP	97.7	0	15-142		%Rec	1	9/28/2021 2:28:02 PM	62729

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-04R
Project: Additional Well Install
Collection Date: 9/17/2021 10:00:00 AM
Lab ID: 2109A01-004D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Aniline	ND	0.50	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Azobenzene	ND	0.55	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Benzoic acid	ND	1.1	20		µg/L	1	9/24/2021 8:31:42 PM	62689
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/24/2021 8:31:42 PM	62689
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Carbazole	ND	0.56	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/24/2021 8:31:42 PM	62689
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/24/2021 8:31:42 PM	62689
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Diethyl phthalate	ND	3.9	10		µg/L	1	9/24/2021 8:31:42 PM	62689
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/24/2021 8:31:42 PM	62689
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
2,4-Dimethylphenol	3.9	0.97	5.0	J	µg/L	1	9/24/2021 8:31:42 PM	62689
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Isophorone	ND	0.40	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
2-Methylphenol	ND	0.51	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-04R
Project: Additional Well Install
Collection Date: 9/17/2021 10:00:00 AM
Lab ID: 2109A01-004D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Pentachlorophenol	ND	0.59	20		µg/L	1	9/24/2021 8:31:42 PM	62689
Phenol	8.3	0.33	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Pyridine	ND	0.93	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/24/2021 8:31:42 PM	62689
Surr: 2-Fluorophenol	66.7	0	15-87		%Rec	1	9/24/2021 8:31:42 PM	62689
Surr: Phenol-d5	50.2	0	15-67.5		%Rec	1	9/24/2021 8:31:42 PM	62689
Surr: 2,4,6-Tribromophenol	85.5	0	15-122		%Rec	1	9/24/2021 8:31:42 PM	62689
Surr: Nitrobenzene-d5	74.2	0	15-103		%Rec	1	9/24/2021 8:31:42 PM	62689
Surr: 2-Fluorobiphenyl	68.2	0	15-103		%Rec	1	9/24/2021 8:31:42 PM	62689
Surr: 4-Terphenyl-d14	65.1	0	45-137		%Rec	1	9/24/2021 8:31:42 PM	62689
EPA METHOD 8270SIM							Analyst: **DAM**	
Naphthalene	15	0.34	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
1-Methylnaphthalene	9.0	0.24	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
2-Methylnaphthalene	6.2	0.34	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Acenaphthylene	ND	0.43	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Acenaphthene	1.6	0.31	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Fluorene	1.8	0.31	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Phenanthrene	ND	0.57	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Anthracene	ND	0.34	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Fluoranthene	ND	1.0	2.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Pyrene	ND	1.6	2.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Benz(a)anthracene	ND	0.36	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Chrysene	ND	0.24	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Benzo(b)fluoranthene	ND	0.57	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Benzo(k)fluoranthene	ND	0.36	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Benzo(a)pyrene	ND	0.34	0.70	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Dibenz(a,h)anthracene	ND	0.34	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Benzo(g,h,i)perylene	ND	0.34	1.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Indeno(1,2,3-cd)pyrene	ND	0.43	3.0	D	µg/L	10	9/27/2021 6:14:00 PM	62703
Surr: Nitrobenzene-d5	0	0	21.9-89.8	SD	%Rec	10	9/27/2021 6:14:00 PM	62703
Surr: 2,4,6-Tribromophenol	0	0	23.4-71.6	SD	%Rec	10	9/27/2021 6:14:00 PM	62703

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-04R
Project: Additional Well Install
Collection Date: 9/17/2021 10:00:00 AM
Lab ID: 2109A01-004D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: **DAM**	
Surr: 2-Fluorobiphenyl	0	0	15-84.5	SD	%Rec	10	9/27/2021 6:14:00 PM	62703
Surr: 4-Terphenyl-d14	0	0	73.1-152	SD	%Rec	10	9/27/2021 6:14:00 PM	62703

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-04R
Project: Additional Well Install
Collection Date: 9/17/2021 10:00:00 AM
Lab ID: 2109A01-004E
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Fluoride	ND	0.20	0.50		mg/L	5	9/18/2021 2:06:05 PM	R81380
Chloride	220	5.0	10		mg/L	20	9/18/2021 2:18:57 PM	R81380
Nitrogen, Nitrite (As N)	ND	0.027	0.50		mg/L	5	9/18/2021 2:06:05 PM	R81380
Nitrogen, Nitrate (As N)	ND	0.050	0.50		mg/L	5	9/18/2021 2:06:05 PM	R81380
Sulfate	63	1.2	2.5		mg/L	5	9/18/2021 2:06:05 PM	R81380
SM2320B: ALKALINITY							Analyst: **CAS**	
Bicarbonate (As CaCO3)	691.9	20.00	20.00		mg/L Ca	1	9/21/2021 7:59:20 PM	R81457
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	9/21/2021 7:59:20 PM	R81457
Total Alkalinity (as CaCO3)	691.9	20.00	20.00		mg/L Ca	1	9/21/2021 7:59:20 PM	R81457

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-04R
Project: Additional Well Install
Collection Date: 9/17/2021 10:00:00 AM
Lab ID: 2109A01-004F
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Barium	1.6	0.016	0.030		mg/L	10	9/24/2021 1:42:20 PM	62792
Beryllium	ND	0.00088	0.0020		mg/L	1	9/24/2021 1:40:59 PM	62792
Cadmium	ND	0.0015	0.0020		mg/L	1	9/24/2021 1:40:59 PM	62792
Calcium	120	1.1	10		mg/L	10	9/24/2021 1:42:20 PM	62792
Chromium	0.0082	0.0021	0.0060		mg/L	1	9/24/2021 1:40:59 PM	62792
Cobalt	0.0090	0.0024	0.0060		mg/L	1	9/24/2021 1:40:59 PM	62792
Iron	9.3	0.13	0.50	*	mg/L	10	9/24/2021 1:42:20 PM	62792
Magnesium	31	0.067	1.0		mg/L	1	9/24/2021 1:40:59 PM	62792
Manganese	2.7	0.0081	0.020	*	mg/L	10	9/24/2021 1:42:20 PM	62792
Nickel	0.016	0.0033	0.010		mg/L	1	9/24/2021 1:40:59 PM	62792
Potassium	3.4	0.16	1.0		mg/L	1	9/24/2021 1:40:59 PM	62792
Silver	ND	0.0013	0.0050		mg/L	1	9/24/2021 1:40:59 PM	62792
Sodium	330	1.9	10		mg/L	10	9/24/2021 1:42:20 PM	62792
Vanadium	0.016	0.0024	0.050	J	mg/L	1	9/24/2021 1:40:59 PM	62792
Zinc	0.016	0.0064	0.010		mg/L	1	9/24/2021 1:40:59 PM	62792
EPA 200.8: METALS							Analyst: **bcv**	
Antimony	ND	0.0022	0.0050		mg/L	5	9/30/2021 3:38:38 PM	62792
Arsenic	0.0052	0.00063	0.0050		mg/L	5	9/30/2021 3:38:38 PM	62792
Lead	0.0075	0.00031	0.0025		mg/L	5	9/30/2021 3:38:38 PM	62792
Selenium	0.0028	0.0019	0.0050	J	mg/L	5	9/30/2021 3:38:38 PM	62792
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:41:51 PM	62854

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-04R
Project: Additional Well Install
Collection Date: 9/17/2021 10:00:00 AM
Lab ID: 2109A01-004G
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Barium	1.2	0.0056	0.010		mg/L	5	9/21/2021 12:06:41 PM	B81434
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2021 12:05:15 PM	B81434
Cadmium	ND	0.0012	0.0020		mg/L	1	9/21/2021 12:05:15 PM	B81434
Chromium	ND	0.0020	0.0060		mg/L	1	9/21/2021 12:05:15 PM	B81434
Cobalt	0.0043	0.0024	0.0060	J	mg/L	1	9/21/2021 12:05:15 PM	B81434
Iron	1.5	0.052	0.10	*	mg/L	5	9/21/2021 12:06:41 PM	B81434
Manganese	2.4	0.0029	0.010	*	mg/L	5	9/21/2021 12:06:41 PM	B81434
Nickel	0.0066	0.0033	0.010	J	mg/L	1	9/21/2021 12:05:15 PM	B81434
Silver	ND	0.0013	0.0050		mg/L	1	9/21/2021 12:05:15 PM	B81434
Vanadium	ND	0.0020	0.050		mg/L	1	9/21/2021 12:05:15 PM	B81434
Zinc	0.011	0.0060	0.010		mg/L	1	9/21/2021 12:05:15 PM	B81434
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Antimony	ND	0.0044	0.010		mg/L	10	9/29/2021 3:58:34 PM	C81686
Arsenic	0.0036	0.0012	0.010	J	mg/L	10	9/29/2021 3:58:34 PM	C81686
Lead	ND	0.00057	0.0050		mg/L	10	9/29/2021 3:58:34 PM	C81686
Selenium	ND	0.0034	0.010		mg/L	10	9/29/2021 3:58:34 PM	C81686
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:44:16 PM	62854

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-01R
Project: Additional Well Install
Collection Date: 9/17/2021 10:35:00 AM
Lab ID: 2109A01-005A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	7100	23	100		µg/L	100	9/23/2021 4:52:30 PM	R81542
Toluene	170	1.0	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Ethylbenzene	370	1.1	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Methyl tert-butyl ether (MTBE)	86	2.0	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,2,4-Trimethylbenzene	310	0.61	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,3,5-Trimethylbenzene	28	0.91	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,2-Dichloroethane (EDC)	2.4	1.3	5.0	J	µg/L	5	9/23/2021 5:22:05 AM	R81501
1,2-Dibromoethane (EDB)	ND	1.5	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Naphthalene	52	2.5	10		µg/L	5	9/23/2021 5:22:05 AM	R81501
1-Methylnaphthalene	28	4.2	20		µg/L	5	9/23/2021 5:22:05 AM	R81501
2-Methylnaphthalene	25	3.5	20		µg/L	5	9/23/2021 5:22:05 AM	R81501
Acetone	47	13	50	J	µg/L	5	9/23/2021 5:22:05 AM	R81501
Bromobenzene	ND	1.4	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Bromodichloromethane	ND	1.0	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Bromoform	ND	1.6	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Bromomethane	ND	4.3	15		µg/L	5	9/23/2021 5:22:05 AM	R81501
2-Butanone	22	10	50	J	µg/L	5	9/23/2021 5:22:05 AM	R81501
Carbon disulfide	ND	3.0	50		µg/L	5	9/23/2021 5:22:05 AM	R81501
Carbon Tetrachloride	ND	0.88	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Chlorobenzene	ND	0.78	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Chloroethane	ND	1.9	10		µg/L	5	9/23/2021 5:22:05 AM	R81501
Chloroform	ND	0.67	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Chloromethane	ND	2.1	15		µg/L	5	9/23/2021 5:22:05 AM	R81501
2-Chlorotoluene	ND	0.66	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
4-Chlorotoluene	ND	1.7	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
cis-1,2-DCE	ND	1.9	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
cis-1,3-Dichloropropene	ND	1.8	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,2-Dibromo-3-chloropropane	ND	2.9	10		µg/L	5	9/23/2021 5:22:05 AM	R81501
Dibromochloromethane	ND	1.4	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Dibromomethane	ND	1.5	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,2-Dichlorobenzene	ND	0.77	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,3-Dichlorobenzene	ND	0.81	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,4-Dichlorobenzene	ND	1.0	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Dichlorodifluoromethane	ND	2.0	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,1-Dichloroethane	3.0	1.4	5.0	J	µg/L	5	9/23/2021 5:22:05 AM	R81501
1,1-Dichloroethene	ND	1.0	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,2-Dichloropropane	ND	1.0	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,3-Dichloropropane	ND	0.90	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
2,2-Dichloropropane	ND	1.3	10		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,1-Dichloropropene	ND	0.90	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-01R
Project: Additional Well Install
Collection Date: 9/17/2021 10:35:00 AM
Lab ID: 2109A01-005A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Hexachlorobutadiene	ND	2.8	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
2-Hexanone	ND	9.0	50		µg/L	5	9/23/2021 5:22:05 AM	R81501
Isopropylbenzene	20	0.91	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
4-Isopropyltoluene	2.4	1.0	5.0	J	µg/L	5	9/23/2021 5:22:05 AM	R81501
4-Methyl-2-pentanone	ND	4.4	50		µg/L	5	9/23/2021 5:22:05 AM	R81501
Methylene Chloride	ND	2.5	15		µg/L	5	9/23/2021 5:22:05 AM	R81501
n-Butylbenzene	6.9	1.3	15	J	µg/L	5	9/23/2021 5:22:05 AM	R81501
n-Propylbenzene	52	0.91	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
sec-Butylbenzene	3.2	0.72	5.0	J	µg/L	5	9/23/2021 5:22:05 AM	R81501
Styrene	ND	0.68	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
tert-Butylbenzene	ND	1.2	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,1,1,2-Tetrachloroethane	ND	1.3	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,1,2,2-Tetrachloroethane	ND	1.4	10		µg/L	5	9/23/2021 5:22:05 AM	R81501
Tetrachloroethene (PCE)	ND	1.8	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
trans-1,2-DCE	ND	0.97	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
trans-1,3-Dichloropropene	ND	1.7	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,2,3-Trichlorobenzene	ND	1.2	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,2,4-Trichlorobenzene	ND	1.2	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,1,1-Trichloroethane	ND	1.5	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,1,2-Trichloroethane	ND	0.99	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Trichloroethene (TCE)	ND	1.0	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Trichlorofluoromethane	ND	0.79	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
1,2,3-Trichloropropane	ND	2.2	10		µg/L	5	9/23/2021 5:22:05 AM	R81501
Vinyl chloride	22	1.6	5.0		µg/L	5	9/23/2021 5:22:05 AM	R81501
Xylenes, Total	850	1.9	7.5		µg/L	5	9/23/2021 5:22:05 AM	R81501
Surr: 1,2-Dichloroethane-d4	108	0	70-130		%Rec	5	9/23/2021 5:22:05 AM	R81501
Surr: 4-Bromofluorobenzene	79.9	0	70-130		%Rec	5	9/23/2021 5:22:05 AM	R81501
Surr: Dibromofluoromethane	97.8	0	70-130		%Rec	5	9/23/2021 5:22:05 AM	R81501
Surr: Toluene-d8	105	0	70-130		%Rec	5	9/23/2021 5:22:05 AM	R81501
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	19	0.061	0.25		mg/L	5	9/23/2021 5:22:05 AM	R81501
Surr: 4-Bromofluorobenzene	85.9	0	70-130		%Rec	5	9/23/2021 5:22:05 AM	R81501

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-01R
Project: Additional Well Install
Collection Date: 9/17/2021 10:35:00 AM
Lab ID: 2109A01-005C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	1.2	0.016	0.064		mg/L	1	9/28/2021 2:51:55 PM	62729
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	9/28/2021 2:51:55 PM	62729
Surr: DNOP	93.1	0	15-142		%Rec	1	9/28/2021 2:51:55 PM	62729

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-01R
Project: Additional Well Install
Collection Date: 9/17/2021 10:35:00 AM
Lab ID: 2109A01-005D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Aniline	ND	0.50	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Azobenzene	ND	0.55	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Benzoic acid	ND	1.1	20		µg/L	1	9/24/2021 9:13:02 PM	62689
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/24/2021 9:13:02 PM	62689
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Carbazole	ND	0.56	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/24/2021 9:13:02 PM	62689
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/24/2021 9:13:02 PM	62689
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Diethyl phthalate	ND	3.9	10		µg/L	1	9/24/2021 9:13:02 PM	62689
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/24/2021 9:13:02 PM	62689
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
2,4-Dimethylphenol	19	0.97	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Isophorone	ND	0.40	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
2-Methylphenol	2.1	0.51	5.0	J	µg/L	1	9/24/2021 9:13:02 PM	62689
3+4-Methylphenol	5.3	0.45	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-01R
Project: Additional Well Install
Collection Date: 9/17/2021 10:35:00 AM
Lab ID: 2109A01-005D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Pentachlorophenol	ND	0.59	20		µg/L	1	9/24/2021 9:13:02 PM	62689
Phenol	92	0.33	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Pyridine	ND	0.93	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/24/2021 9:13:02 PM	62689
Surr: 2-Fluorophenol	50.7	0	15-87		%Rec	1	9/24/2021 9:13:02 PM	62689
Surr: Phenol-d5	46.8	0	15-67.5		%Rec	1	9/24/2021 9:13:02 PM	62689
Surr: 2,4,6-Tribromophenol	47.5	0	15-122		%Rec	1	9/24/2021 9:13:02 PM	62689
Surr: Nitrobenzene-d5	71.0	0	15-103		%Rec	1	9/24/2021 9:13:02 PM	62689
Surr: 2-Fluorobiphenyl	68.0	0	15-103		%Rec	1	9/24/2021 9:13:02 PM	62689
Surr: 4-Terphenyl-d14	61.4	0	45-137		%Rec	1	9/24/2021 9:13:02 PM	62689
EPA METHOD 8270SIM							Analyst: **DAM**	
Naphthalene	21	0.34	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
1-Methylnaphthalene	11	0.24	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
2-Methylnaphthalene	8.2	0.34	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Acenaphthylene	ND	0.43	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Acenaphthene	ND	0.31	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Fluorene	ND	0.31	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Phenanthrene	ND	0.57	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Anthracene	ND	0.34	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Fluoranthene	ND	1.0	2.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Pyrene	ND	1.6	2.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Benz(a)anthracene	ND	0.36	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Chrysene	ND	0.24	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Benzo(b)fluoranthene	ND	0.57	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Benzo(k)fluoranthene	ND	0.36	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Benzo(a)pyrene	ND	0.34	0.70	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Dibenz(a,h)anthracene	ND	0.34	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Benzo(g,h,i)perylene	ND	0.34	1.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Indeno(1,2,3-cd)pyrene	ND	0.43	3.0	D	µg/L	10	9/27/2021 6:58:00 PM	62703
Surr: Nitrobenzene-d5	0	0	21.9-89.8	SD	%Rec	10	9/27/2021 6:58:00 PM	62703
Surr: 2,4,6-Tribromophenol	0	0	23.4-71.6	SD	%Rec	10	9/27/2021 6:58:00 PM	62703

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	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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-01R
Project: Additional Well Install
Collection Date: 9/17/2021 10:35:00 AM
Lab ID: 2109A01-005D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: **DAM**	
Surr: 2-Fluorobiphenyl	0	0	15-84.5	SD	%Rec	10	9/27/2021 6:58:00 PM	62703
Surr: 4-Terphenyl-d14	0	0	73.1-152	SD	%Rec	10	9/27/2021 6:58:00 PM	62703

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-01R
Project: Additional Well Install
Collection Date: 9/17/2021 10:35:00 AM
Lab ID: 2109A01-005E
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Fluoride	0.43	0.20	0.50	J	mg/L	5	9/18/2021 2:31:50 PM	R81380
Chloride	1200	25	50	*	mg/L	100	9/22/2021 12:26:46 PM	R81507
Nitrogen, Nitrite (As N)	ND	0.027	0.50		mg/L	5	9/18/2021 2:31:50 PM	R81380
Nitrogen, Nitrate (As N)	ND	0.050	0.50		mg/L	5	9/18/2021 2:31:50 PM	R81380
Sulfate	13	1.2	2.5		mg/L	5	9/18/2021 2:31:50 PM	R81380
SM2320B: ALKALINITY							Analyst: **CAS**	
Bicarbonate (As CaCO3)	611.8	20.00	20.00		mg/L Ca	1	9/21/2021 8:24:10 PM	R81457
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	9/21/2021 8:24:10 PM	R81457
Total Alkalinity (as CaCO3)	611.8	20.00	20.00		mg/L Ca	1	9/21/2021 8:24:10 PM	R81457

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
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Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-01R
Project: Additional Well Install
Collection Date: 9/17/2021 10:35:00 AM
Lab ID: 2109A01-005F
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Barium	5.4	0.016	0.030	*	mg/L	10	9/24/2021 1:45:04 PM	62792
Beryllium	ND	0.00088	0.0020		mg/L	1	9/24/2021 1:43:42 PM	62792
Cadmium	ND	0.0015	0.0020		mg/L	1	9/24/2021 1:43:42 PM	62792
Calcium	230	1.1	10		mg/L	10	9/24/2021 1:45:04 PM	62792
Chromium	ND	0.0021	0.0060		mg/L	1	9/24/2021 1:43:42 PM	62792
Cobalt	0.012	0.0024	0.0060		mg/L	1	9/24/2021 1:43:42 PM	62792
Iron	5.7	0.13	0.50	*	mg/L	10	9/24/2021 1:45:04 PM	62792
Magnesium	55	0.067	1.0		mg/L	1	9/24/2021 1:43:42 PM	62792
Manganese	3.4	0.0081	0.020	*	mg/L	10	9/24/2021 1:45:04 PM	62792
Nickel	0.035	0.0033	0.010		mg/L	1	9/24/2021 1:43:42 PM	62792
Potassium	2.9	0.16	1.0		mg/L	1	9/24/2021 1:43:42 PM	62792
Silver	ND	0.0013	0.0050		mg/L	1	9/24/2021 1:43:42 PM	62792
Sodium	720	1.9	10		mg/L	10	9/24/2021 1:45:04 PM	62792
Vanadium	ND	0.0024	0.050		mg/L	1	9/24/2021 1:43:42 PM	62792
Zinc	ND	0.0064	0.010		mg/L	1	9/24/2021 1:43:42 PM	62792
EPA 200.8: METALS							Analyst: **bcv**	
Antimony	ND	0.0022	0.0050		mg/L	5	9/30/2021 3:41:02 PM	62792
Arsenic	0.0076	0.00063	0.0050		mg/L	5	9/30/2021 3:41:02 PM	62792
Lead	0.0095	0.00031	0.0025		mg/L	5	9/30/2021 3:41:02 PM	62792
Selenium	ND	0.0019	0.0050		mg/L	5	9/30/2021 3:41:02 PM	62792
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:46:42 PM	62854

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-01R
Project: Additional Well Install
Collection Date: 9/17/2021 10:35:00 AM
Lab ID: 2109A01-005G
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Barium	4.7	0.0056	0.010	*	mg/L	5	9/21/2021 12:16:07 PM	B81434
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2021 12:14:39 PM	B81434
Cadmium	ND	0.0012	0.0020		mg/L	1	9/21/2021 12:14:39 PM	B81434
Chromium	ND	0.0020	0.0060		mg/L	1	9/21/2021 12:14:39 PM	B81434
Cobalt	0.0080	0.0024	0.0060		mg/L	1	9/21/2021 12:14:39 PM	B81434
Iron	4.5	0.052	0.10	*	mg/L	5	9/21/2021 12:16:07 PM	B81434
Manganese	3.1	0.0029	0.010	*	mg/L	5	9/21/2021 12:16:07 PM	B81434
Nickel	0.029	0.0033	0.010		mg/L	1	9/21/2021 12:14:39 PM	B81434
Silver	ND	0.0013	0.0050		mg/L	1	9/21/2021 12:14:39 PM	B81434
Vanadium	ND	0.0020	0.050		mg/L	1	9/21/2021 12:14:39 PM	B81434
Zinc	0.011	0.0060	0.010		mg/L	1	9/21/2021 12:14:39 PM	B81434
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Antimony	ND	0.0044	0.010		mg/L	10	9/29/2021 4:01:13 PM	C81686
Arsenic	0.0066	0.0012	0.010	J	mg/L	10	9/29/2021 4:01:13 PM	C81686
Lead	ND	0.00057	0.0050		mg/L	10	9/29/2021 4:01:13 PM	C81686
Selenium	ND	0.0034	0.010		mg/L	10	9/29/2021 4:01:13 PM	C81686
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:49:08 PM	62854

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-02R
Project: Additional Well Install
Collection Date: 9/17/2021 11:00:00 AM
Lab ID: 2109A01-006A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	29	1.1	5.0		µg/L	5	9/23/2021 5:21:04 PM	R81542
Toluene	ND	1.0	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Ethylbenzene	ND	1.1	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Methyl tert-butyl ether (MTBE)	45	2.0	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,2,4-Trimethylbenzene	ND	0.61	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,3,5-Trimethylbenzene	ND	0.91	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,2-Dichloroethane (EDC)	67	1.3	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,2-Dibromoethane (EDB)	ND	1.5	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Naphthalene	ND	2.5	10		µg/L	5	9/23/2021 5:50:41 AM	R81501
1-Methylnaphthalene	ND	4.2	20		µg/L	5	9/23/2021 5:50:41 AM	R81501
2-Methylnaphthalene	ND	3.5	20		µg/L	5	9/23/2021 5:50:41 AM	R81501
Acetone	ND	13	50		µg/L	5	9/23/2021 5:50:41 AM	R81501
Bromobenzene	ND	1.4	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Bromodichloromethane	ND	1.0	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Bromoform	ND	1.6	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Bromomethane	ND	4.3	15		µg/L	5	9/23/2021 5:50:41 AM	R81501
2-Butanone	ND	10	50		µg/L	5	9/23/2021 5:50:41 AM	R81501
Carbon disulfide	ND	3.0	50		µg/L	5	9/23/2021 5:50:41 AM	R81501
Carbon Tetrachloride	ND	0.88	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Chlorobenzene	ND	0.78	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Chloroethane	4.5	1.9	10	J	µg/L	5	9/23/2021 5:50:41 AM	R81501
Chloroform	1.3	0.67	5.0	J	µg/L	5	9/23/2021 5:50:41 AM	R81501
Chloromethane	3.2	2.1	15	J	µg/L	5	9/23/2021 5:50:41 AM	R81501
2-Chlorotoluene	ND	0.66	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
4-Chlorotoluene	ND	1.7	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
cis-1,2-DCE	3.1	1.9	5.0	J	µg/L	5	9/23/2021 5:50:41 AM	R81501
cis-1,3-Dichloropropene	ND	1.8	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,2-Dibromo-3-chloropropane	ND	2.9	10		µg/L	5	9/23/2021 5:50:41 AM	R81501
Dibromochloromethane	ND	1.4	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Dibromomethane	ND	1.5	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,2-Dichlorobenzene	ND	0.77	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,3-Dichlorobenzene	ND	0.81	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,4-Dichlorobenzene	ND	1.0	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Dichlorodifluoromethane	ND	2.0	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,1-Dichloroethane	110	1.4	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,1-Dichloroethene	280	1.0	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,2-Dichloropropane	ND	1.0	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,3-Dichloropropane	ND	0.90	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
2,2-Dichloropropane	ND	1.3	10		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,1-Dichloropropene	ND	0.90	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-02R
Project: Additional Well Install
Collection Date: 9/17/2021 11:00:00 AM
Lab ID: 2109A01-006A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Hexachlorobutadiene	ND	2.8	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
2-Hexanone	ND	9.0	50		µg/L	5	9/23/2021 5:50:41 AM	R81501
Isopropylbenzene	ND	0.91	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
4-Isopropyltoluene	ND	1.0	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
4-Methyl-2-pentanone	ND	4.4	50		µg/L	5	9/23/2021 5:50:41 AM	R81501
Methylene Chloride	ND	2.5	15		µg/L	5	9/23/2021 5:50:41 AM	R81501
n-Butylbenzene	ND	1.3	15		µg/L	5	9/23/2021 5:50:41 AM	R81501
n-Propylbenzene	ND	0.91	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
sec-Butylbenzene	ND	0.72	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Styrene	ND	0.68	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
tert-Butylbenzene	ND	1.2	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,1,1,2-Tetrachloroethane	ND	1.3	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,1,2,2-Tetrachloroethane	ND	1.4	10		µg/L	5	9/23/2021 5:50:41 AM	R81501
Tetrachloroethene (PCE)	ND	1.8	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
trans-1,2-DCE	ND	0.97	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
trans-1,3-Dichloropropene	ND	1.7	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,2,3-Trichlorobenzene	ND	1.2	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,2,4-Trichlorobenzene	ND	1.2	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,1,1-Trichloroethane	ND	1.5	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,1,2-Trichloroethane	7.9	0.99	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Trichloroethene (TCE)	23	1.0	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
Trichlorofluoromethane	ND	0.79	5.0		µg/L	5	9/23/2021 5:50:41 AM	R81501
1,2,3-Trichloropropane	ND	2.2	10		µg/L	5	9/23/2021 5:50:41 AM	R81501
Vinyl chloride	1.9	1.6	5.0	J	µg/L	5	9/23/2021 5:50:41 AM	R81501
Xylenes, Total	ND	1.9	7.5		µg/L	5	9/23/2021 5:50:41 AM	R81501
Surr: 1,2-Dichloroethane-d4	112	0	70-130		%Rec	5	9/23/2021 5:50:41 AM	R81501
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	5	9/23/2021 5:50:41 AM	R81501
Surr: Dibromofluoromethane	101	0	70-130		%Rec	5	9/23/2021 5:50:41 AM	R81501
Surr: Toluene-d8	102	0	70-130		%Rec	5	9/23/2021 5:50:41 AM	R81501
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	0.56	0.061	0.25		mg/L	5	9/23/2021 5:50:41 AM	R81501
Surr: 4-Bromofluorobenzene	104	0	70-130		%Rec	5	9/23/2021 5:50:41 AM	R81501

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-02R
Project: Additional Well Install
Collection Date: 9/17/2021 11:00:00 AM
Lab ID: 2109A01-006C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	0.22	0.016	0.064		mg/L	1	9/28/2021 3:39:47 PM	62729
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	9/28/2021 3:39:47 PM	62729
Surr: DNOP	99.9	0	15-142		%Rec	1	9/28/2021 3:39:47 PM	62729

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-02R
Project: Additional Well Install
Collection Date: 9/17/2021 11:00:00 AM
Lab ID: 2109A01-006D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Aniline	ND	0.50	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Azobenzene	ND	0.55	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Benzoic acid	ND	1.1	20		µg/L	1	9/24/2021 9:54:33 PM	62689
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/24/2021 9:54:33 PM	62689
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Carbazole	ND	0.56	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/24/2021 9:54:33 PM	62689
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/24/2021 9:54:33 PM	62689
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Diethyl phthalate	ND	3.9	10		µg/L	1	9/24/2021 9:54:33 PM	62689
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/24/2021 9:54:33 PM	62689
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Isophorone	ND	0.40	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
2-Methylphenol	ND	0.51	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-02R
Project: Additional Well Install
Collection Date: 9/17/2021 11:00:00 AM
Lab ID: 2109A01-006D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Pentachlorophenol	ND	0.59	20		µg/L	1	9/24/2021 9:54:33 PM	62689
Phenol	0.76	0.33	5.0	J	µg/L	1	9/24/2021 9:54:33 PM	62689
Pyridine	ND	0.93	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/24/2021 9:54:33 PM	62689
Surr: 2-Fluorophenol	54.0	0	15-87		%Rec	1	9/24/2021 9:54:33 PM	62689
Surr: Phenol-d5	41.1	0	15-67.5		%Rec	1	9/24/2021 9:54:33 PM	62689
Surr: 2,4,6-Tribromophenol	83.5	0	15-122		%Rec	1	9/24/2021 9:54:33 PM	62689
Surr: Nitrobenzene-d5	64.4	0	15-103		%Rec	1	9/24/2021 9:54:33 PM	62689
Surr: 2-Fluorobiphenyl	60.8	0	15-103		%Rec	1	9/24/2021 9:54:33 PM	62689
Surr: 4-Terphenyl-d14	65.5	0	45-137		%Rec	1	9/24/2021 9:54:33 PM	62689
EPA METHOD 8270SIM							Analyst: **DAM**	
Naphthalene	ND	0.034	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Acenaphthylene	ND	0.043	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Acenaphthene	ND	0.031	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Fluorene	ND	0.031	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Phenanthrene	ND	0.057	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Anthracene	ND	0.034	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Fluoranthene	ND	0.10	0.20		µg/L	1	9/27/2021 7:42:00 PM	62703
Pyrene	ND	0.16	0.20		µg/L	1	9/27/2021 7:42:00 PM	62703
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Chrysene	ND	0.024	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Benzo(k)fluoranthene	ND	0.036	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Benzo(a)pyrene	ND	0.034	0.070		µg/L	1	9/27/2021 7:42:00 PM	62703
Dibenz(a,h)anthracene	ND	0.034	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Benzo(g,h,i)perylene	ND	0.034	0.10		µg/L	1	9/27/2021 7:42:00 PM	62703
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	9/27/2021 7:42:00 PM	62703
Surr: Nitrobenzene-d5	54.0	0	21.9-89.8		%Rec	1	9/27/2021 7:42:00 PM	62703
Surr: 2,4,6-Tribromophenol	65.2	0	23.4-71.6		%Rec	1	9/27/2021 7:42:00 PM	62703

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-02R
Project: Additional Well Install
Collection Date: 9/17/2021 11:00:00 AM
Lab ID: 2109A01-006D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: **DAM**	
Surr: 2-Fluorobiphenyl	42.0	0	15-84.5		%Rec	1	9/27/2021 7:42:00 PM	62703
Surr: 4-Terphenyl-d14	94.5	0	73.1-152		%Rec	1	9/27/2021 7:42:00 PM	62703

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-02R
Project: Additional Well Install
Collection Date: 9/17/2021 11:00:00 AM
Lab ID: 2109A01-006E
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Fluoride	ND	0.20	0.50		mg/L	5	9/18/2021 2:57:36 PM	R81380
Chloride	1800	50	100	*	mg/L	200	9/22/2021 12:39:38 PM	R81507
Nitrogen, Nitrite (As N)	ND	0.027	0.50		mg/L	5	9/18/2021 2:57:36 PM	R81380
Nitrogen, Nitrate (As N)	0.20	0.050	0.50	J	mg/L	5	9/18/2021 2:57:36 PM	R81380
Sulfate	710	5.0	10	*	mg/L	20	9/18/2021 3:10:28 PM	R81380
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	146.6	20.00	20.00		mg/L Ca	1	9/23/2021 9:13:30 PM	R81582
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	9/23/2021 9:13:30 PM	R81582
Total Alkalinity (as CaCO3)	146.6	20.00	20.00		mg/L Ca	1	9/23/2021 9:13:30 PM	R81582

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-02R
Project: Additional Well Install
Collection Date: 9/17/2021 11:00:00 AM
Lab ID: 2109A01-006F
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Barium	0.056	0.0016	0.0030		mg/L	1	9/24/2021 1:46:29 PM	62792
Beryllium	ND	0.00088	0.0020		mg/L	1	9/24/2021 1:46:29 PM	62792
Cadmium	ND	0.0015	0.0020		mg/L	1	9/24/2021 1:46:29 PM	62792
Calcium	310	1.1	10		mg/L	10	9/24/2021 1:48:05 PM	62792
Chromium	ND	0.0021	0.0060		mg/L	1	9/24/2021 1:46:29 PM	62792
Cobalt	0.0053	0.0024	0.0060	J	mg/L	1	9/24/2021 1:46:29 PM	62792
Iron	0.047	0.013	0.050	J	mg/L	1	9/24/2021 1:46:29 PM	62792
Magnesium	48	0.067	1.0		mg/L	1	9/24/2021 1:46:29 PM	62792
Manganese	0.095	0.00081	0.0020	*	mg/L	1	9/24/2021 1:46:29 PM	62792
Nickel	0.0063	0.0033	0.010	J	mg/L	1	9/24/2021 1:46:29 PM	62792
Potassium	13	0.16	1.0		mg/L	1	9/24/2021 1:46:29 PM	62792
Silver	0.0014	0.0013	0.0050	J	mg/L	1	9/24/2021 1:46:29 PM	62792
Sodium	1100	3.7	20		mg/L	20	9/28/2021 11:09:50 AM	62792
Vanadium	ND	0.0024	0.050		mg/L	1	9/24/2021 1:46:29 PM	62792
Zinc	0.019	0.0064	0.010		mg/L	1	9/24/2021 1:46:29 PM	62792
EPA 200.8: METALS							Analyst: **bcv**	
Antimony	ND	0.0022	0.0050		mg/L	5	9/30/2021 3:43:27 PM	62792
Arsenic	0.0010	0.00063	0.0050	J	mg/L	5	9/30/2021 3:43:27 PM	62792
Lead	ND	0.00031	0.0025		mg/L	5	9/30/2021 3:43:27 PM	62792
Selenium	ND	0.0019	0.0050		mg/L	5	9/30/2021 3:43:27 PM	62792
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:56:25 PM	62854

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-02R
Project: Additional Well Install
Collection Date: 9/17/2021 11:00:00 AM
Lab ID: 2109A01-006G
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Barium	0.048	0.0011	0.0020		mg/L	1	9/21/2021 12:17:34 PM	B81434
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2021 12:17:34 PM	B81434
Cadmium	ND	0.0012	0.0020		mg/L	1	9/21/2021 12:17:34 PM	B81434
Chromium	ND	0.0020	0.0060		mg/L	1	9/21/2021 12:17:34 PM	B81434
Cobalt	0.0050	0.0024	0.0060	J	mg/L	1	9/21/2021 12:17:34 PM	B81434
Iron	ND	0.010	0.020		mg/L	1	9/21/2021 12:17:34 PM	B81434
Manganese	0.087	0.00058	0.0020	*	mg/L	1	9/21/2021 12:17:34 PM	B81434
Nickel	ND	0.0033	0.010		mg/L	1	9/21/2021 12:17:34 PM	B81434
Silver	ND	0.0013	0.0050		mg/L	1	9/21/2021 12:17:34 PM	B81434
Vanadium	0.0022	0.0020	0.050	J	mg/L	1	9/21/2021 12:17:34 PM	B81434
Zinc	0.034	0.0060	0.010		mg/L	1	9/21/2021 12:17:34 PM	B81434
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Antimony	ND	0.0044	0.010		mg/L	10	9/29/2021 4:03:53 PM	C81686
Arsenic	ND	0.0012	0.010		mg/L	10	9/29/2021 4:03:53 PM	C81686
Lead	ND	0.00057	0.0050		mg/L	10	9/29/2021 4:03:53 PM	C81686
Selenium	ND	0.0034	0.010		mg/L	10	9/29/2021 4:03:53 PM	C81686
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 12:58:52 PM	62854

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-68
Project: Additional Well Install
Collection Date: 9/17/2021 11:55:00 AM
Lab ID: 2109A01-007A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	0.78	0.23	1.0	J	µg/L	1	9/23/2021 6:19:17 AM	R81501
Toluene	ND	0.20	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Ethylbenzene	0.85	0.21	1.0	J	µg/L	1	9/23/2021 6:19:17 AM	R81501
Methyl tert-butyl ether (MTBE)	1.3	0.39	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,2,4-Trimethylbenzene	0.58	0.12	1.0	J	µg/L	1	9/23/2021 6:19:17 AM	R81501
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,2-Dichloroethane (EDC)	0.30	0.25	1.0	J	µg/L	1	9/23/2021 6:19:17 AM	R81501
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Naphthalene	ND	0.50	2.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Acetone	5.2	2.5	10	J	µg/L	1	9/23/2021 6:19:17 AM	R81501
Bromobenzene	ND	0.28	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Bromodichloromethane	ND	0.20	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Bromoform	ND	0.31	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Bromomethane	ND	0.85	3.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
2-Butanone	2.0	2.0	10	J	µg/L	1	9/23/2021 6:19:17 AM	R81501
Carbon disulfide	ND	0.59	10		µg/L	1	9/23/2021 6:19:17 AM	R81501
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Chloroethane	ND	0.38	2.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Chloroform	ND	0.13	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Chloromethane	2.3	0.41	3.0	J	µg/L	1	9/23/2021 6:19:17 AM	R81501
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Dibromochloromethane	ND	0.28	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Dibromomethane	ND	0.31	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range
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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-68
Project: Additional Well Install
Collection Date: 9/17/2021 11:55:00 AM
Lab ID: 2109A01-007A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
2-Hexanone	ND	1.8	10		µg/L	1	9/23/2021 6:19:17 AM	R81501
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/23/2021 6:19:17 AM	R81501
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
n-Propylbenzene	0.30	0.18	1.0	J	µg/L	1	9/23/2021 6:19:17 AM	R81501
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Styrene	ND	0.14	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,2,3-Trichlorobenzene	0.37	0.25	1.0	J	µg/L	1	9/23/2021 6:19:17 AM	R81501
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/23/2021 6:19:17 AM	R81501
Xylenes, Total	0.87	0.37	1.5	J	µg/L	1	9/23/2021 6:19:17 AM	R81501
Surr: 1,2-Dichloroethane-d4	113	0	70-130		%Rec	1	9/23/2021 6:19:17 AM	R81501
Surr: 4-Bromofluorobenzene	97.9	0	70-130		%Rec	1	9/23/2021 6:19:17 AM	R81501
Surr: Dibromofluoromethane	108	0	70-130		%Rec	1	9/23/2021 6:19:17 AM	R81501
Surr: Toluene-d8	102	0	70-130		%Rec	1	9/23/2021 6:19:17 AM	R81501
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	1.7	0.012	0.050		mg/L	1	9/23/2021 6:19:17 AM	R81501
Surr: 4-Bromofluorobenzene	95.9	0	70-130		%Rec	1	9/23/2021 6:19:17 AM	R81501

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-68
Project: Additional Well Install
Collection Date: 9/17/2021 11:55:00 AM
Lab ID: 2109A01-007C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: **BRM**	
Diesel Range Organics (DRO)	1.1	0.016	0.064		mg/L	1	9/30/2021 10:38:45 AM	62729
Motor Oil Range Organics (MRO)	0.12	0.052	0.080		mg/L	1	9/30/2021 10:38:45 AM	62729
Surr: DNOP	91.7	0	15-142		%Rec	1	9/30/2021 10:38:45 AM	62729

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-68
Project: Additional Well Install
Collection Date: 9/17/2021 11:55:00 AM
Lab ID: 2109A01-007D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Aniline	ND	0.50	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Azobenzene	ND	0.55	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Benzoic acid	ND	1.1	20		µg/L	1	9/24/2021 10:35:59 PM	62689
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/24/2021 10:35:59 PM	62689
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Carbazole	ND	0.56	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/24/2021 10:35:59 PM	62689
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/24/2021 10:35:59 PM	62689
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Diethyl phthalate	ND	3.9	10		µg/L	1	9/24/2021 10:35:59 PM	62689
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/24/2021 10:35:59 PM	62689
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Isophorone	ND	0.40	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
2-Methylphenol	ND	0.51	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-68
Project: Additional Well Install
Collection Date: 9/17/2021 11:55:00 AM
Lab ID: 2109A01-007D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Pentachlorophenol	ND	0.59	20		µg/L	1	9/24/2021 10:35:59 PM	62689
Phenol	ND	0.33	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Pyridine	ND	0.93	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/24/2021 10:35:59 PM	62689
Surr: 2-Fluorophenol	50.8	0	15-87		%Rec	1	9/24/2021 10:35:59 PM	62689
Surr: Phenol-d5	39.4	0	15-67.5		%Rec	1	9/24/2021 10:35:59 PM	62689
Surr: 2,4,6-Tribromophenol	75.9	0	15-122		%Rec	1	9/24/2021 10:35:59 PM	62689
Surr: Nitrobenzene-d5	57.6	0	15-103		%Rec	1	9/24/2021 10:35:59 PM	62689
Surr: 2-Fluorobiphenyl	60.2	0	15-103		%Rec	1	9/24/2021 10:35:59 PM	62689
Surr: 4-Terphenyl-d14	79.1	0	45-137		%Rec	1	9/24/2021 10:35:59 PM	62689
EPA METHOD 8270SIM							Analyst: **DAM**	
Naphthalene	ND	0.034	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Acenaphthylene	ND	0.043	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Acenaphthene	0.20	0.031	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Fluorene	ND	0.031	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Phenanthrene	ND	0.057	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Anthracene	ND	0.034	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Fluoranthene	ND	0.10	0.20		µg/L	1	9/27/2021 8:27:00 PM	62703
Pyrene	0.18	0.16	0.20	J	µg/L	1	9/27/2021 8:27:00 PM	62703
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Chrysene	ND	0.024	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Benzo(k)fluoranthene	ND	0.036	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Benzo(a)pyrene	ND	0.034	0.070		µg/L	1	9/27/2021 8:27:00 PM	62703
Dibenz(a,h)anthracene	ND	0.034	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Benzo(g,h,i)perylene	ND	0.034	0.10		µg/L	1	9/27/2021 8:27:00 PM	62703
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	9/27/2021 8:27:00 PM	62703
Surr: Nitrobenzene-d5	68.5	0	21.9-89.8		%Rec	1	9/27/2021 8:27:00 PM	62703
Surr: 2,4,6-Tribromophenol	98.5	0	23.4-71.6	S	%Rec	1	9/27/2021 8:27:00 PM	62703

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-68
Project: Additional Well Install
Collection Date: 9/17/2021 11:55:00 AM
Lab ID: 2109A01-007D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: **DAM**	
Surr: 2-Fluorobiphenyl	50.0	0	15-84.5		%Rec	1	9/27/2021 8:27:00 PM	62703
Surr: 4-Terphenyl-d14	96.0	0	73.1-152		%Rec	1	9/27/2021 8:27:00 PM	62703

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Qualifiers:

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-68
Project: Additional Well Install
Collection Date: 9/17/2021 11:55:00 AM
Lab ID: 2109A01-007E
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Fluoride	6.4	0.20	0.50	*	mg/L	5	9/18/2021 3:23:21 PM	R81380
Chloride	5100	120	250	*	mg/L	500	9/22/2021 1:18:17 PM	R81507
Nitrogen, Nitrite (As N)	0.14	0.027	0.50	J	mg/L	5	9/18/2021 3:23:21 PM	R81380
Nitrogen, Nitrate (As N)	0.33	0.050	0.50	J	mg/L	5	9/18/2021 3:23:21 PM	R81380
Sulfate	800	5.0	10	*	mg/L	20	9/18/2021 3:36:14 PM	R81380
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	704.0	20.00	20.00		mg/L Ca	1	9/23/2021 9:23:48 PM	R81582
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	9/23/2021 9:23:48 PM	R81582
Total Alkalinity (as CaCO3)	704.0	20.00	20.00		mg/L Ca	1	9/23/2021 9:23:48 PM	R81582

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-68
Project: Additional Well Install
Collection Date: 9/17/2021 11:55:00 AM
Lab ID: 2109A01-007F
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Barium	0.13	0.0082	0.015		mg/L	5	9/28/2021 11:16:30 AM	62792
Beryllium	ND	0.0044	0.010		mg/L	5	9/28/2021 11:16:30 AM	62792
Cadmium	ND	0.0074	0.010		mg/L	5	9/28/2021 11:16:30 AM	62792
Calcium	790	1.1	10		mg/L	10	9/24/2021 1:55:56 PM	62792
Chromium	ND	0.011	0.030		mg/L	5	9/28/2021 11:16:30 AM	62792
Cobalt	0.10	0.012	0.030		mg/L	5	9/28/2021 11:16:30 AM	62792
Iron	2.9	0.13	0.50	*	mg/L	10	9/24/2021 1:55:56 PM	62792
Magnesium	130	0.67	10		mg/L	10	9/24/2021 1:55:56 PM	62792
Manganese	11	0.041	0.10	*	mg/L	50	9/28/2021 11:18:13 AM	62792
Nickel	0.17	0.016	0.050	*	mg/L	5	9/28/2021 11:16:30 AM	62792
Potassium	15	0.16	1.0		mg/L	1	9/24/2021 1:54:35 PM	62792
Silver	ND	0.0063	0.025		mg/L	5	9/28/2021 11:16:30 AM	62792
Sodium	2500	9.3	50		mg/L	50	9/28/2021 11:18:13 AM	62792
Vanadium	ND	0.012	0.25		mg/L	5	9/28/2021 11:16:30 AM	62792
Zinc	ND	0.032	0.050		mg/L	5	9/28/2021 11:16:30 AM	62792
EPA 200.8: METALS							Analyst: **bcv**	
Antimony	ND	0.0022	0.0050		mg/L	5	9/30/2021 3:45:51 PM	62792
Arsenic	0.0058	0.00063	0.0050		mg/L	5	9/30/2021 3:45:51 PM	62792
Lead	0.0020	0.00031	0.0025	J	mg/L	5	9/30/2021 3:45:51 PM	62792
Selenium	0.0076	0.0019	0.0050		mg/L	5	9/30/2021 3:45:51 PM	62792
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 1:01:17 PM	62854

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-68
Project: Additional Well Install
Collection Date: 9/17/2021 11:55:00 AM
Lab ID: 2109A01-007G
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Barium	0.085	0.0011	0.0020		mg/L	1	9/21/2021 12:20:54 PM	B81434
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2021 12:20:54 PM	B81434
Cadmium	ND	0.0012	0.0020		mg/L	1	9/21/2021 12:20:54 PM	B81434
Chromium	ND	0.0020	0.0060		mg/L	1	9/21/2021 12:20:54 PM	B81434
Cobalt	0.079	0.0024	0.0060		mg/L	1	9/21/2021 12:20:54 PM	B81434
Iron	0.95	0.010	0.020	*	mg/L	1	9/21/2021 12:20:54 PM	B81434
Manganese	9.6	0.0058	0.020	*	mg/L	10	9/21/2021 1:01:13 PM	B81434
Nickel	0.15	0.0033	0.010	*	mg/L	1	9/21/2021 12:20:54 PM	B81434
Silver	0.0029	0.0013	0.0050	J	mg/L	1	9/21/2021 12:20:54 PM	B81434
Vanadium	0.0023	0.0020	0.050	J	mg/L	1	9/21/2021 12:20:54 PM	B81434
Zinc	0.039	0.0060	0.010		mg/L	1	9/21/2021 12:20:54 PM	B81434
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Antimony	ND	0.0044	0.010		mg/L	10	9/29/2021 4:06:32 PM	C81686
Arsenic	0.0055	0.0012	0.010	J	mg/L	10	9/29/2021 4:06:32 PM	C81686
Lead	0.0012	0.00057	0.0050	J	mg/L	10	9/29/2021 4:06:32 PM	C81686
Selenium	0.0058	0.0034	0.010	J	mg/L	10	9/29/2021 4:06:32 PM	C81686
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 1:03:44 PM	62854

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-67
Project: Additional Well Install
Collection Date: 9/17/2021 12:15:00 PM
Lab ID: 2109A01-008A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	ND	0.23	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Toluene	ND	0.20	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Methyl tert-butyl ether (MTBE)	34	0.39	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Naphthalene	ND	0.50	2.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Acetone	4.7	2.5	10	J	µg/L	1	9/23/2021 6:47:52 AM	R81501
Bromobenzene	ND	0.28	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Bromodichloromethane	ND	0.20	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Bromoform	ND	0.31	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Bromomethane	ND	0.85	3.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
2-Butanone	ND	2.0	10		µg/L	1	9/23/2021 6:47:52 AM	R81501
Carbon disulfide	ND	0.59	10		µg/L	1	9/23/2021 6:47:52 AM	R81501
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Chloroethane	ND	0.38	2.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Chloroform	ND	0.13	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Chloromethane	ND	0.41	3.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Dibromochloromethane	ND	0.28	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Dibromomethane	ND	0.31	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-67
Project: Additional Well Install
Collection Date: 9/17/2021 12:15:00 PM
Lab ID: 2109A01-008A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
2-Hexanone	ND	1.8	10		µg/L	1	9/23/2021 6:47:52 AM	R81501
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/23/2021 6:47:52 AM	R81501
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Styrene	ND	0.14	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/23/2021 6:47:52 AM	R81501
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/23/2021 6:47:52 AM	R81501
Surr: 1,2-Dichloroethane-d4	112	0	70-130		%Rec	1	9/23/2021 6:47:52 AM	R81501
Surr: 4-Bromofluorobenzene	98.1	0	70-130		%Rec	1	9/23/2021 6:47:52 AM	R81501
Surr: Dibromofluoromethane	106	0	70-130		%Rec	1	9/23/2021 6:47:52 AM	R81501
Surr: Toluene-d8	99.3	0	70-130		%Rec	1	9/23/2021 6:47:52 AM	R81501
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	0.41	0.012	0.050		mg/L	1	9/23/2021 6:47:52 AM	R81501
Surr: 4-Bromofluorobenzene	102	0	70-130		%Rec	1	9/23/2021 6:47:52 AM	R81501

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-67
Project: Additional Well Install
Collection Date: 9/17/2021 12:15:00 PM
Lab ID: 2109A01-008C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	0.56	0.016	0.064		mg/L	1	9/28/2021 4:03:36 PM	62729
Motor Oil Range Organics (MRO)	0.064	0.052	0.080	J	mg/L	1	9/28/2021 4:03:36 PM	62729
Surr: DNOP	92.0	0	15-142		%Rec	1	9/28/2021 4:03:36 PM	62729

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-67
Project: Additional Well Install
Collection Date: 9/17/2021 12:15:00 PM
Lab ID: 2109A01-008D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Aniline	ND	0.50	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Azobenzene	ND	0.55	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Benzoic acid	ND	1.1	20		µg/L	1	9/24/2021 11:17:34 PM	62689
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/24/2021 11:17:34 PM	62689
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Carbazole	ND	0.56	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/24/2021 11:17:34 PM	62689
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/24/2021 11:17:34 PM	62689
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Diethyl phthalate	ND	3.9	10		µg/L	1	9/24/2021 11:17:34 PM	62689
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/24/2021 11:17:34 PM	62689
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Isophorone	ND	0.40	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
2-Methylphenol	ND	0.51	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-67
Project: Additional Well Install
Collection Date: 9/17/2021 12:15:00 PM
Lab ID: 2109A01-008D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Pentachlorophenol	ND	0.59	20		µg/L	1	9/24/2021 11:17:34 PM	62689
Phenol	ND	0.33	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Pyridine	ND	0.93	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/24/2021 11:17:34 PM	62689
Surr: 2-Fluorophenol	54.6	0	15-87		%Rec	1	9/24/2021 11:17:34 PM	62689
Surr: Phenol-d5	42.8	0	15-67.5		%Rec	1	9/24/2021 11:17:34 PM	62689
Surr: 2,4,6-Tribromophenol	68.3	0	15-122		%Rec	1	9/24/2021 11:17:34 PM	62689
Surr: Nitrobenzene-d5	62.7	0	15-103		%Rec	1	9/24/2021 11:17:34 PM	62689
Surr: 2-Fluorobiphenyl	61.9	0	15-103		%Rec	1	9/24/2021 11:17:34 PM	62689
Surr: 4-Terphenyl-d14	86.1	0	45-137		%Rec	1	9/24/2021 11:17:34 PM	62689
EPA METHOD 8270SIM							Analyst: **DAM**	
Naphthalene	ND	0.034	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Acenaphthylene	ND	0.043	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Acenaphthene	ND	0.031	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Fluorene	ND	0.031	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Phenanthrene	ND	0.057	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Anthracene	ND	0.034	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Fluoranthene	ND	0.10	0.20		µg/L	1	9/27/2021 9:12:00 PM	62703
Pyrene	ND	0.16	0.20		µg/L	1	9/27/2021 9:12:00 PM	62703
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Chrysene	ND	0.024	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Benzo(k)fluoranthene	ND	0.036	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Benzo(a)pyrene	ND	0.034	0.070		µg/L	1	9/27/2021 9:12:00 PM	62703
Dibenz(a,h)anthracene	ND	0.034	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Benzo(g,h,i)perylene	ND	0.034	0.10		µg/L	1	9/27/2021 9:12:00 PM	62703
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	9/27/2021 9:12:00 PM	62703
Surr: Nitrobenzene-d5	69.5	0	21.9-89.8		%Rec	1	9/27/2021 9:12:00 PM	62703
Surr: 2,4,6-Tribromophenol	84.5	0	23.4-71.6	S	%Rec	1	9/27/2021 9:12:00 PM	62703

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-67
Project: Additional Well Install
Collection Date: 9/17/2021 12:15:00 PM
Lab ID: 2109A01-008D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: **DAM**	
Surr: 2-Fluorobiphenyl	46.0	0	15-84.5		%Rec	1	9/27/2021 9:12:00 PM	62703
Surr: 4-Terphenyl-d14	96.5	0	73.1-152		%Rec	1	9/27/2021 9:12:00 PM	62703

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-67
Project: Additional Well Install
Collection Date: 9/17/2021 12:15:00 PM
Lab ID: 2109A01-008E
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Fluoride	ND	0.20	0.50		mg/L	5	9/18/2021 4:14:53 PM	R81380
Chloride	4900	120	250	*	mg/L	500	9/22/2021 1:31:09 PM	R81507
Nitrogen, Nitrite (As N)	ND	0.027	0.50		mg/L	5	9/18/2021 4:14:53 PM	R81380
Nitrogen, Nitrate (As N)	0.17	0.050	0.50	J	mg/L	5	9/18/2021 4:14:53 PM	R81380
Sulfate	760	5.0	10	*	mg/L	20	9/18/2021 4:27:45 PM	R81380
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	430.5	20.00	20.00		mg/L Ca	1	9/23/2021 9:50:28 PM	R81582
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	9/23/2021 9:50:28 PM	R81582
Total Alkalinity (as CaCO3)	430.5	20.00	20.00		mg/L Ca	1	9/23/2021 9:50:28 PM	R81582

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-67
Project: Additional Well Install
Collection Date: 9/17/2021 12:15:00 PM
Lab ID: 2109A01-008F
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Barium	0.080	0.0082	0.015		mg/L	5	9/28/2021 11:19:53 AM	62792
Beryllium	ND	0.0044	0.010		mg/L	5	9/28/2021 11:19:53 AM	62792
Cadmium	ND	0.0074	0.010		mg/L	5	9/28/2021 11:19:53 AM	62792
Calcium	1000	5.7	50		mg/L	50	9/28/2021 11:21:32 AM	62792
Chromium	ND	0.011	0.030		mg/L	5	9/28/2021 11:19:53 AM	62792
Cobalt	0.029	0.012	0.030	J	mg/L	5	9/28/2021 11:19:53 AM	62792
Iron	0.23	0.013	0.050		mg/L	1	9/24/2021 1:57:35 PM	62792
Magnesium	180	0.67	10		mg/L	10	9/24/2021 1:59:14 PM	62792
Manganese	8.0	0.0081	0.020	*	mg/L	10	9/24/2021 1:59:14 PM	62792
Nickel	0.11	0.016	0.050	*	mg/L	5	9/28/2021 11:19:53 AM	62792
Potassium	4.6	0.16	1.0		mg/L	1	9/24/2021 1:57:35 PM	62792
Silver	ND	0.0063	0.025		mg/L	5	9/28/2021 11:19:53 AM	62792
Sodium	2300	9.3	50		mg/L	50	9/28/2021 11:21:32 AM	62792
Vanadium	ND	0.012	0.25		mg/L	5	9/28/2021 11:19:53 AM	62792
Zinc	ND	0.032	0.050		mg/L	5	9/28/2021 11:19:53 AM	62792
EPA 200.8: METALS							Analyst: **bcv**	
Antimony	ND	0.0022	0.0050		mg/L	5	9/30/2021 3:48:17 PM	62792
Arsenic	0.0025	0.00063	0.0050	J	mg/L	5	9/30/2021 3:48:17 PM	62792
Lead	ND	0.00031	0.0025		mg/L	5	9/30/2021 3:48:17 PM	62792
Selenium	0.0028	0.0019	0.0050	J	mg/L	5	9/30/2021 3:48:17 PM	62792
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 1:06:10 PM	62854

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-67
Project: Additional Well Install
Collection Date: 9/17/2021 12:15:00 PM
Lab ID: 2109A01-008G
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Barium	0.074	0.0011	0.0020		mg/L	1	9/21/2021 12:24:03 PM	B81434
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2021 12:24:03 PM	B81434
Cadmium	ND	0.0012	0.0020		mg/L	1	9/21/2021 12:24:03 PM	B81434
Chromium	ND	0.0020	0.0060		mg/L	1	9/21/2021 12:24:03 PM	B81434
Cobalt	0.011	0.0024	0.0060		mg/L	1	9/21/2021 12:24:03 PM	B81434
Iron	0.015	0.010	0.020	J	mg/L	1	9/21/2021 12:24:03 PM	B81434
Manganese	7.4	0.0058	0.020	*	mg/L	10	9/21/2021 1:04:32 PM	B81434
Nickel	0.098	0.0033	0.010		mg/L	1	9/21/2021 12:24:03 PM	B81434
Silver	0.0039	0.0013	0.0050	J	mg/L	1	9/21/2021 12:24:03 PM	B81434
Vanadium	ND	0.0020	0.050		mg/L	1	9/21/2021 12:24:03 PM	B81434
Zinc	0.016	0.0060	0.010		mg/L	1	9/21/2021 12:24:03 PM	B81434
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Antimony	ND	0.0044	0.010		mg/L	10	9/29/2021 4:09:12 PM	C81686
Arsenic	0.0023	0.0012	0.010	J	mg/L	10	9/29/2021 4:09:12 PM	C81686
Lead	ND	0.00057	0.0050		mg/L	10	9/29/2021 4:09:12 PM	C81686
Selenium	ND	0.0034	0.010		mg/L	10	9/29/2021 4:09:12 PM	C81686
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 1:08:36 PM	62854

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-66
Project: Additional Well Install
Collection Date: 9/17/2021 12:45:00 PM
Lab ID: 2109A01-009A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	12000	45	200		µg/L	200	9/23/2021 6:46:49 PM	R81542
Toluene	9200	40	200		µg/L	200	9/23/2021 6:46:49 PM	R81542
Ethylbenzene	720	2.1	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
Methyl tert-butyl ether (MTBE)	680	3.9	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,2,4-Trimethylbenzene	1300	24	200		µg/L	200	9/23/2021 6:46:49 PM	R81542
1,3,5-Trimethylbenzene	350	1.8	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,2-Dichloroethane (EDC)	4.4	2.5	10	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
1,2-Dibromoethane (EDB)	ND	3.0	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
Naphthalene	130	5.0	20		µg/L	10	9/23/2021 7:16:24 AM	R81501
1-Methylnaphthalene	35	8.4	40	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
2-Methylnaphthalene	61	6.9	40		µg/L	10	9/23/2021 7:16:24 AM	R81501
Acetone	32	25	100	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
Bromobenzene	ND	2.8	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
Bromodichloromethane	2.1	2.0	10	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
Bromoform	ND	3.1	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
Bromomethane	ND	8.5	30		µg/L	10	9/23/2021 7:16:24 AM	R81501
2-Butanone	32	20	100	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
Carbon disulfide	ND	5.9	100		µg/L	10	9/23/2021 7:16:24 AM	R81501
Carbon Tetrachloride	ND	1.8	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
Chlorobenzene	ND	1.6	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
Chloroethane	ND	3.8	20		µg/L	10	9/23/2021 7:16:24 AM	R81501
Chloroform	ND	1.3	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
Chloromethane	28	4.1	30	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
2-Chlorotoluene	ND	1.3	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
4-Chlorotoluene	ND	3.4	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
cis-1,2-DCE	ND	3.9	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
cis-1,3-Dichloropropene	ND	3.6	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,2-Dibromo-3-chloropropane	ND	5.9	20		µg/L	10	9/23/2021 7:16:24 AM	R81501
Dibromochloromethane	6.2	2.8	10	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
Dibromomethane	ND	3.1	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,2-Dichlorobenzene	ND	1.5	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,3-Dichlorobenzene	ND	1.6	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,4-Dichlorobenzene	ND	2.1	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
Dichlorodifluoromethane	ND	4.0	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,1-Dichloroethane	ND	2.7	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,1-Dichloroethene	ND	2.0	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,2-Dichloropropane	ND	2.0	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,3-Dichloropropane	ND	1.8	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
2,2-Dichloropropane	ND	2.6	20		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,1-Dichloropropene	ND	1.8	10		µg/L	10	9/23/2021 7:16:24 AM	R81501

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-66
Project: Additional Well Install
Collection Date: 9/17/2021 12:45:00 PM
Lab ID: 2109A01-009A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Hexachlorobutadiene	ND	5.6	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
2-Hexanone	ND	18	100		µg/L	10	9/23/2021 7:16:24 AM	R81501
Isopropylbenzene	26	1.8	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
4-Isopropyltoluene	4.4	2.0	10	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
4-Methyl-2-pentanone	ND	8.8	100		µg/L	10	9/23/2021 7:16:24 AM	R81501
Methylene Chloride	ND	5.0	30		µg/L	10	9/23/2021 7:16:24 AM	R81501
n-Butylbenzene	20	2.5	30	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
n-Propylbenzene	140	1.8	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
sec-Butylbenzene	5.6	1.4	10	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
Styrene	1.4	1.4	10	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
tert-Butylbenzene	ND	2.4	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,1,1,2-Tetrachloroethane	ND	2.7	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,1,2,2-Tetrachloroethane	ND	2.7	20		µg/L	10	9/23/2021 7:16:24 AM	R81501
Tetrachloroethene (PCE)	ND	3.6	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
trans-1,2-DCE	2.7	1.9	10	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
trans-1,3-Dichloropropene	6.5	3.4	10	J	µg/L	10	9/23/2021 7:16:24 AM	R81501
1,2,3-Trichlorobenzene	ND	2.5	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,2,4-Trichlorobenzene	ND	2.4	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,1,1-Trichloroethane	ND	3.0	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,1,2-Trichloroethane	ND	2.0	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
Trichloroethene (TCE)	ND	2.0	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
Trichlorofluoromethane	ND	1.6	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
1,2,3-Trichloropropane	ND	4.4	20		µg/L	10	9/23/2021 7:16:24 AM	R81501
Vinyl chloride	ND	3.2	10		µg/L	10	9/23/2021 7:16:24 AM	R81501
Xylenes, Total	6200	74	300		µg/L	200	9/23/2021 6:46:49 PM	R81542
Surr: 1,2-Dichloroethane-d4	107	0	70-130		%Rec	10	9/23/2021 7:16:24 AM	R81501
Surr: 4-Bromofluorobenzene	82.6	0	70-130		%Rec	10	9/23/2021 7:16:24 AM	R81501
Surr: Dibromofluoromethane	92.3	0	70-130		%Rec	10	9/23/2021 7:16:24 AM	R81501
Surr: Toluene-d8	110	0	70-130		%Rec	10	9/23/2021 7:16:24 AM	R81501
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	69	0.12	0.50		mg/L	10	9/23/2021 7:16:24 AM	R81501
Surr: 4-Bromofluorobenzene	89.1	0	70-130		%Rec	10	9/23/2021 7:16:24 AM	R81501

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-66
Project: Additional Well Install
Collection Date: 9/17/2021 12:45:00 PM
Lab ID: 2109A01-009C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	4.0	0.16	0.64		mg/L	10	9/27/2021 9:49:27 PM	62729
Motor Oil Range Organics (MRO)	ND	0.52	0.80	D	mg/L	10	9/27/2021 9:49:27 PM	62729
Surr: DNOP	0	0	15-142	S	%Rec	10	9/27/2021 9:49:27 PM	62729

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-66
Project: Additional Well Install
Collection Date: 9/17/2021 12:45:00 PM
Lab ID: 2109A01-009D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Aniline	ND	0.50	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Azobenzene	ND	0.55	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Benzoic acid	ND	1.1	20		µg/L	1	9/24/2021 11:59:01 PM	62689
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/24/2021 11:59:01 PM	62689
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Carbazole	3.7	0.56	5.0	J	µg/L	1	9/24/2021 11:59:01 PM	62689
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/24/2021 11:59:01 PM	62689
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/24/2021 11:59:01 PM	62689
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Diethyl phthalate	ND	3.9	10		µg/L	1	9/24/2021 11:59:01 PM	62689
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/24/2021 11:59:01 PM	62689
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
2,4-Dimethylphenol	5.4	0.97	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Isophorone	ND	0.40	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
2-Methylphenol	14	0.51	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
3+4-Methylphenol	17	0.45	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-66
Project: Additional Well Install
Collection Date: 9/17/2021 12:45:00 PM
Lab ID: 2109A01-009D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Pentachlorophenol	ND	0.59	20		µg/L	1	9/24/2021 11:59:01 PM	62689
Phenol	18	0.33	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Pyridine	ND	0.93	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/24/2021 11:59:01 PM	62689
Surr: 2-Fluorophenol	0	0	15-87	S	%Rec	1	9/24/2021 11:59:01 PM	62689
Surr: Phenol-d5	38.8	0	15-67.5		%Rec	1	9/24/2021 11:59:01 PM	62689
Surr: 2,4,6-Tribromophenol	84.0	0	15-122		%Rec	1	9/24/2021 11:59:01 PM	62689
Surr: Nitrobenzene-d5	68.7	0	15-103		%Rec	1	9/24/2021 11:59:01 PM	62689
Surr: 2-Fluorobiphenyl	61.0	0	15-103		%Rec	1	9/24/2021 11:59:01 PM	62689
Surr: 4-Terphenyl-d14	84.4	0	45-137		%Rec	1	9/24/2021 11:59:01 PM	62689
EPA METHOD 8270SIM							Analyst: **DAM**	
1,4-Dioxane	ND	0.48	10	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Naphthalene	110	0.34	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
1-Methylnaphthalene	33	0.24	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
2-Methylnaphthalene	51	0.34	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Acenaphthylene	ND	0.43	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Acenaphthene	1.0	0.31	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Fluorene	2.2	0.31	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Phenanthrene	2.6	0.57	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Anthracene	ND	0.34	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Fluoranthene	ND	1.0	2.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Pyrene	ND	1.6	2.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Benz(a)anthracene	ND	0.36	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Chrysene	ND	0.24	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Benzo(b)fluoranthene	ND	0.57	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Benzo(k)fluoranthene	ND	0.36	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Benzo(a)pyrene	ND	0.34	0.70	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Dibenz(a,h)anthracene	ND	0.34	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Benzo(g,h,i)perylene	ND	0.34	1.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Indeno(1,2,3-cd)pyrene	ND	0.43	3.0	D	µg/L	10	9/27/2021 9:57:00 PM	62703
Surr: Nitrobenzene-d5	0	0	21.9-89.8	SD	%Rec	10	9/27/2021 9:57:00 PM	62703

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-66
Project: Additional Well Install
Collection Date: 9/17/2021 12:45:00 PM
Lab ID: 2109A01-009D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: **DAM**	
Surr: 2,4,6-Tribromophenol	0	0	23.4-71.6	SD	%Rec	10	9/27/2021 9:57:00 PM	62703
Surr: 2-Fluorobiphenyl	0	0	15-84.5	SD	%Rec	10	9/27/2021 9:57:00 PM	62703
Surr: 4-Terphenyl-d14	0	0	73.1-152	SD	%Rec	10	9/27/2021 9:57:00 PM	62703

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-66
Project: Additional Well Install
Collection Date: 9/17/2021 12:45:00 PM
Lab ID: 2109A01-009E
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Fluoride	ND	0.20	0.50		mg/L	5	9/18/2021 4:40:37 PM	R81380
Chloride	320	5.0	10	*	mg/L	20	9/18/2021 4:53:31 PM	R81380
Nitrogen, Nitrite (As N)	ND	0.027	0.50		mg/L	5	9/18/2021 4:40:37 PM	R81380
Nitrogen, Nitrate (As N)	ND	0.050	0.50		mg/L	5	9/18/2021 4:40:37 PM	R81380
Sulfate	1.4	1.2	2.5	J	mg/L	5	9/18/2021 4:40:37 PM	R81380
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	782.3	20.00	20.00		mg/L Ca	1	9/23/2021 10:09:30 PM	R81582
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	9/23/2021 10:09:30 PM	R81582
Total Alkalinity (as CaCO3)	782.3	20.00	20.00		mg/L Ca	1	9/23/2021 10:09:30 PM	R81582

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Qualifiers:

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-66
Project: Additional Well Install
Collection Date: 9/17/2021 12:45:00 PM
Lab ID: 2109A01-009F
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Barium	1.4	0.016	0.030		mg/L	10	9/24/2021 2:02:10 PM	62792
Beryllium	ND	0.00088	0.0020		mg/L	1	9/24/2021 2:00:51 PM	62792
Cadmium	ND	0.0015	0.0020		mg/L	1	9/24/2021 2:00:51 PM	62792
Calcium	87	0.11	1.0		mg/L	1	9/24/2021 2:00:51 PM	62792
Chromium	0.0027	0.0021	0.0060	J	mg/L	1	9/24/2021 2:00:51 PM	62792
Cobalt	0.010	0.0024	0.0060		mg/L	1	9/24/2021 2:00:51 PM	62792
Iron	6.9	0.13	0.50	*	mg/L	10	9/24/2021 2:02:10 PM	62792
Magnesium	22	0.067	1.0		mg/L	1	9/24/2021 2:00:51 PM	62792
Manganese	2.6	0.0081	0.020	*	mg/L	10	9/24/2021 2:02:10 PM	62792
Nickel	0.38	0.0033	0.010	*	mg/L	1	9/24/2021 2:00:51 PM	62792
Potassium	0.97	0.16	1.0	J	mg/L	1	9/24/2021 2:00:51 PM	62792
Silver	ND	0.0013	0.0050		mg/L	1	9/24/2021 2:00:51 PM	62792
Sodium	470	1.9	10		mg/L	10	9/24/2021 2:02:10 PM	62792
Vanadium	0.0083	0.0024	0.050	J	mg/L	1	9/24/2021 2:00:51 PM	62792
Zinc	0.0095	0.0064	0.010	J	mg/L	1	9/24/2021 2:00:51 PM	62792
EPA 200.8: METALS							Analyst: **bcv**	
Antimony	ND	0.0022	0.0050		mg/L	5	9/30/2021 3:50:42 PM	62792
Arsenic	0.0048	0.00063	0.0050	J	mg/L	5	9/30/2021 3:50:42 PM	62792
Lead	0.0090	0.00031	0.0025		mg/L	5	9/30/2021 3:50:42 PM	62792
Selenium	ND	0.0019	0.0050		mg/L	5	9/30/2021 3:50:42 PM	62792
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 1:11:02 PM	62854

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: OW-66
Project: Additional Well Install
Collection Date: 9/17/2021 12:45:00 PM
Lab ID: 2109A01-009G
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Barium	1.1	0.0056	0.010		mg/L	5	9/21/2021 12:28:48 PM	B81434
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2021 12:27:20 PM	B81434
Cadmium	ND	0.0012	0.0020		mg/L	1	9/21/2021 12:27:20 PM	B81434
Chromium	ND	0.0020	0.0060		mg/L	1	9/21/2021 12:27:20 PM	B81434
Cobalt	0.0084	0.0024	0.0060		mg/L	1	9/21/2021 12:27:20 PM	B81434
Iron	3.7	0.052	0.10	*	mg/L	5	9/21/2021 12:28:48 PM	B81434
Manganese	2.4	0.0029	0.010	*	mg/L	5	9/21/2021 12:28:48 PM	B81434
Nickel	0.35	0.0033	0.010	*	mg/L	1	9/21/2021 12:27:20 PM	B81434
Silver	ND	0.0013	0.0050		mg/L	1	9/21/2021 12:27:20 PM	B81434
Vanadium	0.0023	0.0020	0.050	J	mg/L	1	9/21/2021 12:27:20 PM	B81434
Zinc	ND	0.0060	0.010		mg/L	1	9/21/2021 12:27:20 PM	B81434
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Antimony	ND	0.0044	0.010		mg/L	10	9/29/2021 4:11:51 PM	C81686
Arsenic	0.0037	0.0012	0.010	J	mg/L	10	9/29/2021 4:11:51 PM	C81686
Lead	ND	0.00057	0.0050		mg/L	10	9/29/2021 4:11:51 PM	C81686
Selenium	ND	0.0034	0.010		mg/L	10	9/29/2021 4:11:51 PM	C81686
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 1:13:28 PM	62854

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021
Lab ID: 2109A01-010A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	1200	23	100		µg/L	100	9/27/2021 5:22:19 PM	R81622
Toluene	13	0.20	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Ethylbenzene	1100	11	50		µg/L	10	9/23/2021 7:15:37 PM	R81542
Methyl tert-butyl ether (MTBE)	7800	20	50		µg/L	10	9/23/2021 7:15:37 PM	R81542
1,2,4-Trimethylbenzene	780	6.1	50		µg/L	10	9/23/2021 7:15:37 PM	R81542
1,3,5-Trimethylbenzene	30	0.18	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,2-Dichloroethane (EDC)	1.5	0.25	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Naphthalene	77	0.50	2.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1-Methylnaphthalene	43	0.84	4.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
2-Methylnaphthalene	54	0.69	4.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Acetone	19	2.5	10		µg/L	1	9/23/2021 7:44:58 AM	R81501
Bromobenzene	ND	0.28	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Bromodichloromethane	0.49	0.20	1.0	J	µg/L	1	9/23/2021 7:44:58 AM	R81501
Bromoform	ND	0.31	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Bromomethane	ND	0.85	3.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
2-Butanone	8.0	2.0	10	J	µg/L	1	9/23/2021 7:44:58 AM	R81501
Carbon disulfide	ND	0.59	10		µg/L	1	9/23/2021 7:44:58 AM	R81501
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Chloroethane	ND	0.38	2.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Chloroform	ND	0.13	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Chloromethane	1.3	0.41	3.0	J	µg/L	1	9/23/2021 7:44:58 AM	R81501
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
cis-1,2-DCE	17	0.39	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Dibromochloromethane	0.49	0.28	1.0	J	µg/L	1	9/23/2021 7:44:58 AM	R81501
Dibromomethane	ND	0.31	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,2-Dichlorobenzene	0.57	0.15	1.0	J	µg/L	1	9/23/2021 7:44:58 AM	R81501
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,1-Dichloroethane	32	0.27	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,1-Dichloroethene	44	0.20	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,2-Dichloropropane	0.54	0.20	1.0	J	µg/L	1	9/23/2021 7:44:58 AM	R81501
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501

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	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021
Lab ID: 2109A01-010A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
2-Hexanone	ND	1.8	10		µg/L	1	9/23/2021 7:44:58 AM	R81501
Isopropylbenzene	12	0.18	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
4-Isopropyltoluene	2.5	0.20	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/23/2021 7:44:58 AM	R81501
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
n-Butylbenzene	4.0	0.25	3.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
n-Propylbenzene	28	0.18	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
sec-Butylbenzene	1.9	0.14	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Styrene	0.21	0.14	1.0	J	µg/L	1	9/23/2021 7:44:58 AM	R81501
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
trans-1,2-DCE	0.32	0.19	1.0	J	µg/L	1	9/23/2021 7:44:58 AM	R81501
trans-1,3-Dichloropropene	0.90	0.34	1.0	J	µg/L	1	9/23/2021 7:44:58 AM	R81501
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/23/2021 7:44:58 AM	R81501
Vinyl chloride	0.41	0.32	1.0	J	µg/L	1	9/23/2021 7:44:58 AM	R81501
Xylenes, Total	260	0.37	1.5		µg/L	1	9/23/2021 7:44:58 AM	R81501
Surr: 1,2-Dichloroethane-d4	100	0	70-130		%Rec	1	9/23/2021 7:44:58 AM	R81501
Surr: 4-Bromofluorobenzene	76.0	0	70-130		%Rec	1	9/23/2021 7:44:58 AM	R81501
Surr: Dibromofluoromethane	89.5	0	70-130		%Rec	1	9/23/2021 7:44:58 AM	R81501
Surr: Toluene-d8	106	0	70-130		%Rec	1	9/23/2021 7:44:58 AM	R81501
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	5.0	0.012	0.050		mg/L	1	9/23/2021 7:44:58 AM	R81501
Surr: 4-Bromofluorobenzene	81.4	0	70-130		%Rec	1	9/23/2021 7:44:58 AM	R81501

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021
Lab ID: 2109A01-010C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: **SB**	
Diesel Range Organics (DRO)	2.6	0.016	0.064		mg/L	1	9/28/2021 4:27:27 PM	62729
Motor Oil Range Organics (MRO)	0.090	0.052	0.080		mg/L	1	9/28/2021 4:27:27 PM	62729
Surr: DNOP	90.1	0	15-142		%Rec	1	9/28/2021 4:27:27 PM	62729

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021
Lab ID: 2109A01-010D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Aniline	ND	0.50	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Azobenzene	ND	0.55	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Benzoic acid	ND	1.1	20		µg/L	1	9/25/2021 12:40:37 AM	62689
Benzyl alcohol	ND	0.68	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Bis(2-chloroethoxy)methane	ND	0.41	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Bis(2-chloroethyl)ether	ND	0.63	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Bis(2-chloroisopropyl)ether	ND	0.54	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	9/25/2021 12:40:37 AM	62689
4-Bromophenyl phenyl ether	ND	0.77	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Butyl benzyl phthalate	ND	0.74	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Carbazole	ND	0.56	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
4-Chloro-3-methylphenol	ND	0.41	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
4-Chloroaniline	ND	0.53	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
2-Chloronaphthalene	ND	0.59	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
2-Chlorophenol	ND	0.62	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
4-Chlorophenyl phenyl ether	ND	0.57	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	9/25/2021 12:40:37 AM	62689
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	9/25/2021 12:40:37 AM	62689
Dibenz(a,h)anthracene	ND	0.83	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Dibenzofuran	ND	0.38	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
1,2-Dichlorobenzene	ND	0.75	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
1,3-Dichlorobenzene	ND	0.64	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
3,3´-Dichlorobenzidine	ND	0.51	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Diethyl phthalate	ND	3.9	10		µg/L	1	9/25/2021 12:40:37 AM	62689
Dimethyl phthalate	ND	2.0	10		µg/L	1	9/25/2021 12:40:37 AM	62689
2,4-Dichlorophenol	ND	0.58	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
2,4-Dimethylphenol	3.9	0.97	5.0	J	µg/L	1	9/25/2021 12:40:37 AM	62689
4,6-Dinitro-2-methylphenol	ND	0.53	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
2,4-Dinitrotoluene	ND	0.62	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
2,6-Dinitrotoluene	ND	0.58	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Hexachlorobenzene	ND	0.66	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Hexachlorobutadiene	ND	0.82	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Hexachlorocyclopentadiene	ND	0.65	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Hexachloroethane	ND	0.45	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Isophorone	ND	0.40	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
2-Methylphenol	ND	0.51	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
N-Nitrosodi-n-propylamine	ND	0.48	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021
Lab ID: 2109A01-010D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
N-Nitrosodimethylamine	ND	0.36	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
N-Nitrosodiphenylamine	ND	1.0	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
2-Nitroaniline	ND	0.31	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
3-Nitroaniline	ND	1.6	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
4-Nitroaniline	ND	0.47	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Nitrobenzene	ND	0.51	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
2-Nitrophenol	ND	0.47	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
4-Nitrophenol	ND	0.28	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Pentachlorophenol	ND	0.59	20		µg/L	1	9/25/2021 12:40:37 AM	62689
Phenol	8.2	0.33	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Pyridine	ND	0.93	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
1,2,4-Trichlorobenzene	ND	0.58	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
2,4,5-Trichlorophenol	ND	0.62	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	9/25/2021 12:40:37 AM	62689
Surr: 2-Fluorophenol	48.1	0	15-87		%Rec	1	9/25/2021 12:40:37 AM	62689
Surr: Phenol-d5	33.8	0	15-67.5		%Rec	1	9/25/2021 12:40:37 AM	62689
Surr: 2,4,6-Tribromophenol	76.2	0	15-122		%Rec	1	9/25/2021 12:40:37 AM	62689
Surr: Nitrobenzene-d5	56.8	0	15-103		%Rec	1	9/25/2021 12:40:37 AM	62689
Surr: 2-Fluorobiphenyl	55.9	0	15-103		%Rec	1	9/25/2021 12:40:37 AM	62689
Surr: 4-Terphenyl-d14	81.2	0	45-137		%Rec	1	9/25/2021 12:40:37 AM	62689
EPA METHOD 8270SIM							Analyst: **DAM**	
Naphthalene	42	0.34	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
1-Methylnaphthalene	27	0.24	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
2-Methylnaphthalene	19	0.34	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Acenaphthylene	ND	0.43	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Acenaphthene	3.0	0.31	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Fluorene	3.4	0.31	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Phenanthrene	1.2	0.57	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Anthracene	ND	0.34	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Fluoranthene	ND	1.0	2.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Pyrene	ND	1.6	2.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Benz(a)anthracene	ND	0.36	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Chrysene	ND	0.24	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Benzo(b)fluoranthene	ND	0.57	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Benzo(k)fluoranthene	ND	0.36	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Benzo(a)pyrene	ND	0.34	0.70	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Dibenz(a,h)anthracene	ND	0.34	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Benzo(g,h,i)perylene	ND	0.34	1.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Indeno(1,2,3-cd)pyrene	ND	0.43	3.0	D	µg/L	10	9/27/2021 10:41:00 PM	62703
Surr: Nitrobenzene-d5	0	0	21.9-89.8	SD	%Rec	10	9/27/2021 10:41:00 PM	62703

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021
Lab ID: 2109A01-010D
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: **DAM**	
Surr: 2,4,6-Tribromophenol	0	0	23.4-71.6	SD	%Rec	10	9/27/2021 10:41:00 PM	62703
Surr: 2-Fluorobiphenyl	0	0	15-84.5	SD	%Rec	10	9/27/2021 10:41:00 PM	62703
Surr: 4-Terphenyl-d14	0	0	73.1-152	SD	%Rec	10	9/27/2021 10:41:00 PM	62703

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021
Lab ID: 2109A01-010E
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Fluoride	0.65	0.20	0.50		mg/L	5	9/18/2021 5:06:25 PM	R81380
Chloride	220	5.0	10		mg/L	20	9/18/2021 5:19:18 PM	R81380
Nitrogen, Nitrite (As N)	ND	0.027	0.50		mg/L	5	9/18/2021 5:06:25 PM	R81380
Nitrogen, Nitrate (As N)	ND	0.050	0.50		mg/L	5	9/18/2021 5:06:25 PM	R81380
Sulfate	62	1.2	2.5		mg/L	5	9/18/2021 5:06:25 PM	R81380
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	623.0	20.00	20.00		mg/L Ca	1	9/23/2021 10:37:02 PM	R81582
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	9/23/2021 10:37:02 PM	R81582
Total Alkalinity (as CaCO3)	623.0	20.00	20.00		mg/L Ca	1	9/23/2021 10:37:02 PM	R81582

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	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021
Lab ID: 2109A01-010F
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Barium	2.0	0.016	0.030		mg/L	10	9/24/2021 2:04:56 PM	62792
Beryllium	0.0019	0.00088	0.0020	J	mg/L	1	9/24/2021 2:03:33 PM	62792
Cadmium	ND	0.0015	0.0020		mg/L	1	9/24/2021 2:03:33 PM	62792
Calcium	140	1.1	10		mg/L	10	9/24/2021 2:04:56 PM	62792
Chromium	0.020	0.0021	0.0060		mg/L	1	9/24/2021 2:03:33 PM	62792
Cobalt	0.015	0.0024	0.0060		mg/L	1	9/24/2021 2:03:33 PM	62792
Iron	17	0.26	1.0	*	mg/L	20	9/28/2021 11:23:11 AM	62792
Magnesium	36	0.067	1.0		mg/L	1	9/24/2021 2:03:33 PM	62792
Manganese	2.9	0.0081	0.020	*	mg/L	10	9/24/2021 2:04:56 PM	62792
Nickel	0.026	0.0033	0.010		mg/L	1	9/24/2021 2:03:33 PM	62792
Potassium	5.1	0.16	1.0		mg/L	1	9/24/2021 2:03:33 PM	62792
Silver	ND	0.0013	0.0050		mg/L	1	9/24/2021 2:03:33 PM	62792
Sodium	320	1.9	10		mg/L	10	9/24/2021 2:04:56 PM	62792
Vanadium	0.033	0.0024	0.050	J	mg/L	1	9/24/2021 2:03:33 PM	62792
Zinc	0.036	0.0064	0.010		mg/L	1	9/24/2021 2:03:33 PM	62792
EPA 200.8: METALS							Analyst: **bcv**	
Antimony	ND	0.0022	0.0050		mg/L	5	9/30/2021 3:53:08 PM	62792
Arsenic	0.0063	0.00063	0.0050		mg/L	5	9/30/2021 3:53:08 PM	62792
Lead	0.046	0.00031	0.0025	*	mg/L	5	9/30/2021 3:53:08 PM	62792
Selenium	0.0063	0.0019	0.0050		mg/L	5	9/30/2021 3:53:08 PM	62792
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 1:15:54 PM	62854

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: DUP-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021
Lab ID: 2109A01-010G
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Barium	1.2	0.0056	0.010		mg/L	5	9/21/2021 12:36:41 PM	B81434
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2021 12:35:14 PM	B81434
Cadmium	ND	0.0012	0.0020		mg/L	1	9/21/2021 12:35:14 PM	B81434
Chromium	ND	0.0020	0.0060		mg/L	1	9/21/2021 12:35:14 PM	B81434
Cobalt	0.0053	0.0024	0.0060	J	mg/L	1	9/21/2021 12:35:14 PM	B81434
Iron	0.51	0.010	0.020	*	mg/L	1	9/21/2021 12:35:14 PM	B81434
Manganese	2.4	0.0029	0.010	*	mg/L	5	9/21/2021 12:36:41 PM	B81434
Nickel	0.0068	0.0033	0.010	J	mg/L	1	9/21/2021 12:35:14 PM	B81434
Silver	ND	0.0013	0.0050		mg/L	1	9/21/2021 12:35:14 PM	B81434
Vanadium	ND	0.0020	0.050		mg/L	1	9/21/2021 12:35:14 PM	B81434
Zinc	0.011	0.0060	0.010		mg/L	1	9/21/2021 12:35:14 PM	B81434
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Antimony	ND	0.0044	0.010		mg/L	10	9/29/2021 4:14:31 PM	C81686
Arsenic	0.0026	0.0012	0.010	J	mg/L	10	9/29/2021 4:14:31 PM	C81686
Lead	ND	0.00057	0.0050		mg/L	10	9/29/2021 4:14:31 PM	C81686
Selenium	ND	0.0034	0.010		mg/L	10	9/29/2021 4:14:31 PM	C81686
EPA METHOD 245.1: MERCURY							Analyst: **ags**	
Mercury	ND	0.00012	0.00020		mg/L	1	9/28/2021 1:18:19 PM	62854

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: FB-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021 12:45:00 PM
Lab ID: 2109A01-011A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	0.42	0.23	1.0	J	µg/L	1	9/23/2021 8:13:41 AM	R81501
Toluene	ND	0.20	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,2,4-Trimethylbenzene	0.16	0.12	1.0	J	µg/L	1	9/23/2021 8:13:41 AM	R81501
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Naphthalene	0.63	0.50	2.0	J	µg/L	1	9/23/2021 8:13:41 AM	R81501
1-Methylnaphthalene	0.94	0.84	4.0	J	µg/L	1	9/23/2021 8:13:41 AM	R81501
2-Methylnaphthalene	1.0	0.69	4.0	J	µg/L	1	9/23/2021 8:13:41 AM	R81501
Acetone	7.3	2.5	10	J	µg/L	1	9/23/2021 8:13:41 AM	R81501
Bromobenzene	ND	0.28	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Bromodichloromethane	ND	0.20	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Bromoform	ND	0.31	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Bromomethane	ND	0.85	3.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
2-Butanone	2.2	2.0	10	J	µg/L	1	9/23/2021 8:13:41 AM	R81501
Carbon disulfide	ND	0.59	10		µg/L	1	9/23/2021 8:13:41 AM	R81501
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Chloroethane	ND	0.38	2.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Chloroform	ND	0.13	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Chloromethane	ND	0.41	3.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Dibromochloromethane	ND	0.28	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Dibromomethane	ND	0.31	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501

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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: FB-09-17-21
Project: Additional Well Install
Collection Date: 9/17/2021 12:45:00 PM
Lab ID: 2109A01-011A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
2-Hexanone	ND	1.8	10		µg/L	1	9/23/2021 8:13:41 AM	R81501
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/23/2021 8:13:41 AM	R81501
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Styrene	ND	0.14	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/23/2021 8:13:41 AM	R81501
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/23/2021 8:13:41 AM	R81501
Surr: 1,2-Dichloroethane-d4	112	0	70-130		%Rec	1	9/23/2021 8:13:41 AM	R81501
Surr: 4-Bromofluorobenzene	104	0	70-130		%Rec	1	9/23/2021 8:13:41 AM	R81501
Surr: Dibromofluoromethane	102	0	70-130		%Rec	1	9/23/2021 8:13:41 AM	R81501
Surr: Toluene-d8	106	0	70-130		%Rec	1	9/23/2021 8:13:41 AM	R81501
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **mb**	
Gasoline Range Organics (GRO)	ND	0.012	0.050		mg/L	1	9/23/2021 8:13:41 AM	R81501
Surr: 4-Bromofluorobenzene	105	0	70-130		%Rec	1	9/23/2021 8:13:41 AM	R81501

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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: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: Trip Blank
Project: Additional Well Install
Collection Date:
Lab ID: 2109A01-012A
Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Benzene	ND	0.23	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Toluene	ND	0.20	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Naphthalene	ND	0.50	2.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Acetone	ND	2.5	10		µg/L	1	9/23/2021 8:42:24 AM	R81501
Bromobenzene	ND	0.28	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Bromodichloromethane	ND	0.20	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Bromoform	ND	0.31	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Bromomethane	ND	0.85	3.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
2-Butanone	ND	2.0	10		µg/L	1	9/23/2021 8:42:24 AM	R81501
Carbon disulfide	ND	0.59	10		µg/L	1	9/23/2021 8:42:24 AM	R81501
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Chloroethane	ND	0.38	2.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Chloroform	ND	0.13	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Chloromethane	ND	0.41	3.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Dibromochloromethane	ND	0.28	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Dibromomethane	ND	0.31	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501

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
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S	% Recovery outside of range due to dilution or matrix

Analytical Report
Lab Order: **2109A01**
Date Reported: **10/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: Trip Blank
Project: Additional Well Install
Collection Date:
Lab ID: 2109A01-012A
Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **mb**	
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
2-Hexanone	ND	1.8	10		µg/L	1	9/23/2021 8:42:24 AM	R81501
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/23/2021 8:42:24 AM	R81501
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Styrene	ND	0.14	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/23/2021 8:42:24 AM	R81501
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/23/2021 8:42:24 AM	R81501
Surr: 1,2-Dichloroethane-d4	112	0	70-130		%Rec	1	9/23/2021 8:42:24 AM	R81501
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	9/23/2021 8:42:24 AM	R81501
Surr: Dibromofluoromethane	101	0	70-130		%Rec	1	9/23/2021 8:42:24 AM	R81501
Surr: Toluene-d8	105	0	70-130		%Rec	1	9/23/2021 8:42:24 AM	R81501

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		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **MB-62792** SampType: **MBLK** TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW** Batch ID: **62792** RunNo: **81569**
Prep Date: **9/23/2021** Analysis Date: **9/24/2021** SeqNo: **2882424** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0030								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Silver	ND	0.0050								
Sodium	ND	1.0								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: **LLLCS-62792** SampType: **LCSLL** TestCode: **EPA Method 200.7: Metals**
Client ID: **BatchQC** Batch ID: **62792** RunNo: **81569**
Prep Date: **9/23/2021** Analysis Date: **9/24/2021** SeqNo: **2882426** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0027	0.0030	0.002000	0	137	50	150			J
Beryllium	0.0017	0.0020	0.002000	0	84.7	50	150			J
Cadmium	0.0017	0.0020	0.002000	0	87.1	50	150			J
Calcium	0.49	1.0	0.5000	0	98.0	50	150			J
Chromium	0.0065	0.0060	0.006000	0	108	50	150			
Cobalt	0.0072	0.0060	0.006000	0	120	50	150			
Iron	0.024	0.050	0.02000	0	118	50	150			J
Magnesium	0.49	1.0	0.5000	0	98.5	50	150			J
Manganese	0.0020	0.0020	0.002000	0	99.8	50	150			J
Nickel	0.0046	0.010	0.005000	0	92.4	50	150			J
Potassium	0.55	1.0	0.5000	0	111	50	150			J
Silver	0.0047	0.0050	0.005000	0	93.6	50	150			J
Sodium	0.53	1.0	0.5000	0	106	50	150			J
Vanadium	0.0096	0.050	0.01000	0	95.8	50	150			J
Zinc	0.012	0.010	0.01000	0	117	50	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **LCS-62792** SampType: **LCS** TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW** Batch ID: **62792** RunNo: **81569**
Prep Date: **9/23/2021** Analysis Date: **9/24/2021** SeqNo: **2882428** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0030	0.5000	0	101	85	115			
Beryllium	0.52	0.0020	0.5000	0	103	85	115			
Cadmium	0.50	0.0020	0.5000	0	99.5	85	115			
Calcium	50	1.0	50.00	0	99.5	85	115			
Chromium	0.49	0.0060	0.5000	0	98.5	85	115			
Cobalt	0.48	0.0060	0.5000	0	96.5	85	115			
Iron	0.52	0.050	0.5000	0	104	85	115			
Magnesium	49	1.0	50.00	0	99.0	85	115			
Manganese	0.48	0.0020	0.5000	0	96.9	85	115			
Nickel	0.48	0.010	0.5000	0	96.2	85	115			
Potassium	51	1.0	50.00	0	101	85	115			
Silver	0.10	0.0050	0.1000	0	101	85	115			
Sodium	51	1.0	50.00	0	101	85	115			
Vanadium	0.50	0.050	0.5000	0	101	85	115			
Zinc	0.49	0.010	0.5000	0	97.8	85	115			

Sample ID: **2109A01-001FMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **EB-09-17-21** Batch ID: **62792** RunNo: **81569**
Prep Date: **9/23/2021** Analysis Date: **9/24/2021** SeqNo: **2882478** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.53	0.0030	0.5000	0	106	70	130			
Beryllium	0.53	0.0020	0.5000	0	105	70	130			
Cadmium	0.53	0.0020	0.5000	0	105	70	130			
Calcium	51	1.0	50.00	0	101	70	130			
Chromium	0.53	0.0060	0.5000	0	106	70	130			
Cobalt	0.52	0.0060	0.5000	0	103	70	130			
Iron	0.53	0.050	0.5000	0	105	70	130			
Magnesium	50	1.0	50.00	0	99.1	70	130			
Manganese	0.51	0.0020	0.5000	0	102	70	130			
Nickel	0.51	0.010	0.5000	0	102	70	130			
Potassium	49	1.0	50.00	0	98.4	70	130			
Silver	0.10	0.0050	0.1000	0	104	70	130			
Sodium	52	1.0	50.00	0	104	70	130			
Vanadium	0.53	0.050	0.5000	0	105	70	130			
Zinc	0.50	0.010	0.5000	0	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **2109A01-001FMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **EB-09-17-21** Batch ID: **62792** RunNo: **81569**
Prep Date: **9/23/2021** Analysis Date: **9/24/2021** SeqNo: **2882479** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.53	0.0030	0.5000	0	106	70	130	0.368	20	
Beryllium	0.52	0.0020	0.5000	0	104	70	130	1.20	20	
Cadmium	0.52	0.0020	0.5000	0	104	70	130	0.972	20	
Calcium	51	1.0	50.00	0	101	70	130	0.298	20	
Chromium	0.53	0.0060	0.5000	0	105	70	130	0.869	20	
Cobalt	0.51	0.0060	0.5000	0	102	70	130	0.755	20	
Iron	0.53	0.050	0.5000	0	106	70	130	0.190	20	
Magnesium	49	1.0	50.00	0	97.3	70	130	1.80	20	
Manganese	0.51	0.0020	0.5000	0	101	70	130	1.10	20	
Nickel	0.50	0.010	0.5000	0	101	70	130	0.940	20	
Potassium	48	1.0	50.00	0	96.6	70	130	1.83	20	
Silver	0.10	0.0050	0.1000	0	103	70	130	0.804	20	
Sodium	51	1.0	50.00	0	103	70	130	1.50	20	
Vanadium	0.52	0.050	0.5000	0	103	70	130	1.90	20	
Zinc	0.50	0.010	0.5000	0	100	70	130	0.0115	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **MB** SampType: **MBLK** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW** Batch ID: **B81434** RunNo: **81434**
Prep Date: Analysis Date: **9/21/2021** SeqNo: **2876913** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: **LLLCS** SampType: **LCSLL** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC** Batch ID: **B81434** RunNo: **81434**
Prep Date: Analysis Date: **9/21/2021** SeqNo: **2876914** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0027	0.0020	0.002000	0	134	50	150			
Beryllium	0.0022	0.0020	0.002000	0	109	50	150			
Cadmium	0.0020	0.0020	0.002000	0	101	50	150			
Chromium	0.0061	0.0060	0.006000	0	101	50	150			
Cobalt	0.0059	0.0060	0.006000	0	97.9	50	150			J
Iron	0.019	0.020	0.02000	0	93.2	50	150			J
Manganese	0.0020	0.0020	0.002000	0	102	50	150			
Nickel	0.0045	0.010	0.005000	0	90.4	50	150			J
Silver	0.0048	0.0050	0.005000	0	95.8	50	150			J
Vanadium	0.0097	0.050	0.01000	0	96.6	50	150			J
Zinc	0.012	0.010	0.01000	0	122	50	150			

Sample ID: **LCS** SampType: **LCS** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW** Batch ID: **B81434** RunNo: **81434**
Prep Date: Analysis Date: **9/21/2021** SeqNo: **2876915** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.51	0.0020	0.5000	0	101	85	115			
Beryllium	0.51	0.0020	0.5000	0	102	85	115			
Cadmium	0.50	0.0020	0.5000	0	100	85	115			
Chromium	0.50	0.0060	0.5000	0	99.6	85	115			
Cobalt	0.49	0.0060	0.5000	0	98.2	85	115			
Iron	0.51	0.020	0.5000	0	101	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **LCS** SampType: **LCS** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW** Batch ID: **B81434** RunNo: **81434**
Prep Date: Analysis Date: **9/21/2021** SeqNo: **2876915** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.49	0.0020	0.5000	0	99.0	85	115			
Nickel	0.48	0.010	0.5000	0	97.0	85	115			
Silver	0.10	0.0050	0.1000	0	102	85	115			
Vanadium	0.52	0.050	0.5000	0	104	85	115			
Zinc	0.50	0.010	0.5000	0	100	85	115			

Sample ID: **2109A01-001GMS** SampType: **MS** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **EB-09-17-21** Batch ID: **B81434** RunNo: **81434**
Prep Date: Analysis Date: **9/21/2021** SeqNo: **2876945** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.47	0.0020	0.5000	0	94.8	70	130			
Beryllium	0.51	0.0020	0.5000	0	102	70	130			
Cadmium	0.48	0.0020	0.5000	0	96.5	70	130			
Chromium	0.47	0.0060	0.5000	0	93.3	70	130			
Cobalt	0.46	0.0060	0.5000	0	92.6	70	130			
Iron	0.48	0.020	0.5000	0	96.3	70	130			
Manganese	0.47	0.0020	0.5000	0	94.0	70	130			
Nickel	0.47	0.010	0.5000	0	93.2	70	130			
Silver	0.10	0.0050	0.1000	0	99.6	70	130			
Vanadium	0.50	0.050	0.5000	0	99.2	70	130			
Zinc	0.50	0.010	0.5000	0.007132	98.9	70	130			

Sample ID: **2109A01-001GMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **EB-09-17-21** Batch ID: **B81434** RunNo: **81434**
Prep Date: Analysis Date: **9/21/2021** SeqNo: **2876949** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	96.3	70	130	1.50	20	
Beryllium	0.51	0.0020	0.5000	0	103	70	130	1.33	20	
Cadmium	0.49	0.0020	0.5000	0	98.2	70	130	1.73	20	
Chromium	0.47	0.0060	0.5000	0	94.0	70	130	0.747	20	
Cobalt	0.47	0.0060	0.5000	0	93.4	70	130	0.916	20	
Iron	0.48	0.020	0.5000	0	95.6	70	130	0.765	20	
Manganese	0.47	0.0020	0.5000	0	94.8	70	130	0.880	20	
Nickel	0.47	0.010	0.5000	0	94.4	70	130	1.27	20	
Silver	0.10	0.0050	0.1000	0	101	70	130	1.05	20	
Vanadium	0.49	0.050	0.5000	0	98.7	70	130	0.534	20	
Zinc	0.52	0.010	0.5000	0.007132	102	70	130	3.07	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **MB-62792** SampType: **MBLK** TestCode: **EPA 200.8: Metals**
Client ID: **PBW** Batch ID: **62792** RunNo: **81552**
Prep Date: **9/23/2021** Analysis Date: **9/24/2021** SeqNo: **2881768** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: **MSLLLCS-62792** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC** Batch ID: **62792** RunNo: **81552**
Prep Date: **9/23/2021** Analysis Date: **9/24/2021** SeqNo: **2881769** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0012	0.0010	0.001000	0	117	50	150			
Arsenic	0.00093	0.0010	0.001000	0	92.8	50	150			J
Lead	0.00051	0.00050	0.0005000	0	102	50	150			
Selenium	0.00085	0.0010	0.001000	0	84.5	50	150			J

Sample ID: **MSLCS-62792** SampType: **LCS** TestCode: **EPA 200.8: Metals**
Client ID: **LCSW** Batch ID: **62792** RunNo: **81552**
Prep Date: **9/23/2021** Analysis Date: **9/24/2021** SeqNo: **2881770** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.027	0.0010	0.02500	0	107	85	115			
Arsenic	0.024	0.0010	0.02500	0	95.6	85	115			
Lead	0.012	0.00050	0.01250	0	98.2	85	115			
Selenium	0.025	0.0010	0.02500	0	101	85	115			

Sample ID: **2109A01-002FMSLL** SampType: **MS** TestCode: **EPA 200.8: Metals**
Client ID: **MKTF-17R** Batch ID: **62792** RunNo: **81711**
Prep Date: **9/23/2021** Analysis Date: **9/30/2021** SeqNo: **2888684** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0050	0.02500	0	95.4	70	130			
Arsenic	0.029	0.0050	0.02500	0.005548	94.0	70	130			
Lead	0.012	0.0025	0.01250	0.0003855	92.8	70	130			
Selenium	0.024	0.0050	0.02500	0	95.0	70	130			

Sample ID: **2109A01-002FMSDL** SampType: **MSD** TestCode: **EPA 200.8: Metals**
Client ID: **MKTF-17R** Batch ID: **62792** RunNo: **81711**
Prep Date: **9/23/2021** Analysis Date: **9/30/2021** SeqNo: **2888685** Units: **mg/L**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **2109A01-002FMSDL** SampType: **MSD** TestCode: **EPA 200.8: Metals**
Client ID: **MKTF-17R** Batch ID: **62792** RunNo: **81711**
Prep Date: **9/23/2021** Analysis Date: **9/30/2021** SeqNo: **2888685** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0050	0.02500	0	96.4	70	130	1.10	20	
Arsenic	0.027	0.0050	0.02500	0.005548	87.5	70	130	5.78	20	
Lead	0.011	0.0025	0.01250	0.0003855	85.7	70	130	7.66	20	
Selenium	0.021	0.0050	0.02500	0	85.4	70	130	10.6	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109A01**

08-Oct-21

Client: Marathon

Project: Additional Well Install

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **C81686**	RunNo: **81686**
Prep Date:	Analysis Date: **9/29/2021**	SeqNo: **2887260** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: **LCSLL**	SampType: **LCSLL**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **C81686**	RunNo: **81686**
Prep Date:	Analysis Date: **9/29/2021**	SeqNo: **2887261** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0010	0.0010	0.001000	0	104	50	150			
Arsenic	0.00098	0.0010	0.001000	0	98.3	50	150			J
Lead	0.00052	0.00050	0.0005000	0	104	50	150			
Selenium	0.00082	0.0010	0.001000	0	81.6	50	150			J

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **C81686**	RunNo: **81686**
Prep Date:	Analysis Date: **9/29/2021**	SeqNo: **2887262** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	96.6	85	115			
Arsenic	0.025	0.0010	0.02500	0	98.4	85	115			
Lead	0.012	0.00050	0.01250	0	98.1	85	115			
Selenium	0.022	0.0010	0.02500	0	88.9	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109A01**

08-Oct-21

Client: Marathon

Project: Additional Well Install

Sample ID: **MB-62854** SampType: **MBLK** TestCode: **EPA Method 245.1: Mercury**
Client ID: **PBW** Batch ID: **62854** RunNo: **81625**
Prep Date: **9/27/2021** Analysis Date: **9/28/2021** SeqNo: **2884681** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LLLCS-62854** SampType: **LCSLL** TestCode: **EPA Method 245.1: Mercury**
Client ID: **BatchQC** Batch ID: **62854** RunNo: **81625**
Prep Date: **9/27/2021** Analysis Date: **9/28/2021** SeqNo: **2884682** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00016	0.00020	0.0001500	0	104	50	150			J

Sample ID: **LCS-62854** SampType: **LCS** TestCode: **EPA Method 245.1: Mercury**
Client ID: **LCSW** Batch ID: **62854** RunNo: **81625**
Prep Date: **9/27/2021** Analysis Date: **9/28/2021** SeqNo: **2884683** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	97.8	85	115			

Sample ID: **2109A01-003FMS** SampType: **MS** TestCode: **EPA Method 245.1: Mercury**
Client ID: **MKTF-18R** Batch ID: **62854** RunNo: **81625**
Prep Date: **9/27/2021** Analysis Date: **9/28/2021** SeqNo: **2884717** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0043	0.00020	0.005000	0	85.7	75	125			

Sample ID: **2109A01-003FMSD** SampType: **MSD** TestCode: **EPA Method 245.1: Mercury**
Client ID: **MKTF-18R** Batch ID: **62854** RunNo: **81625**
Prep Date: **9/27/2021** Analysis Date: **9/28/2021** SeqNo: **2884718** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0042	0.00020	0.005000	0	84.1	75	125	1.89	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#: **2109A01**

08-Oct-21

Client: Marathon

Project: Additional Well Install

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R81380**	RunNo: **81380**
Prep Date:	Analysis Date: **9/18/2021**	SeqNo: **2874311** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R81380**	RunNo: **81380**
Prep Date:	Analysis Date: **9/18/2021**	SeqNo: **2874312** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	103	90	110			
Chloride	4.8	0.50	5.000	0	96.4	90	110			
Nitrogen, Nitrite (As N)	0.98	0.10	1.000	0	97.9	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Sulfate	10	0.50	10.00	0	99.8	90	110			

Sample ID: **2109A01-001EMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**
Client ID: **EB-09-17-21**	Batch ID: **R81380**	RunNo: **81380**
Prep Date:	Analysis Date: **9/18/2021**	SeqNo: **2874314** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	105	73.3	111			
Chloride	5.1	0.50	5.000	0.2855	95.3	84.2	117			
Nitrogen, Nitrite (As N)	0.98	0.10	1.000	0	97.8	75.5	113			
Nitrogen, Nitrate (As N)	2.9	0.10	2.500	0.3118	103	86.8	110			
Sulfate	12	0.50	10.00	1.678	101	83.3	112			

Sample ID: **2109A01-001EMSD**	SampType: **msd**	TestCode: **EPA Method 300.0: Anions**
Client ID: **EB-09-17-21**	Batch ID: **R81380**	RunNo: **81380**
Prep Date:	Analysis Date: **9/18/2021**	SeqNo: **2874315** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	105	73.3	111	0.0997	20	
Chloride	5.1	0.50	5.000	0.2855	95.3	84.2	117	0.0286	20	
Nitrogen, Nitrite (As N)	0.99	0.10	1.000	0	98.6	75.5	113	0.828	20	
Nitrogen, Nitrate (As N)	2.9	0.10	2.500	0.3118	103	86.8	110	0.00673	20	
Sulfate	12	0.50	10.00	1.678	101	83.3	112	0.430	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#: **2109A01**

08-Oct-21

Client: Marathon

Project: Additional Well Install

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBW**	Batch ID: **R81507**	RunNo: **81507**							
Prep Date:	Analysis Date: **9/22/2021**	SeqNo: **2879514**	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: **R81507**	RunNo: **81507**							
Prep Date:	Analysis Date: **9/22/2021**	SeqNo: **2879515**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	5.0	0.50	5.000	0	99.4	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109A01**

08-Oct-21

Client: Marathon

Project: Additional Well Install

Sample ID: **MB-62729** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Diesel Range**

Client ID: **PBW** Batch ID: **62729** RunNo: **81612**

Prep Date: **9/21/2021** Analysis Date: **9/28/2021** SeqNo: **2885933** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.064								
Motor Oil Range Organics (MRO)	ND	0.080								
Surr: DNOP	0.037		0.03750		99.3	15	142			

Sample ID: **LCS-62729** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Diesel Range**

Client ID: **LCSW** Batch ID: **62729** RunNo: **81612**

Prep Date: **9/21/2021** Analysis Date: **9/28/2021** SeqNo: **2885938** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.090	0.064	0.1875	0	48.2	21.1	126			
Surr: DNOP	0.019		0.01875		100	15	142			

Sample ID: **LCSD-62729** SampType: **LCSD** TestCode: **EPA Method 8015D Mod: Diesel Range**

Client ID: **LCSS02** Batch ID: **62729** RunNo: **81612**

Prep Date: **9/21/2021** Analysis Date: **9/28/2021** SeqNo: **2885939** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.089	0.064	0.1875	0	47.3	21.1	126	1.81	20	
Surr: DNOP	0.018		0.01875		95.1	15	142	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R81501**	RunNo: **81501**
Prep Date:	Analysis Date: **9/22/2021**	SeqNo: **2879728** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R81501** RunNo: **81501**
Prep Date: Analysis Date: **9/22/2021** SeqNo: **2879728** 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	11		10.00		108	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.7	70	130			
Surr: Dibromofluoromethane	9.9		10.00		98.5	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R81501** RunNo: **81501**
Prep Date: Analysis Date: **9/23/2021** SeqNo: **2879729** 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								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R81501**	RunNo: **81501**
Prep Date:	Analysis Date: **9/23/2021**	SeqNo: **2879729** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R81501** RunNo: **81501**
Prep Date: Analysis Date: **9/23/2021** SeqNo: **2879729** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	11		10.00		108	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.1	70	130			
Surr: Dibromofluoromethane	10		10.00		99.8	70	130			
Surr: Toluene-d8	11		10.00		106	70	130			

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R81501** RunNo: **81501**
Prep Date: Analysis Date: **9/22/2021** SeqNo: **2879730** 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	20	1.0	20.00	0	102	70	130			
Chlorobenzene	20	1.0	20.00	0	102	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	102	70	130			
Trichloroethene (TCE)	21	1.0	20.00	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		109	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R81501** RunNo: **81501**
Prep Date: Analysis Date: **9/22/2021** SeqNo: **2879730** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	9.9		10.00		99.3	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	11		10.00		105	70	130			

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R81501** RunNo: **81501**
Prep Date: Analysis Date: **9/23/2021** SeqNo: **2879731** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	24	1.0	20.00	0	121	70	130			
Toluene	21	1.0	20.00	0	105	70	130			
Chlorobenzene	20	1.0	20.00	0	102	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	103	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		110	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	11		10.00		105	70	130			

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R81542** RunNo: **81542**
Prep Date: Analysis Date: **9/23/2021** SeqNo: **2881350** 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	20	1.0	20.00	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	11		10.00		105	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: **R81542** RunNo: **81542**
Prep Date: Analysis Date: **9/23/2021** SeqNo: **2881354** 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								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R81542** RunNo: **81542**
Prep Date: Analysis Date: **9/23/2021** SeqNo: **2881354** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.2	70	130			
Surr: Dibromofluoromethane	10		10.00		99.9	70	130			
Surr: Toluene-d8	9.7		10.00		96.8	70	130			

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R81622** RunNo: **81622**
Prep Date: Analysis Date: **9/27/2021** SeqNo: **2884501** 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			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	10		10.00		100	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: **R81622** RunNo: **81622**
Prep Date: Analysis Date: **9/27/2021** SeqNo: **2884520** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	11		10.00		113	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **mb-62689** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW** Batch ID: **62689** RunNo: **81566**
Prep Date: **9/20/2021** Analysis Date: **9/24/2021** SeqNo: **2882371** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aniline	ND	5.0								
Anthracene	ND	5.0								
Azobenzene	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								
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								
2,4-Dinitrotoluene	ND	5.0								
2,6-Dinitrotoluene	ND	5.0								
Hexachlorobenzene	ND	5.0								
Hexachlorobutadiene	ND	5.0								
Hexachlorocyclopentadiene	ND	5.0								
Hexachloroethane	ND	5.0								
Isophorone	ND	5.0								
2-Methylphenol	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **mb-62689** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW** Batch ID: **62689** RunNo: **81566**
Prep Date: **9/20/2021** Analysis Date: **9/24/2021** SeqNo: **2882371** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
3+4-Methylphenol	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodiphenylamine	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								
Phenol	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	120		200.0		57.8	15	87			
Surr: Phenol-d5	93		200.0		46.6	15	67.5			
Surr: 2,4,6-Tribromophenol	130		200.0		62.5	15	122			
Surr: Nitrobenzene-d5	65		100.0		64.6	15	103			
Surr: 2-Fluorobiphenyl	60		100.0		60.0	15	103			
Surr: 4-Terphenyl-d14	110		100.0		110	45	137			

Sample ID: **lcs-62689** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW** Batch ID: **62689** RunNo: **81566**
Prep Date: **9/20/2021** Analysis Date: **9/24/2021** SeqNo: **2882372** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chloro-3-methylphenol	120	5.0	200.0	0	61.5	28.3	103			
2-Chlorophenol	130	5.0	200.0	0	65.1	29.3	105			
1,4-Dichlorobenzene	53	5.0	100.0	0	52.6	15	87.6			
2,4-Dinitrotoluene	62	5.0	100.0	0	61.5	23.6	90.9			
N-Nitrosodi-n-propylamine	61	5.0	100.0	0	60.9	23.1	94.6			
4-Nitrophenol	120	5.0	200.0	0	61.3	15	77			
Pentachlorophenol	150	20	200.0	0	75.5	21	111			
Phenol	77	5.0	200.0	0	38.3	16.8	70.5			
1,2,4-Trichlorobenzene	52	5.0	100.0	0	52.1	15	88.2			
Surr: 2-Fluorophenol	87		200.0		43.5	15	84.2			
Surr: Phenol-d5	66		200.0		33.2	15	67.5			

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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **lcs-62689** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW** Batch ID: **62689** RunNo: **81566**
Prep Date: **9/20/2021** Analysis Date: **9/24/2021** SeqNo: **2882372** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	130		200.0		62.9	15	115			
Surr: Nitrobenzene-d5	56		100.0		56.1	15	103			
Surr: 2-Fluorobiphenyl	50		100.0		49.8	15	105			
Surr: 4-Terphenyl-d14	110		100.0		108	42.3	137			

Sample ID: **lcsd-62689** SampType: **LCSD** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02** Batch ID: **62689** RunNo: **81566**
Prep Date: **9/20/2021** Analysis Date: **9/24/2021** SeqNo: **2882373** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chloro-3-methylphenol	140	5.0	200.0	0	69.0	28.3	103	11.4	44.7	
2-Chlorophenol	150	5.0	200.0	0	73.9	29.3	105	12.8	35.6	
1,4-Dichlorobenzene	58	5.0	100.0	0	58.2	15	87.6	10.1	30.4	
2,4-Dinitrotoluene	62	5.0	100.0	0	62.1	23.6	90.9	0.928	53.1	
N-Nitrosodi-n-propylamine	65	5.0	100.0	0	65.3	23.1	94.6	6.95	31.1	
4-Nitrophenol	120	5.0	200.0	0	61.7	15	77	0.713	52.4	
Pentachlorophenol	160	20	200.0	0	78.8	21	111	4.31	71.6	
Phenol	82	5.0	200.0	0	40.9	16.8	70.5	6.57	37.2	
1,2,4-Trichlorobenzene	57	5.0	100.0	0	57.1	15	88.2	9.07	31.8	
Surr: 2-Fluorophenol	97		200.0		48.3	15	87	0	0	
Surr: Phenol-d5	73		200.0		36.7	15	67.5	0	0	
Surr: 2,4,6-Tribromophenol	140		200.0		70.0	15	122	0	0	
Surr: Nitrobenzene-d5	60		100.0		60.5	15	103	0	0	
Surr: 2-Fluorobiphenyl	58		100.0		58.0	15	103	0	0	
Surr: 4-Terphenyl-d14	110		100.0		107	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **mb-62703** SampType: **MBLK** TestCode: **EPA Method 8270SIM**
Client ID: **PBW** Batch ID: **62703** RunNo: **81600**
Prep Date: **9/21/2021** Analysis Date: **9/27/2021** SeqNo: **2883642** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	ND	1.0								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.10								
2-Methylnaphthalene	ND	0.10								
Acenaphthylene	ND	0.10								
Acenaphthene	ND	0.10								
Fluorene	ND	0.10								
Phenanthrene	ND	0.10								
Anthracene	ND	0.10								
Fluoranthene	ND	0.20								
Pyrene	0.18	0.20								J
Benz(a)anthracene	ND	0.10								
Chrysene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.10								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.10								
Benzo(g,h,i)perylene	ND	0.10								
Indeno(1,2,3-cd)pyrene	ND	0.30								
Surr: Nitrobenzene-d5	2.4		4.000		60.5	21.9	89.8			
Surr: 2,4,6-Tribromophenol	3.9		8.000		48.8	23.4	71.6			
Surr: 2-Fluorobiphenyl	1.9		4.000		48.5	15	84.5			
Surr: 4-Terphenyl-d14	3.8		4.000		94.0	73.1	152			

Sample ID: **lcs-62703** SampType: **LCS** TestCode: **EPA Method 8270SIM**
Client ID: **LCSW** Batch ID: **62703** RunNo: **81600**
Prep Date: **9/21/2021** Analysis Date: **9/27/2021** SeqNo: **2883643** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.70	0.10	2.000	0	35.0	15	79.8			
Naphthalene	1.0	0.10	2.000	0	50.0	26.5	90.9			
1-Methylnaphthalene	1.0	0.10	2.000	0	51.0	27.9	88.2			
2-Methylnaphthalene	1.0	0.10	2.000	0	50.0	29.2	87.5			
Acenaphthylene	1.2	0.10	2.000	0	61.0	30	92.9			
Acenaphthene	1.1	0.10	2.000	0	57.0	25.6	93.9			
Fluorene	1.2	0.10	2.000	0	61.0	27.4	95.1			
Phenanthrene	1.3	0.10	2.000	0	65.0	25.1	104			
Anthracene	1.3	0.10	2.000	0	67.0	30.1	100			
Fluoranthene	1.7	0.20	2.000	0	87.0	41.6	126			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **lcs-62703** SampType: **LCS** TestCode: **EPA Method 8270SIM**
Client ID: **LCSW** Batch ID: **62703** RunNo: **81600**
Prep Date: **9/21/2021** Analysis Date: **9/27/2021** SeqNo: **2883643** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pyrene	1.5	0.20	2.000	0	76.0	34.5	112			
Benz(a)anthracene	2.0	0.10	2.000	0	100	43.9	132			
Chrysene	1.6	0.10	2.000	0	82.0	39.8	118			
Benzo(b)fluoranthene	1.7	0.10	2.000	0	87.0	37.2	134			
Benzo(k)fluoranthene	1.7	0.10	2.000	0	86.0	43.8	122			
Benzo(a)pyrene	1.7	0.070	2.000	0	86.0	36.6	122			
Dibenz(a,h)anthracene	1.7	0.10	2.000	0	84.0	35.5	129			
Benzo(g,h,i)perylene	1.6	0.10	2.000	0	82.0	39.4	120			
Indeno(1,2,3-cd)pyrene	1.8	0.30	2.000	0	91.0	24.9	150			
Surr: Nitrobenzene-d5	3.3		5.000		65.2	21.9	89.8			
Surr: 2,4,6-Tribromophenol	5.2		10.00		51.8	23.4	71.6			
Surr: 2-Fluorobiphenyl	2.3		5.000		45.2	15	84.5			
Surr: 4-Terphenyl-d14	5.3		5.000		106	73.1	152			

Sample ID: **lcsd-62703** SampType: **LCSD** TestCode: **EPA Method 8270SIM**
Client ID: **LCSS02** Batch ID: **62703** RunNo: **81600**
Prep Date: **9/21/2021** Analysis Date: **9/27/2021** SeqNo: **2883644** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.78	0.10	2.000	0	39.0	15	79.8	10.8	34.2	
Naphthalene	1.1	0.10	2.000	0	56.0	26.5	90.9	11.3	37.6	
1-Methylnaphthalene	1.1	0.10	2.000	0	57.0	27.9	88.2	11.1	33.1	
2-Methylnaphthalene	1.1	0.10	2.000	0	57.0	29.2	87.5	13.1	35.4	
Acenaphthylene	1.3	0.10	2.000	0	67.0	30	92.9	9.38	31.7	
Acenaphthene	1.3	0.10	2.000	0	63.0	25.6	93.9	10.0	36.3	
Fluorene	1.4	0.10	2.000	0	68.0	27.4	95.1	10.9	32.2	
Phenanthrene	1.4	0.10	2.000	0	72.0	25.1	104	10.2	32.9	
Anthracene	1.5	0.10	2.000	0	73.0	30.1	100	8.57	31.5	
Fluoranthene	1.8	0.20	2.000	0	89.0	41.6	126	2.27	26.5	
Pyrene	1.6	0.20	2.000	0	80.0	34.5	112	5.13	23.3	
Benz(a)anthracene	1.8	0.10	2.000	0	92.0	43.9	132	8.33	29.5	
Chrysene	1.7	0.10	2.000	0	83.0	39.8	118	1.21	22.3	
Benzo(b)fluoranthene	1.7	0.10	2.000	0	86.0	37.2	134	1.16	25.2	
Benzo(k)fluoranthene	1.7	0.10	2.000	0	85.0	43.8	122	1.17	23.1	
Benzo(a)pyrene	1.7	0.070	2.000	0	84.0	36.6	122	2.35	22.4	
Dibenz(a,h)anthracene	1.7	0.10	2.000	0	83.0	35.5	129	1.20	23.7	
Benzo(g,h,i)perylene	1.6	0.10	2.000	0	81.0	39.4	120	1.23	22.9	
Indeno(1,2,3-cd)pyrene	1.8	0.30	2.000	0	90.0	24.9	150	1.10	26.6	
Surr: Nitrobenzene-d5	3.7		5.000		74.4	21.9	89.8	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **lcsd-62703** SampType: **LCSD** TestCode: **EPA Method 8270SIM**
Client ID: **LCSS02** Batch ID: **62703** RunNo: **81600**
Prep Date: **9/21/2021** Analysis Date: **9/27/2021** SeqNo: **2883644** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	6.0		10.00		60.2	23.4	71.6	0	0	
Surr: 2-Fluorobiphenyl	2.6		5.000		51.2	15	84.5	0	0	
Surr: 4-Terphenyl-d14	5.5		5.000		110	73.1	152	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBW**	Batch ID: **R81501**	RunNo: **81501**							
Prep Date:	Analysis Date: **9/22/2021**	SeqNo: **2879769**	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: 4-Bromofluorobenzene	10		10.00		105	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBW**	Batch ID: **R81501**	RunNo: **81501**							
Prep Date:	Analysis Date: **9/23/2021**	SeqNo: **2879770**	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: 4-Bromofluorobenzene	11		10.00		105	70	130			

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSW**	Batch ID: **R81501**	RunNo: **81501**							
Prep Date:	Analysis Date: **9/22/2021**	SeqNo: **2879771**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.43	0.050	0.5000	0	86.3	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSW**	Batch ID: **R81501**	RunNo: **81501**							
Prep Date:	Analysis Date: **9/23/2021**	SeqNo: **2879772**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.42	0.050	0.5000	0	83.1	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.1	70	130			

Sample ID: **2.5ug gro lcs1**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSW**	Batch ID: **R81542**	RunNo: **81542**							
Prep Date:	Analysis Date: **9/23/2021**	SeqNo: **2881464**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBW**	Batch ID: **R81542**	RunNo: **81542**							
Prep Date:	Analysis Date: **9/23/2021**	SeqNo: **2881466**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	9.8		10.00		97.7	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R81457**	RunNo: **81457**							
Prep Date:	Analysis Date: **9/21/2021**	SeqNo: **2877862**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R81457**	RunNo: **81457**							
Prep Date:	Analysis Date: **9/21/2021**	SeqNo: **2877863**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80.40	20.00	80.00	0	101	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R81457**	RunNo: **81457**							
Prep Date:	Analysis Date: **9/21/2021**	SeqNo: **2877885**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R81457**	RunNo: **81457**							
Prep Date:	Analysis Date: **9/21/2021**	SeqNo: **2877886**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	82.04	20.00	80.00	0	103	90	110			

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R81582**	RunNo: **81582**							
Prep Date:	Analysis Date: **9/23/2021**	SeqNo: **2883100**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R81582**	RunNo: **81582**							
Prep Date:	Analysis Date: **9/23/2021**	SeqNo: **2883101**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80.64	20.00	80.00	0	101	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#: **2109A01**
08-Oct-21

Client: Marathon
Project: Additional Well Install

Sample ID: **mb-2 alk** SampType: **mblk** TestCode: **SM2320B: Alkalinity**
Client ID: **PBW** Batch ID: **R81582** RunNo: **81582**
Prep Date: Analysis Date: **9/23/2021** SeqNo: **2883126** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk** SampType: **lcs** TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW** Batch ID: **R81582** RunNo: **81582**
Prep Date: Analysis Date: **9/23/2021** SeqNo: **2883127** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	84.32	20.00	80.00	0	105	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

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: **2109A01** RcptNo: **1**

Received By: **Cheyenne Cason** **9/18/2021 10:13:00 AM** Chcl

Completed By: **Desiree Dominguez** **9/18/2021 10:54:02 AM** DD

Reviewed By: CNC 9/18 CNC 9/20/21 9/20/21

125 combo : Sent 9/18/21

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 ☑ TME 9.20.21 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: 20 (<2 or >12 unless noted)

Adjusted? Yes TME 9.20.21

Checked by: 9/18/21

125 combo nitrates : Sent 9/18/21 pH <2 10

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 40mL of HNO_3 to samples 001G, 002G, 003G, 004G and 009G for pH. Added 50mL of HNO_3 to samples 001F, 003F, and 009F for pH - TME 9.20.21

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.6					
2	1.8					
3	1.6					
4	4.1					
5	3.7					
6	4.9					
7	3.4					

Released to Imaging: 11/23/2022 1:26:56 PM

Received by OCD: 10/21/2022 2:38:50 PM

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Marathon Petroleum Company

Mailing Address: 92 Giant Crossing Rd. Jamestown, NM 87347

Phone #: 808-640-1823

Email or Fax#: bmcloughlin@trihydro.com

QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

☐ Standard ☐ Rush

Project Name: Additional Cokell Install

~~2021 GW Sampling - 3rd Quarter~~

Project #: ~~697-080-001~~ 697-092-001

PO#: ~~4500267009~~ 4500267036

Project Manager: Lesli Alexander, Brian McLoughlin

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): See Checklist

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2109A01	VOCs	TPH GRO	TPH DRO/MRO	SVOC includes 1,4 Dioxane on reques	1,4 Dioxane	WQCC metals	C/A	NO2/NO3 combined	Nitrite	8011 EDB	8260/BTEX/MTBE	COD	Cyanide	TDS/TSS	Gen Chem	PFAS
9-17-21	9:00	water	EB-09-17-21	12		-001	X	X	X	X		X	X									
9-17-21	9:00	water	MKTE-17R	12		-002	X	X	X	X		X	X									
9-17-21	9:25	water	MKTE-18R	12		-003	X	X	X	X		X	X									
9-17-21	10:00	water	MKTE-04R	12		-004	X	X	X	X		X	X									
9-17-21	10:35	water	MKTE-01R	12		-005	X	X	X	X		X	X									
9-17-21	11:00	water	MKTE-02R	12		-006	X	X	X	X		X	X									
9-17-21	11:55	water	~~OW-68~~ OW-68	12		-007	X	X	X	X		X	X									
9-17-21	12:15	water	OW-67	12		-008	X	X	X	X		X	X									
9-17-21	12:45	water	OW-66	12		-009	X	X	X	X		X	X									
9-17-21	—	water	DUP-09-17-21	12		-010	X	X	X	X		X	X									
9-17-21	12:45	water	FB-09-17-21	2		-011	X															
		water	TB- TMC 9.20.21	2		-012																

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
9/17	13:30		ome	courier	9/18/21	1013
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.

Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental
Project Name: Western Refining SW, Monitoring Well Installation	Sample Matrix: Aqueous
Project Number: 697-092-001 Task: 0002	Sample Start Date: 09/17/2021
Date Validated: 10/19/2021	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 ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015D MOD ▪ Total and Dissolved Metals by Environmental Protection Agency (EPA) Method 200.7 and Method 200.8 ▪ Total and Dissolved 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	
Laboratory Project ID: 2109A01	
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, 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 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)

Tier II Data Validation Report Summary

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-09-17-21	2109A01-001
MKTF-17R	2109A01-002
MKTF-18R	2109A01-003
MKTF-04R	2109A01-004
MKTF-01R	2109A01-005
MKTF-02R	2109A01-006
OW-68	2109A01-007
OW-67	2109A01-008
OW-66	2109A01-009
DUP-09-17-21	2109A01-010
FB-09-17-21	2109A01-011
Trip Blank	2109A01-012

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)
- ⊗ 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
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 1,650 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 * – 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 8260B: Dilution factors of 5 to 200 times were applied to select samples for the analysis of VOCs. Method 8270C: Samples MKTF-17R, MKTF-18R, MKTF-04R, MKTF-01R, OW-66, and DUP-09-17-21 were diluted by factors of 10 times for the analysis of select SVOC target analytes. Method 8270C-SIM: Dilution factors of 10 times were applied to samples MKTF-17R, MKTF-18R, MKTF-04R, MKTF-01R, OW-66, and DUP-09-17-21 for the analysis of anthracene and/or dibenz(a,h)anthracene. Method 8015: Samples MKTF-17R, MKTF-18R, MKTF-04R, MKTF-01R, MKTF-02R, and OW-66 were diluted by factors of 5 or 10 times for the analysis of select GRO, DRO, and/or MRO. Method 300.0: Dilution factors of 5 to 500 times were applied to the submitted samples except sample EB-09-17-21 for the analysis of anions. Method 200.7: Samples were diluted by factors of 5 to 50 times for the analysis of total and dissolved metals. Method 200.8: Dilution factors of 5 to 10 times were applied to the submitted samples for the analysis of total and dissolved metals.	
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 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 some samples to achieve the required pH less than 2. Validation action was not required.	

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 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?	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 detected in associated sample OW-68 at a concentration less than the applicable reporting limit, and the result was assigned a U qualifier.** Pyrene was not detected in the remaining associated samples, and qualification of those results was not required based on the method blank detection.	

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
8260B	VOCs	R81501	Not Prepared
8260B	VOCs	R81542	Not Prepared
8260B	Benzene	R81622	Not Prepared
8270C	SVOCs	62689	Not Prepared
8270C	SVOCs	62703	Not Prepared
8270C-SIM	SVOCs	62703	Not Prepared
8015D	GRO	R81501	Not Prepared
8015 MOD	DRO	62729	Not Prepared
200.7	Total Metals	62792	EB-09-17-21
200.7	Dissolved Metals	B81434	EB-09-17-21
200.8	Total Metals	62792	MKTF-17R
200.8	Dissolved Metals	C81686	Not Prepared
245.1	Mercury	62854	MKTF-18R
Method	Analytes	Batch	MS Sample Source
300.0	Anions	R81380	EB-09-17-21
300.0	Chloride	R81507	Not Prepared
2320B	Alkalinity	R81457	Not Prepared
2320B	Alkalinity	R81582	Not Prepared

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.

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.

VALIDATION CRITERIA CHECKLIST

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
8270C	MKTF-17R	2-Fluorophenol	0%	15-87%
8270C-SIM	OW-68	2,4,6-Tribromophenol	98.5%	23.4-71.6%
8270C-SIM	OW-67	2,4,6-Tribromophenol	84.5%	23.4-71.6%
8270C	OW-66	2-Fluorophenol	0%	15-87%

Since Method 8270C and Method 8270C-SIM 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 samples MKTF-17R, OW-68, OW-67, and OW-66, and qualification of sample data was not required.

The SVOC and DRO/MRO results were not qualified based on surrogate non-conformances in the Method 8270C-SIM and Method 8015D MOD analyses since the applied dilution of 10 times or greater resulted in surrogate concentrations below routinely calibrated levels, and those results were deemed unreliable and possibly inaccurate.

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-09-17-21, and one equipment blank sample, EB-09-17-21, 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, field blank, and equipment blank samples, with the following exceptions.

Blank Sample ID	Method	Analyte	Concentration	Units
FB-09-17-21	**SW8260B**	**1,2,4-Trimethylbenzene**	**0.16**	**µg/L**
FB-09-17-21	**SW8260B**	**1-Methylnaphthalene**	**0.94**	**µg/L**
FB-09-17-21	**SW8260B**	**2-Butanone**	**2.2**	**µg/L**
FB-09-17-21	SW8260B	2-Methylnaphthalene	1.0	µg/L
FB-09-17-21	**SW8260B**	**Acetone**	**7.3**	**µg/L**
FB-09-17-21	**SW8260B**	**Benzene**	**0.42**	**µg/L**
FB-09-17-21	SW8260B	Naphthalene	0.63	µg/L
EB-09-17-21	SW8260B	Acetone	3.8	µg/L
EB-09-17-21	SW8015	Diesel Range Organics (DRO)	0.019	mg/L
EB-09-17-21	E300.0	Chloride	0.29	mg/L
EB-09-17-21	**E300.0**	**Nitrogen, Nitrate (As N)**	**0.31**	**mg/L**
EB-09-17-21	**E300.0**	**Sulfate**	**1.7**	**mg/L**
EB-09-17-21	**E200.7**	**Zinc, Dissolved**	**0.0071**	**mg/L**
EB-09-17-21	**E200.8**	**Lead**	**0.00052**	**mg/L**

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.

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-09-17-21 was collected as a field duplicate of sample MKTF-18R.

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 0-30% for water samples, with the following exceptions.

The RPD values for several analytes exceeded the data validation limit of 30%. The reported results for these analytes were assigned J qualifiers for the parent and field duplicate samples, MKTF-18R and DUP-09-17-21, due to evidence of poor precision.

The RPD values for several analytes greatly exceeded the data validation limit of 30% with RPD values greater than 100%. The reported results for these analytes were assigned J qualifiers for samples MKTF-18R and DUP-09-17-21, and J/UJ qualifiers for the results in the associated samples due to evidence of extremely poor precision (RPD > 100%).

RPD values could not be calculated for several analytes for the field duplicate pair MKTF-18R and DUP-09-17-21 since the analyte was detected in the one sample and was undetected in the other. Since the detection was greater than two times the reporting limit, the results for these analytes were assigned J and UJ qualifiers due to evidence of poor precision.

VALIDATION CRITERIA CHECKLIST

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.

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? No

Comments: Anthracene was analyzed by both Method 8270C and Method 8270-SIM for sample MKTF-17R. Anthracene was detected in the sample by Method 8270C-SIM at a concentration less than the reporting limit for Method 8270C and qualification of data was not required. Dibenz(a,h)anthracene was analyzed by both Method 8270C and Method 8270-SIM for several samples. Dibenz(a,h)anthracene was not detected by both methods and qualification of results was not required.

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
DUP-09-17-21	1,2-Dichlorobenzene	0.57	ND	1.0 / 5.0	----
DUP-09-17-21	**1-Methylnaphthalene**	**43**	**27**	**4.0 / 1.0**	**45.7%**
MKTF-01R	1-Methylnaphthalene	28	11	20 / 1.0	87.2% ◄
MKTF-04R	1-Methylnaphthalene	48	9.0	20 / 1.0	137% ◄
MKTF-17R	1-Methylnaphthalene	27	15	20 / 1.0	57.1% ◄
MKTF-18R	**1-Methylnaphthalene**	**200**	**110**	**20 / 1.0**	**58.1%**
OW-66	1-Methylnaphthalene	35	33	40 / 1.1	5.9% ◄
DUP-09-17-21	**2-Methylnaphthalene**	**54**	**19**	**4.0 / 1.0**	**95.9%**
MKTF-01R	2-Methylnaphthalene	25	8.2	20 / 1.0	101% ◄
MKTF-04R	2-Methylnaphthalene	59	6.2	20 / 1.0	162% ◄
MKTF-17R	2-Methylnaphthalene	34	16	20 / 1.0	72.0% ◄
MKTF-18R	**2-Methylnaphthalene**	**300**	**130**	**20 / 1.0**	**79.1%**
OW-66	2-Methylnaphthalene	61	51	40 / 1.1	17.9% ◄
DUP-09-17-21	**Naphthalene**	**77**	**42**	**2.0 / 1.0**	**58.8%**
MKTF-01R	**Naphthalene**	**52**	**21**	**10 / 1.0**	**84.9%**
MKTF-04R	**Naphthalene**	**81**	**15**	**10 / 1.0**	**138%**
MKTF-17R	**Naphthalene**	**72**	**38**	**10 / 1.0**	**61.8%**
MKTF-18R	**Naphthalene**	**170**	**87**	**10 / 1.0**	**64.6%**
OW-66	Naphthalene	130	110	20 / 1.0	16.7%

◄ – one or both results were within 5 times the applicable reporting limit.

----- – RPD could not be calculated.

The bold results in the table above were greater than 5 times the applicable reporting limits and the relative percent differences between the Method 8260B and Method 8270C results were greater than the acceptable limit for aqueous samples of 30%. These results were assigned J qualifiers due to the discrepancies between the concentrations.

The differences between the remaining results reported by both Method 8260B and Method 8270C were evaluated to be

VALIDATION CRITERIA CHECKLIST	
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?	No
Comments: The reported concentrations for total metals in the submitted samples were greater than the dissolved results, or the differences were within the measurement uncertainty for the methods, with the following exception.	
The reported dissolved zinc result of 0.034 mg/L for sample MKTF-02R was greater than the total zinc concentration of 0.019 mg/L. These results were within 5 times the applicable reporting limits and qualification of results was not required.	

FIELD DUPLICATE SUMMARY

Client Sample ID: MKTF-18R Field Duplicate Sample ID: DUP-09-17-21				
Method	**Analyte**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
SW8260B	**1,1-Dichloroethane**	**ND (5.0 µg/L)**	**32 µg/L**	**DL**
SW8260B	**1,1-Dichloroethene**	**ND (5.0 µg/L)**	**44 µg/L**	**DL**
SW8260B	**1,2,4-Trimethylbenzene**	**30 µg/L**	**780 µg/L**	**185.2%**
SW8260B	1,2-Dichlorobenzene	ND (5.0 µg/L)	0.57 µg/L	DL
SW8260B	1,2-Dichloroethane	1.5 µg/L	1.5 µg/L	0.0% +/-RL
SW8260B	1,2-Dichloropropane	ND (5.0 ug/L)	0.54 µg/L	DL
SW8260B	**1,3,5-Trimethylbenzene**	**8.8 µg/L**	**30 µg/L**	**109.3%**
SW8260B	**1-Methylnaphthalene**	**200 µg/L**	**43 µg/L**	**129.2%**
SW8260B	2-Butanone	13 µg/L	8.0 µg/L	47.6% +/-RL
SW8260B	**2-Methylnaphthalene**	**300 µg/L**	**54 µg/L**	**139.0%**
SW8260B	Acetone	20 µg/L	19 µg/L	5.1% +/-RL
SW8260B	**Benzene**	**3,700 µg/L**	**1,200 µg/L**	**102.0%**
SW8260B	Bromodichloromethane	ND (5.0 µg/L)	0.49 µg/L	DL
SW8260B	Chloromethane	ND (15 µg/L)	1.3 µg/L	DL
SW8260B	**cis-1,2-Dichloroethene**	**7.7 ug/L**	**17 µg/L**	**75.3%**
SW8260B	Dibromochloromethane	ND (5.0 µg/L)	0.49 µg/L	DL
SW8260B	**Ethylbenzene**	**39 µg/L**	**1,100 µg/L**	**186.3%**
SW8260B	**Isopropylbenzene**	**4.3 µg/L**	**12 µg/L**	**94.5%**
SW8260B	**MTBE**	**200 µg/L**	**7,800 µg/L**	**190.0%**
SW8260B	**Naphthalene**	**170 µg/L**	**77 µg/L**	**75.3%**
SW8260B	n-Butylbenzene	3.1 µg/L	4.0 µg/L	25.4% +/-RL
SW8260B	**n-Propylbenzene**	**6.6 µg/L**	**28 µg/L**	**123.7%**
SW8260B	p-Isopropyltoluene	2.6 µg/L	2.5 µg/L	3.9%
SW8260B	sec-Butylbenzene	1.9 µg/L	1.9 µg/L	0.0% +/-RL
SW8260B	Styrene	ND (5.0 µg/L)	0.21 µg/L	DL
SW8260B	**Toluene**	**1,800 µg/L**	**13 µg/L**	**197.1%**
SW8260B	trans-1,2-Dichloroethene	ND (5.0 µg/L)	0.32 µg/L	DL
SW8260B	trans-1,3-Dichloropropene	ND (5.0 µg/L)	0.90 µg/L	DL
SW8260B	Vinyl Chloride	ND (5.0 µg/L)	0.41 µg/L	DL
SW8260B	**Xylenes, Total**	**370 µg/L**	**260 µg/L**	**34.9%**
SW8270C	**1-Methylnaphthalene**	**110 µg/L**	**27 µg/L**	**121.2%**
SW8270C	**2,4-Dimethylphenol**	**13 µg/L**	**3.9 µg/L**	**107.7%**
SW8270C	**2-Methylnaphthalene**	**130 µg/L**	**19 µg/L**	**149.0%**
SW8270C	**2-Methylphenol**	**130 µg/L**	**ND (5.0 µg/L)**	**DL**
SW8270C	**3,4-Methylphenol**	**35 µg/L**	**ND (5.0 µg/L)**	**DL**
SW8270C	**Acenaphthene**	**5.4 µg/L**	**3.0 µg/L**	**57.1%**
SW8270C	**Fluorene**	**8.4 µg/L**	**3.4 µg/L**	**84.7%**
SW8270C	**Naphthalene**	**87 µg/L**	**42 µg/L**	**69.8%**

Client Sample ID: MKTF-18R Field Duplicate Sample ID: DUP-09-17-21				
Method	**Analyte**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
SW8270C	**Phenanthrene**	**6.2 µg/L**	**1.2 µg/L**	**135.1%**
SW8270C	**Phenol**	**120 µg/L**	**8.2 µg/L**	**174.4%**
SW8015	**TPH GRO**	**13 mg/L**	**5.0 mg/L**	**88.9%**
SW8015	**TPH DRO**	**4.6 mg/L**	**2.6 mg/L**	**55.6%**
SW8015	TPH ORO	ND (0.80 mg/L)	0.090 mg/L	DL
SM2320B	Alkalinity	619.7 mg/L $CaCO_3$	623 mg/L $CaCO_3$	0.5%
SM2320B	Bicarbonate as $CaCO_3$	619.7 mg/L $CaCO_3$	623 mg/L $CaCO_3$	0.5%
E300.0	Chloride	290 mg/L	220 mg/L	27.5%
E300.0	Fluoride, Total	0.68 mg/L	0.65 mg/L	4.5% +/-RL
E300.0	**Sulfate**	**10 mg/L**	**62 mg/L**	**144.4%**
E 200.7	Barium, Dissolved	1.6 mg/L	1.2 mg/L	28.6%
E 200.7	Barium, Total	1.8 mg/L	2.0 mg/L	10.5%
E 200.7	Beryllium, Total	ND (0.0020 mg/L)	0.0019 mg/L	DL
E 200.7	Calcium, Total	110 mg/L	140 mg/L	24.0%
E 200.7	**Chromium, Total**	**ND (0.006 mg/L)**	**0.020 mg/L**	**DL**
E 200.7	Cobalt, Dissolved	0.0088 mg/L	0.0053 mg/L	49.6% +/-RL
E 200.7	Cobalt, Total	0.012 mg/L	0.015 mg/L	22.2%
E 200.7	**Iron, Dissolved**	**1.5 mg/L**	**0.51 mg/L**	**98.5%**
E 200.7	**Iron, Total**	**3.3 mg/L**	**17 mg/L**	**135.0%**
E 200.7	Magnesium, Total	32 mg/L	36 mg/L	11.8%
E 200.7	**Manganese, Dissolved**	**1.7 mg/L**	**2.4 mg/L**	**34.1%**
E 200.7	**Manganese, Total**	**1.8 mg/L**	**2.9 mg/L**	**46.8%**
E 200.7	Nickel, Dissolved	0.0048 mg/L	0.0068 mg/L	34.5% +/-RL
E 200.7	**Nickel, Total**	**0.0086 mg/L**	**0.026 mg/L**	**100.6%**
E 200.7	**Potassium, Total**	**2.9 mg/L**	**5.1 mg/L**	**55.0%**
E 200.7	Sodium, Total	300 mg/L	320 mg/L	6.5%
E 200.7	Vanadium, Total	0.0031 mg/L	0.033 mg/L	165.7% +/-RL
E 200.7	Zinc, Dissolved	0.0093 mg/L	0.011 mg/L	16.7% +/-RL
E 200.7	**Zinc, Total**	**ND (0.010 mg/L)**	**0.036 mg/L**	**DL**
E200.8	Arsenic, Dissolved	0.0071 mg/L	0.0026 mg/L	92.8% +/-RL
E200.8	Arsenic, Total	0.0075 mg/L	0.0063 mg/L	17.4% +/-RL
E200.8	**Lead, Total**	**0.0019 mg/L**	**0.046 mg/L**	**184.1%**
E200.8	Selenium, Total	ND (0.0050 mg/L)	0.0063 mg/L	DL

Field duplicate RPD control limits are not to exceed 30% for water 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).

RPD values could not be calculated for several analytes since the analyte was detected in the one sample and was undetected in the other. Since the reported detection was greater than two times the applicable reporting limit, the

Client Sample ID: MKTF-18R Field Duplicate Sample ID: DUP-09-17-21				
Method	**Analyte**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
results for these analytes in samples MKTF-18R and DUP-09-17-21 were assigned J and UJ qualifiers, as appropriate, due to evidence of poor precision. +/-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 several analytes exceeded the data validation limit of 30%. The reported results for these analytes were assigned J qualifiers for the parent and field duplicate samples, MKTF-18R and DUP-09-17-21, due to evidence of poor precision.** **The RPD values for several analytes greatly exceeded the data validation limit of 30% with RPD values greater than 100%. The reported results for these analytes were assigned J qualifiers for samples MKTF-18R and DUP-09-17-21, and J/UJ qualifiers for the results in the associated samples due to evidence of extremely poor precision (RPD > 100%).**				

DATA QUALIFICATION SUMMARY

Abbreviation	Reason
MBD	Method blank detection
FBD	Field blank detection
EBD	Equipment blank detection
ERPD-FD	High field duplicate RPD.
DATA-COMP	Analytical results for analyte by different methods did not meet comparability limits.
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	MKTF-17R	2109A01-002a	3.3	5	µg/L	J	MDLRL
1,1-Dichloroethane	SW8260B	MKTF-18R	2109A01-003a	ND	5	µg/L	UJ	ERPD-FD
1,1-Dichloroethane	SW8260B	MKTF-01R	2109A01-005a	3	5	µg/L	J	MDLRL
1,1-Dichloroethane	SW8260B	DUP-09-17-21	2109A01-010a	32	1	µg/L	J	ERPD-FD
1,1-Dichloroethene	SW8260B	MKTF-18R	2109A01-003a	ND	5	µg/L	UJ	ERPD-FD
1,1-Dichloroethene	SW8260B	DUP-09-17-21	2109A01-010a	44	1	µg/L	J	ERPD-FD
1,2,3-Trichlorobenzene	SW8260B	OW-68	2109A01-007a	0.37	1	µg/L	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	EB-09-17-21	2109A01-001a	ND	1	µg/L	UJ	ERPD-FD
1,2,4-Trimethylbenzene	SW8260B	MKTF-17R	2109A01-002a	430	5	µg/L	J	ERPD-FD
1,2,4-Trimethylbenzene	SW8260B	MKTF-18R	2109A01-003a	30	5	µg/L	J	ERPD-FD
1,2,4-Trimethylbenzene	SW8260B	MKTF-04R	2109A01-004a	160	5	µg/L	J	ERPD-FD
1,2,4-Trimethylbenzene	SW8260B	MKTF-01R	2109A01-005a	310	5	µg/L	J	ERPD-FD
1,2,4-Trimethylbenzene	SW8260B	MKTF-02R	2109A01-006a	ND	5	µg/L	UJ	ERPD-FD
1,2,4-Trimethylbenzene	SW8260B	OW-68	2109A01-007a	0.58	1	µg/L	U	ERPD-FD, FBD, MDLRL
1,2,4-Trimethylbenzene	SW8260B	OW-67	2109A01-008a	ND	1	µg/L	UJ	ERPD-FD
1,2,4-Trimethylbenzene	SW8260B	OW-66	2109A01-009a	1300	200	µg/L	J	ERPD-FD
1,2,4-Trimethylbenzene	SW8260B	DUP-09-17-21	2109A01-010a	780	50	µg/L	J	ERPD-FD

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,2,4-Trimethylbenzene	SW8260B	FB-09-17-21	2109A01-011a	0.16	1	µg/L	J	ERPD-FD, MDLRL
1,2,4-Trimethylbenzene	SW8260B	Trip Blank	2109A01-012a	ND	1	µg/L	UJ	ERPD-FD
1,2-Dichlorobenzene	SW8260B	DUP-09-17-21	2109A01-010a	0.57	1	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	MKTF-18R	2109A01-003a	1.5	5	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	MKTF-04R	2109A01-004a	2.3	5	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	MKTF-01R	2109A01-005a	2.4	5	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	OW-68	2109A01-007a	0.3	1	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	OW-66	2109A01-009a	4.4	10	µg/L	J	MDLRL
1,2-Dichloropropane	SW8260B	MKTF-04R	2109A01-004a	1.3	5	µg/L	J	MDLRL
1,2-Dichloropropane	SW8260B	DUP-09-17-21	2109A01-010a	0.54	1	µg/L	J	MDLRL
1,3,5-Trimethylbenzene	SW8260B	EB-09-17-21	2109A01-001a	ND	1	µg/L	UJ	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	MKTF-17R	2109A01-002a	120	5	µg/L	J	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	MKTF-18R	2109A01-003a	8.8	5	µg/L	J	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	MKTF-04R	2109A01-004a	29	5	µg/L	J	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	MKTF-01R	2109A01-005a	28	5	µg/L	J	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	MKTF-02R	2109A01-006a	ND	5	µg/L	UJ	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	OW-68	2109A01-007a	ND	1	µg/L	UJ	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	OW-67	2109A01-008a	ND	1	µg/L	UJ	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	OW-66	2109A01-009a	350	10	µg/L	J	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	DUP-09-17-21	2109A01-010a	30	1	µg/L	J	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	FB-09-17-21	2109A01-011a	ND	1	µg/L	UJ	ERPD-FD
1,3,5-Trimethylbenzene	SW8260B	Trip Blank	2109A01-012a	ND	1	µg/L	UJ	ERPD-FD
1-Methylnaphthalene	SW8260B	EB-09-17-21	2109A01-001a	ND	4	µg/L	UJ	ERPD-FD
1-Methylnaphthalene	SW8270C	EB-09-17-21	2109a01-001d	ND	0.1	µg/L	UJ	ERPD-FD
1-Methylnaphthalene	SW8260B	MKTF-17R	2109A01-002a	27	20	µg/L	J	ERPD-FD
1-Methylnaphthalene	SW8270C	MKTF-17R	2109a01-002d	15	1	µg/L	J	ERPD-FD
1-Methylnaphthalene	SW8260B	MKTF-18R	2109A01-003a	200	20	µg/L	J	DATA-COMP, ERPD-FD
1-Methylnaphthalene	SW8270C	MKTF-18R	2109a01-003d	110	1	µg/L	J	DATA-COMP, ERPD-FD

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1-Methylnaphthalene	SW8260B	MKTF-04R	2109A01-004a	48	20	µg/L	J	ERPD-FD
1-Methylnaphthalene	SW8270C	MKTF-04R	2109a01-004d	9	1	µg/L	J	ERPD-FD
1-Methylnaphthalene	SW8260B	MKTF-01R	2109A01-005a	28	20	µg/L	J	ERPD-FD
1-Methylnaphthalene	SW8270C	MKTF-01R	2109a01-005d	11	1	µg/L	J	ERPD-FD
1-Methylnaphthalene	SW8260B	MKTF-02R	2109A01-006a	ND	20	µg/L	UJ	ERPD-FD
1-Methylnaphthalene	SW8270C	MKTF-02R	2109a01-006d	ND	0.1	µg/L	UJ	ERPD-FD
1-Methylnaphthalene	SW8260B	OW-68	2109A01-007a	ND	4	µg/L	UJ	ERPD-FD
1-Methylnaphthalene	SW8270C	OW-68	2109a01-007d	ND	0.1	µg/L	UJ	ERPD-FD
1-Methylnaphthalene	SW8260B	OW-67	2109A01-008a	ND	4	µg/L	UJ	ERPD-FD
1-Methylnaphthalene	SW8270C	OW-67	2109a01-008d	ND	0.1	µg/L	UJ	ERPD-FD
1-Methylnaphthalene	SW8260B	OW-66	2109A01-009a	35	40	µg/L	U	ERPD-FD, FBD, MDLRL
1-Methylnaphthalene	SW8270C	OW-66	2109a01-009d	33	1	µg/L	J	ERPD-FD
1-Methylnaphthalene	SW8260B	DUP-09-17-21	2109A01-010a	43	4	µg/L	J	DATA-COMP, ERPD-FD
1-Methylnaphthalene	SW8270C	DUP-09-17-21	2109a01-010d	27	1	µg/L	J	DATA-COMP, ERPD-FD
1-Methylnaphthalene	SW8260B	FB-09-17-21	2109A01-011a	0.94	4	µg/L	J	ERPD-FD, MDLRL
1-Methylnaphthalene	SW8260B	Trip Blank	2109A01-012a	ND	4	µg/L	UJ	ERPD-FD
2,4-Dimethylphenol	SW8270C	EB-09-17-21	2109a01-001d	ND	5	µg/L	UJ	ERPD-FD
2,4-Dimethylphenol	SW8270C	MKTF-17R	2109a01-002d	13	5	µg/L	J	ERPD-FD
2,4-Dimethylphenol	SW8270C	MKTF-18R	2109a01-003d	13	5	µg/L	J	ERPD-FD
2,4-Dimethylphenol	SW8270C	MKTF-04R	2109a01-004d	3.9	5	µg/L	J	ERPD-FD, MDLRL
2,4-Dimethylphenol	SW8270C	MKTF-01R	2109a01-005d	19	5	µg/L	J	ERPD-FD
2,4-Dimethylphenol	SW8270C	MKTF-02R	2109a01-006d	ND	5	µg/L	UJ	ERPD-FD
2,4-Dimethylphenol	SW8270C	OW-68	2109a01-007d	ND	5	µg/L	UJ	ERPD-FD
2,4-Dimethylphenol	SW8270C	OW-67	2109a01-008d	ND	5	µg/L	UJ	ERPD-FD
2,4-Dimethylphenol	SW8270C	OW-66	2109a01-009d	5.4	5	µg/L	J	ERPD-FD
2,4-Dimethylphenol	SW8270C	DUP-09-17-21	2109a01-010d	3.9	5	µg/L	J	ERPD-FD, MDLRL
2-Butanone	SW8260B	MKTF-17R	2109A01-002a	11	50	µg/L	U	FBD, MDLRL
2-Butanone	SW8260B	MKTF-18R	2109A01-003a	13	50	µg/L	U	FBD, MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
2-Butanone	SW8260B	MKTF-04R	2109A01-004a	17	50	µg/L	U	FBD, MDLRL
2-Butanone	SW8260B	MKTF-01R	2109A01-005a	22	50	µg/L	U	FBD, MDLRL
2-Butanone	SW8260B	OW-68	2109A01-007a	2	10	µg/L	U	FBD, MDLRL
2-Butanone	SW8260B	OW-66	2109A01-009a	32	100	µg/L	U	FBD, MDLRL
2-Butanone	SW8260B	DUP-09-17-21	2109A01-010a	8	10	µg/L	U	FBD, MDLRL
2-Butanone	SW8260B	FB-09-17-21	2109A01-011a	2.2	10	µg/L	J	MDLRL
2-Methylnaphthalene	SW8260B	EB-09-17-21	2109A01-001a	ND	4	µg/L	UJ	ERPD-FD
2-Methylnaphthalene	SW8270C	EB-09-17-21	2109a01-001d	ND	0.1	µg/L	UJ	ERPD-FD
2-Methylnaphthalene	SW8260B	MKTF-17R	2109A01-002a	34	20	µg/L	J	ERPD-FD
2-Methylnaphthalene	SW8270C	MKTF-17R	2109a01-002d	16	1	µg/L	J	ERPD-FD
2-Methylnaphthalene	SW8260B	MKTF-18R	2109A01-003a	300	20	µg/L	J	DATA-COMP, ERPD-FD
2-Methylnaphthalene	SW8270C	MKTF-18R	2109a01-003d	130	1	µg/L	J	DATA-COMP, ERPD-FD
2-Methylnaphthalene	SW8260B	MKTF-04R	2109A01-004a	59	20	µg/L	J	ERPD-FD
2-Methylnaphthalene	SW8270C	MKTF-04R	2109a01-004d	6.2	1	µg/L	J	ERPD-FD
2-Methylnaphthalene	SW8260B	MKTF-01R	2109A01-005a	25	20	µg/L	J	ERPD-FD
2-Methylnaphthalene	SW8270C	MKTF-01R	2109a01-005d	8.2	1	µg/L	J	ERPD-FD
2-Methylnaphthalene	SW8260B	MKTF-02R	2109A01-006a	ND	20	µg/L	UJ	ERPD-FD
2-Methylnaphthalene	SW8270C	MKTF-02R	2109a01-006d	ND	0.1	µg/L	UJ	ERPD-FD
2-Methylnaphthalene	SW8260B	OW-68	2109A01-007a	ND	4	µg/L	UJ	ERPD-FD
2-Methylnaphthalene	SW8270C	OW-68	2109a01-007d	ND	0.1	µg/L	UJ	ERPD-FD
2-Methylnaphthalene	SW8260B	OW-67	2109A01-008a	ND	4	µg/L	UJ	ERPD-FD
2-Methylnaphthalene	SW8270C	OW-67	2109a01-008d	ND	0.1	µg/L	UJ	ERPD-FD
2-Methylnaphthalene	SW8260B	OW-66	2109A01-009a	61	40	µg/L	J	ERPD-FD
2-Methylnaphthalene	SW8270C	OW-66	2109a01-009d	51	1	µg/L	J	ERPD-FD
2-Methylnaphthalene	SW8260B	DUP-09-17-21	2109A01-010a	54	4	µg/L	J	DATA-COMP, ERPD-FD
2-Methylnaphthalene	SW8270C	DUP-09-17-21	2109a01-010d	19	1	µg/L	J	DATA-COMP, ERPD-FD
2-Methylnaphthalene	SW8260B	FB-09-17-21	2109A01-011a	1	4	µg/L	J	ERPD-FD, MDLRL
2-Methylnaphthalene	SW8260B	Trip Blank	2109A01-012a	ND	4	µg/L	UJ	ERPD-FD

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
2-Methylphenol	SW8270C	MKTF-18R	2109a01-003d	130	5	µg/L	J	ERPD-FD
2-Methylphenol	SW8270C	MKTF-01R	2109a01-005d	2.1	5	µg/L	J	MDLRL
2-Methylphenol	SW8270C	DUP-09-17-21	2109a01-010d	ND	5	µg/L	UJ	ERPD-FD
3,4-Methylphenol	SW8270C	MKTF-18R	2109a01-003d	35	5	µg/L	J	ERPD-FD
3,4-Methylphenol	SW8270C	DUP-09-17-21	2109a01-010d	ND	5	µg/L	UJ	ERPD-FD
Acenaphthene	SW8270C	MKTF-18R	2109a01-003d	5.4	1	µg/L	J	ERPD-FD
Acenaphthene	SW8270C	DUP-09-17-21	2109a01-010d	3	1	µg/L	J	ERPD-FD
Acetone	SW8260B	EB-09-17-21	2109A01-001a	3.8	10	µg/L	U	FBD, MDLRL
Acetone	SW8260B	MKTF-17R	2109A01-002a	16	50	µg/L	U	FBD, MDLRL
Acetone	SW8260B	MKTF-18R	2109A01-003a	20	50	µg/L	U	FBD, MDLRL
Acetone	SW8260B	MKTF-04R	2109A01-004a	26	50	µg/L	U	FBD, MDLRL
Acetone	SW8260B	MKTF-01R	2109A01-005a	47	50	µg/L	U	FBD, MDLRL
Acetone	SW8260B	OW-68	2109A01-007a	5.2	10	µg/L	U	FBD, MDLRL
Acetone	SW8260B	OW-67	2109A01-008a	4.7	10	µg/L	U	FBD, MDLRL
Acetone	SW8260B	OW-66	2109A01-009a	32	100	µg/L	U	FBD, MDLRL
Acetone	SW8260B	DUP-09-17-21	2109A01-010a	19	10	µg/L	JB	FBD
Acetone	SW8260B	FB-09-17-21	2109A01-011a	7.3	10	µg/L	J	MDLRL
Arsenic, Dissolved	E200.8	MKTF-17R	2109A01-002G	0.0046	0.01	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	MKTF-18R	2109A01-003G	0.0071	0.01	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	MKTF-04R	2109A01-004G	0.0036	0.01	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	MKTF-01R	2109A01-005G	0.0066	0.01	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	OW-68	2109A01-007G	0.0055	0.01	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	OW-67	2109A01-008G	0.0023	0.01	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	OW-66	2109A01-009G	0.0037	0.01	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	DUP-09-17-21	2109A01-010G	0.0026	0.01	mg/L	J	MDLRL
Arsenic, Total	E200.8	MKTF-02R	2109A01-006F	0.001	0.005	mg/L	J	MDLRL
Arsenic, Total	E200.8	OW-67	2109A01-008F	0.0025	0.005	mg/L	J	MDLRL
Arsenic, Total	E200.8	OW-66	2109A01-009F	0.0048	0.005	mg/L	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Benzene	SW8260B	EB-09-17-21	2109A01-001a	ND	1	µg/L	UJ	ERPD-FD
Benzene	SW8260B	MKTF-17R	2109A01-002a	1600	100	µg/L	J	ERPD-FD
Benzene	SW8260B	MKTF-18R	2109A01-003a	3700	100	µg/L	J	ERPD-FD
Benzene	SW8260B	MKTF-04R	2109A01-004a	1100	100	µg/L	J	ERPD-FD
Benzene	SW8260B	MKTF-01R	2109A01-005a	7100	100	µg/L	J	ERPD-FD
Benzene	SW8260B	MKTF-02R	2109A01-006a	29	5	µg/L	J	ERPD-FD
Benzene	SW8260B	OW-68	2109A01-007a	0.78	1	µg/L	U	ERPD-FD, FBD, MDLRL
Benzene	SW8260B	OW-67	2109A01-008a	ND	1	µg/L	UJ	ERPD-FD
Benzene	SW8260B	OW-66	2109A01-009a	12000	200	µg/L	J	ERPD-FD
Benzene	SW8260B	DUP-09-17-21	2109a01-010a	1200	100	µg/L	J	ERPD-FD
Benzene	SW8260B	FB-09-17-21	2109A01-011a	0.42	1	µg/L	J	ERPD-FD, MDLRL
Benzene	SW8260B	Trip Blank	2109A01-012a	ND	1	µg/L	UJ	ERPD-FD
Beryllium, Total	E 200.7	DUP-09-17-21	2109A01-010F	0.0019	0.002	mg/L	J	MDLRL
Bromodichloromethane	SW8260B	OW-66	2109A01-009a	2.1	10	µg/L	J	MDLRL
Bromodichloromethane	SW8260B	DUP-09-17-21	2109A01-010a	0.49	1	µg/L	J	MDLRL
Carbazole	SW8270C	OW-66	2109a01-009d	3.7	5	µg/L	J	MDLRL
Chloride	E300	EB-09-17-21	2109A01-001E	0.29	0.5	mg/L	J	MDLRL
Chloroethane	SW8260B	MKTF-02R	2109A01-006a	4.5	10	µg/L	J	MDLRL
Chloroform	SW8260B	MKTF-04R	2109A01-004a	1.2	5	µg/L	J	MDLRL
Chloroform	SW8260B	MKTF-02R	2109A01-006a	1.3	5	µg/L	J	MDLRL
Chloromethane	SW8260B	MKTF-04R	2109A01-004a	2.6	15	µg/L	J	MDLRL
Chloromethane	SW8260B	MKTF-02R	2109A01-006a	3.2	15	µg/L	J	MDLRL
Chloromethane	SW8260B	OW-68	2109A01-007a	2.3	3	µg/L	J	MDLRL
Chloromethane	SW8260B	OW-66	2109A01-009a	28	30	µg/L	J	MDLRL
Chloromethane	SW8260B	DUP-09-17-21	2109A01-010a	1.3	3	µg/L	J	MDLRL
Chromium, Total	E 200.7	MKTF-18R	2109A01-003F	ND	0.006	mg/L	UJ	ERPD-FD
Chromium, Total	E 200.7	OW-66	2109A01-009F	0.0027	0.006	mg/L	J	MDLRL
Chromium, Total	E 200.7	DUP-09-17-21	2109A01-010F	0.02	0.006	mg/L	J	ERPD-FD

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
cis-1,2-Dichloroethene	SW8260B	MKTF-18R	2109A01-003a	7.7	5	µg/L	J	ERPD-FD
cis-1,2-Dichloroethene	SW8260B	MKTF-02R	2109A01-006a	3.1	5	µg/L	J	MDLRL
cis-1,2-Dichloroethene	SW8260B	DUP-09-17-21	2109A01-010a	17	1	µg/L	J	ERPD-FD
Cobalt, Dissolved	E 200.7	MKTF-17R	2109A01-002G	0.0028	0.006	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	MKTF-04R	2109A01-004G	0.0043	0.006	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	MKTF-02R	2109A01-006G	0.005	0.006	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	DUP-09-17-21	2109A01-010G	0.0053	0.006	mg/L	J	MDLRL
Cobalt, Total	E 200.7	MKTF-17R	2109A01-002F	0.0045	0.006	mg/L	J	MDLRL
Cobalt, Total	E 200.7	MKTF-02R	2109A01-006F	0.0053	0.006	mg/L	J	MDLRL
Cobalt, Total	E 200.7	OW-67	2109A01-008F	0.029	0.03	mg/L	J	MDLRL
Dibromochloromethane	SW8260B	OW-66	2109A01-009a	6.2	10	µg/L	J	MDLRL
Dibromochloromethane	SW8260B	DUP-09-17-21	2109A01-010a	0.49	1	µg/L	J	MDLRL
Ethylbenzene	SW8260B	EB-09-17-21	2109A01-001a	ND	1	µg/L	UJ	ERPD-FD
Ethylbenzene	SW8260B	MKTF-17R	2109A01-002a	280	5	µg/L	J	ERPD-FD
Ethylbenzene	SW8260B	MKTF-18R	2109A01-003a	39	5	µg/L	J	ERPD-FD
Ethylbenzene	SW8260B	MKTF-04R	2109A01-004a	200	5	µg/L	J	ERPD-FD
Ethylbenzene	SW8260B	MKTF-01R	2109A01-005a	370	5	µg/L	J	ERPD-FD
Ethylbenzene	SW8260B	MKTF-02R	2109A01-006a	ND	5	µg/L	UJ	ERPD-FD
Ethylbenzene	SW8260B	OW-68	2109A01-007a	0.85	1	µg/L	J	ERPD-FD, MDLRL
Ethylbenzene	SW8260B	OW-67	2109A01-008a	ND	1	µg/L	UJ	ERPD-FD
Ethylbenzene	SW8260B	OW-66	2109A01-009a	720	10	µg/L	J	ERPD-FD
Ethylbenzene	SW8260B	DUP-09-17-21	2109A01-010a	1100	50	µg/L	J	ERPD-FD
Ethylbenzene	SW8260B	FB-09-17-21	2109A01-011a	ND	1	µg/L	UJ	ERPD-FD
Ethylbenzene	SW8260B	Trip Blank	2109A01-012a	ND	1	µg/L	UJ	ERPD-FD
Fluorene	SW8270C	MKTF-18R	2109a01-003d	8.4	1	µg/L	J	ERPD-FD
Fluorene	SW8270C	DUP-09-17-21	2109a01-010d	3.4	1	µg/L	J	ERPD-FD
Fluoride, Total	E300	MKTF-01R	2109A01-005E	0.43	0.5	mg/L	J	MDLRL
Iron, Dissolved	E 200.7	MKTF-18R	2109A01-003G	1.5	0.1	mg/L	J	ERPD-FD

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Iron, Dissolved	E 200.7	OW-67	2109A01-008G	0.015	0.02	mg/L	J	MDLRL
Iron, Dissolved	E 200.7	DUP-09-17-21	2109A01-010G	0.51	0.02	mg/L	J	ERPD-FD
Iron, Total	E 200.7	EB-09-17-21	2109A01-001F	ND	0.05	mg/L	UJ	ERPD-FD
Iron, Total	E 200.7	MKTF-17R	2109A01-002F	1.4	0.5	mg/L	J	ERPD-FD
Iron, Total	E 200.7	MKTF-18R	2109A01-003F	3.3	0.5	mg/L	J	ERPD-FD
Iron, Total	E 200.7	MKTF-04R	2109A01-004F	9.3	0.5	mg/L	J	ERPD-FD
Iron, Total	E 200.7	MKTF-01R	2109A01-005F	5.7	0.5	mg/L	J	ERPD-FD
Iron, Total	E 200.7	MKTF-02R	2109A01-006F	0.047	0.05	mg/L	J	ERPD-FD, MDLRL
Iron, Total	E 200.7	OW-68	2109A01-007F	2.9	0.5	mg/L	J	ERPD-FD
Iron, Total	E 200.7	OW-67	2109A01-008F	0.23	0.05	mg/L	J	ERPD-FD
Iron, Total	E 200.7	OW-66	2109A01-009F	6.9	0.5	mg/L	J	ERPD-FD
Iron, Total	E 200.7	DUP-09-17-21	2109A01-010F	17	1	mg/L	J	ERPD-FD
Isopropylbenzene	SW8260B	MKTF-18R	2109A01-003a	4.3	5	µg/L	J	ERPD-FD, MDLRL
Isopropylbenzene	SW8260B	DUP-09-17-21	2109A01-010a	12	1	µg/L	J	ERPD-FD
Lead, Dissolved	E200.8	OW-68	2109A01-007G	0.0012	0.005	mg/L	J	MDLRL
Lead, Total	E200.8	EB-09-17-21	2109A01-001F	0.00052	0.0025	mg/L	J	ERPD-FD, MDLRL
Lead, Total	E200.8	MKTF-17R	2109A01-002F	0.00039	0.0025	mg/L	U	EBD, ERPD-FD, MDLRL
Lead, Total	E200.8	MKTF-18R	2109A01-003F	0.0019	0.0025	mg/L	U	EBD, ERPD-FD, MDLRL
Lead, Total	E200.8	MKTF-04R	2109A01-004F	0.0075	0.0025	mg/L	J	ERPD-FD
Lead, Total	E200.8	MKTF-01R	2109A01-005F	0.0095	0.0025	mg/L	J	ERPD-FD
Lead, Total	E200.8	MKTF-02R	2109A01-006F	ND	0.0025	mg/L	UJ	ERPD-FD
Lead, Total	E200.8	OW-68	2109A01-007F	0.002	0.0025	mg/L	U	EBD, ERPD-FD, MDLRL
Lead, Total	E200.8	OW-67	2109A01-008F	ND	0.0025	mg/L	UJ	ERPD-FD
Lead, Total	E200.8	OW-66	2109A01-009F	0.009	0.0025	mg/L	J	ERPD-FD
Lead, Total	E200.8	DUP-09-17-21	2109A01-010F	0.046	0.0025	mg/L	J	ERPD-FD
Manganese, Dissolved	E 200.7	MKTF-18R	2109A01-003G	1.7	0.01	mg/L	J	ERPD-FD
Manganese, Dissolved	E 200.7	DUP-09-17-21	2109A01-010G	2.4	0.01	mg/L	J	ERPD-FD
Manganese, Total	E 200.7	MKTF-18R	2109A01-003F	1.8	0.02	mg/L	J	ERPD-FD

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Manganese, Total	E 200.7	DUP-09-17-21	2109A01-010F	2.9	0.02	mg/L	J	ERPD-FD
MTBE	SW8260B	EB-09-17-21	2109A01-001a	ND	1	µg/L	UJ	ERPD-FD
MTBE	SW8260B	MKTF-17R	2109A01-002a	3900	100	µg/L	J	ERPD-FD
MTBE	SW8260B	MKTF-18R	2109A01-003a	200	5	µg/L	J	ERPD-FD
MTBE	SW8260B	MKTF-04R	2109A01-004a	1600	100	µg/L	J	ERPD-FD
MTBE	SW8260B	MKTF-01R	2109A01-005a	86	5	µg/L	J	ERPD-FD
MTBE	SW8260B	MKTF-02R	2109A01-006a	45	5	µg/L	J	ERPD-FD
MTBE	SW8260B	OW-68	2109A01-007a	1.3	1	µg/L	J	ERPD-FD
MTBE	SW8260B	OW-67	2109A01-008a	34	1	µg/L	J	ERPD-FD
MTBE	SW8260B	OW-66	2109A01-009a	680	10	µg/L	J	ERPD-FD
MTBE	SW8260B	DUP-09-17-21	2109A01-010a	7800	50	µg/L	J	ERPD-FD
MTBE	SW8260B	FB-09-17-21	2109A01-011a	ND	1	µg/L	UJ	ERPD-FD
MTBE	SW8260B	Trip Blank	2109A01-012a	ND	1	µg/L	UJ	ERPD-FD
Naphthalene	SW8260B	MKTF-17R	2109A01-002a	72	10	µg/L	J	DATA-COMP
Naphthalene	SW8270C	MKTF-17R	2109a01-002d	38	1	µg/L	J	DATA-COMP
Naphthalene	SW8260B	MKTF-18R	2109A01-003a	170	10	µg/L	J	DATA-COMP, ERPD-FD
Naphthalene	SW8270C	MKTF-18R	2109a01-003d	87	1	µg/L	J	DATA-COMP, ERPD-FD
Naphthalene	SW8260B	MKTF-04R	2109A01-004a	81	10	µg/L	J	DATA-COMP
Naphthalene	SW8270C	MKTF-04R	2109a01-004d	15	1	µg/L	J	DATA-COMP
Naphthalene	SW8260B	MKTF-01R	2109A01-005a	52	10	µg/L	J	DATA-COMP
Naphthalene	SW8270C	MKTF-01R	2109a01-005d	21	1	µg/L	J	DATA-COMP
Naphthalene	SW8260B	DUP-09-17-21	2109A01-010a	77	2	µg/L	J	DATA-COMP, ERPD-FD
Naphthalene	SW8270C	DUP-09-17-21	2109a01-010d	42	1	µg/L	J	DATA-COMP, ERPD-FD
Naphthalene	SW8260B	FB-09-17-21	2109A01-011a	0.63	2	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-17R	2109A01-002a	4.9	15	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-18R	2109A01-003a	3.1	15	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-04R	2109A01-004a	3.6	15	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-01R	2109A01-005a	6.9	15	µg/L	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
n-Butylbenzene	SW8260B	OW-66	2109A01-009a	20	30	µg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-18R	2109A01-003G	0.0048	0.01	mg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-04R	2109A01-004G	0.0066	0.01	mg/L	J	MDLRL
Nickel, Dissolved	E 200.7	DUP-09-17-21	2109A01-010G	0.0068	0.01	mg/L	J	MDLRL
Nickel, Total	E 200.7	EB-09-17-21	2109A01-001F	ND	0.01	mg/L	UJ	ERPD-FD
Nickel, Total	E 200.7	MKTF-17R	2109A01-002F	0.0062	0.01	mg/L	J	ERPD-FD, MDLRL
Nickel, Total	E 200.7	MKTF-18R	2109A01-003F	0.0086	0.01	mg/L	J	ERPD-FD, MDLRL
Nickel, Total	E 200.7	MKTF-04R	2109A01-004F	0.016	0.01	mg/L	J	ERPD-FD
Nickel, Total	E 200.7	MKTF-01R	2109A01-005F	0.035	0.01	mg/L	J	ERPD-FD
Nickel, Total	E 200.7	MKTF-02R	2109A01-006F	0.0063	0.01	mg/L	J	ERPD-FD, MDLRL
Nickel, Total	E 200.7	OW-68	2109A01-007F	0.17	0.05	mg/L	J	ERPD-FD
Nickel, Total	E 200.7	OW-67	2109A01-008F	0.11	0.05	mg/L	J	ERPD-FD
Nickel, Total	E 200.7	OW-66	2109A01-009F	0.38	0.01	mg/L	J	ERPD-FD
Nickel, Total	E 200.7	DUP-09-17-21	2109A01-010F	0.026	0.01	mg/L	J	ERPD-FD
Nitrogen, Nitrate	E300	MKTF-17R	2109A01-002E	0.39	0.5	mg/L	U	EBD, MDLRL
Nitrogen, Nitrate	E300	MKTF-02R	2109A01-006E	0.2	0.5	mg/L	U	EBD, MDLRL
Nitrogen, Nitrate	E300	OW-68	2109A01-007E	0.33	0.5	mg/L	U	EBD, MDLRL
Nitrogen, Nitrate	E300	OW-67	2109A01-008E	0.17	0.5	mg/L	U	EBD, MDLRL
Nitrogen, Nitrite	E300	OW-68	2109A01-007E	0.14	0.5	mg/L	J	MDLRL
n-Propylbenzene	SW8260B	EB-09-17-21	2109A01-001a	ND	1	µg/L	UJ	ERPD-FD
n-Propylbenzene	SW8260B	MKTF-17R	2109A01-002a	28	5	µg/L	J	ERPD-FD
n-Propylbenzene	SW8260B	MKTF-18R	2109A01-003a	6.6	5	µg/L	J	ERPD-FD
n-Propylbenzene	SW8260B	MKTF-04R	2109A01-004a	28	5	µg/L	J	ERPD-FD
n-Propylbenzene	SW8260B	MKTF-01R	2109A01-005a	52	5	µg/L	J	ERPD-FD
n-Propylbenzene	SW8260B	MKTF-02R	2109A01-006a	ND	5	µg/L	UJ	ERPD-FD
n-Propylbenzene	SW8260B	OW-68	2109A01-007a	0.3	1	µg/L	J	ERPD-FD, MDLRL
n-Propylbenzene	SW8260B	OW-67	2109A01-008a	ND	1	µg/L	UJ	ERPD-FD
n-Propylbenzene	SW8260B	OW-66	2109A01-009a	140	10	µg/L	J	ERPD-FD

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
n-Propylbenzene	SW8260B	DUP-09-17-21	2109A01-010a	28	1	µg/L	J	ERPD-FD
n-Propylbenzene	SW8260B	FB-09-17-21	2109A01-011a	ND	1	µg/L	UJ	ERPD-FD
n-Propylbenzene	SW8260B	Trip Blank	2109A01-012a	ND	1	µg/L	UJ	ERPD-FD
Phenanthrene	SW8270C	EB-09-17-21	2109a01-001d	ND	0.1	µg/L	UJ	ERPD-FD
Phenanthrene	SW8270C	MKTF-17R	2109a01-002d	0.8	1	µg/L	J	ERPD-FD, MDLRL
Phenanthrene	SW8270C	MKTF-18R	2109a01-003d	6.2	1	µg/L	J	ERPD-FD
Phenanthrene	SW8270C	MKTF-04R	2109a01-004d	ND	1	µg/L	UJ	ERPD-FD
Phenanthrene	SW8270C	MKTF-01R	2109a01-005d	ND	1	µg/L	UJ	ERPD-FD
Phenanthrene	SW8270C	MKTF-02R	2109a01-006d	ND	0.1	µg/L	UJ	ERPD-FD
Phenanthrene	SW8270C	OW-68	2109a01-007d	ND	0.1	µg/L	UJ	ERPD-FD
Phenanthrene	SW8270C	OW-67	2109a01-008d	ND	0.1	µg/L	UJ	ERPD-FD
Phenanthrene	SW8270C	OW-66	2109a01-009d	2.6	1	µg/L	J	ERPD-FD
Phenanthrene	SW8270C	DUP-09-17-21	2109a01-010d	1.2	1	µg/L	J	ERPD-FD
Phenol	SW8270C	EB-09-17-21	2109a01-001d	ND	5	µg/L	UJ	ERPD-FD
Phenol	SW8270C	MKTF-17R	2109a01-002d	150	5	µg/L	J	ERPD-FD
Phenol	SW8270C	MKTF-18R	2109a01-003d	120	5	µg/L	J	ERPD-FD
Phenol	SW8270C	MKTF-04R	2109a01-004d	8.3	5	µg/L	J	ERPD-FD
Phenol	SW8270C	MKTF-01R	2109a01-005d	92	5	µg/L	J	ERPD-FD
Phenol	SW8270C	MKTF-02R	2109a01-006d	0.76	5	µg/L	J	ERPD-FD, MDLRL
Phenol	SW8270C	OW-68	2109a01-007d	ND	5	µg/L	UJ	ERPD-FD
Phenol	SW8270C	OW-67	2109a01-008d	ND	5	µg/L	UJ	ERPD-FD
Phenol	SW8270C	OW-66	2109a01-009d	18	5	µg/L	J	ERPD-FD
Phenol	SW8270C	DUP-09-17-21	2109a01-010d	8.2	5	µg/L	J	ERPD-FD
p-Isopropyltoluene	SW8260B	MKTF-17R	2109A01-002a	3.4	5	µg/L	J	MDLRL
p-Isopropyltoluene	SW8260B	MKTF-18R	2109A01-003a	2.6	5	µg/L	J	MDLRL
p-Isopropyltoluene	SW8260B	MKTF-04R	2109A01-004a	2.2	5	µg/L	J	MDLRL
p-Isopropyltoluene	SW8260B	MKTF-01R	2109A01-005a	2.4	5	µg/L	J	MDLRL
p-Isopropyltoluene	SW8260B	OW-66	2109A01-009a	4.4	10	µg/L	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Potassium, Total	E 200.7	MKTF-17R	2109A01-002F	0.88	1	mg/L	J	MDLRL
Potassium, Total	E 200.7	MKTF-18R	2109A01-003F	2.9	1	mg/L	J	ERPD-FD
Potassium, Total	E 200.7	OW-66	2109A01-009F	0.97	1	mg/L	J	MDLRL
Potassium, Total	E 200.7	DUP-09-17-21	2109A01-010F	5.1	1	mg/L	J	ERPD-FD
Pyrene	SW8270C	OW-68	2109a01-007d	0.18	0.2	µg/L	U	MBD, MDLRL
sec-Butylbenzene	SW8260B	MKTF-17R	2109A01-002a	2.8	5	µg/L	J	MDLRL
sec-Butylbenzene	SW8260B	MKTF-18R	2109A01-003a	1.9	5	µg/L	J	MDLRL
sec-Butylbenzene	SW8260B	MKTF-04R	2109A01-004a	1.8	5	µg/L	J	MDLRL
sec-Butylbenzene	SW8260B	MKTF-01R	2109A01-005a	3.2	5	µg/L	J	MDLRL
sec-Butylbenzene	SW8260B	OW-66	2109A01-009a	5.6	10	µg/L	J	MDLRL
Selenium, Dissolved	E200.8	OW-68	2109A01-007G	0.0058	0.01	mg/L	J	MDLRL
Selenium, Total	E200.8	MKTF-04R	2109A01-004F	0.0028	0.005	mg/L	J	MDLRL
Selenium, Total	E200.8	OW-67	2109A01-008F	0.0028	0.005	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	OW-68	2109A01-007G	0.0029	0.005	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	OW-67	2109A01-008G	0.0039	0.005	mg/L	J	MDLRL
Silver, Total	E 200.7	MKTF-02R	2109A01-006F	0.0014	0.005	mg/L	J	MDLRL
Styrene	SW8260B	OW-66	2109A01-009a	1.4	10	µg/L	J	MDLRL
Styrene	SW8260B	DUP-09-17-21	2109A01-010a	0.21	1	µg/L	J	MDLRL
Sulfate	E300	EB-09-17-21	2109A01-001E	1.7	0.5	mg/L	J	ERPD-FD
Sulfate	E300	MKTF-17R	2109A01-002E	10	2.5	mg/L	JB	EBD, ERPD-FD
Sulfate	E300	MKTF-18R	2109A01-003E	10	2.5	mg/L	JB	EBD, ERPD-FD
Sulfate	E300	MKTF-04R	2109A01-004E	63	2.5	mg/L	J	ERPD-FD
Sulfate	E300	MKTF-01R	2109A01-005E	13	2.5	mg/L	JB	EBD, ERPD-FD
Sulfate	E300	MKTF-02R	2109A01-006E	710	10	mg/L	J	ERPD-FD
Sulfate	E300	OW-68	2109A01-007E	800	10	mg/L	J	ERPD-FD
Sulfate	E300	OW-67	2109A01-008E	760	10	mg/L	J	ERPD-FD
Sulfate	E300	OW-66	2109A01-009E	1.4	2.5	mg/L	U	EBD, ERPD-FD, MDLRL
Sulfate	E300	DUP-09-17-21	2109A01-010E	62	2.5	mg/L	J	ERPD-FD

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Toluene	SW8260B	EB-09-17-21	2109A01-001a	ND	1	µg/L	UJ	ERPD-FD
Toluene	SW8260B	MKTF-17R	2109A01-002a	5400	100	µg/L	J	ERPD-FD
Toluene	SW8260B	MKTF-18R	2109A01-003a	1800	100	µg/L	J	ERPD-FD
Toluene	SW8260B	MKTF-04R	2109A01-004a	13	5	µg/L	J	ERPD-FD
Toluene	SW8260B	MKTF-01R	2109A01-005a	170	5	µg/L	J	ERPD-FD
Toluene	SW8260B	MKTF-02R	2109A01-006a	ND	5	µg/L	UJ	ERPD-FD
Toluene	SW8260B	OW-68	2109A01-007a	ND	1	µg/L	UJ	ERPD-FD
Toluene	SW8260B	OW-67	2109A01-008a	ND	1	µg/L	UJ	ERPD-FD
Toluene	SW8260B	OW-66	2109A01-009a	9200	200	µg/L	J	ERPD-FD
Toluene	SW8260B	DUP-09-17-21	2109A01-010a	13	1	µg/L	J	ERPD-FD
Toluene	SW8260B	FB-09-17-21	2109A01-011a	ND	1	µg/L	UJ	ERPD-FD
Toluene	SW8260B	Trip Blank	2109A01-012a	ND	1	µg/L	UJ	ERPD-FD
TPH DRO	SW8015	EB-09-17-21	2109A01-001C	0.019	0.064	mg/L	J	MDLRL
TPH DRO	SW8015	MKTF-18R	2109A01-003C	4.6	0.64	mg/L	J	ERPD-FD
TPH DRO	SW8015	DUP-09-17-21	2109A01-010C	2.6	0.064	mg/L	J	ERPD-FD
TPH GRO	SW8015	MKTF-18R	2109A01-003a	13	0.25	mg/L	J	ERPD-FD
TPH GRO	SW8015	DUP-09-17-21	2109A01-010a	5	0.05	mg/L	J	ERPD-FD
TPH ORO	SW8015	OW-67	2109A01-008C	0.064	0.08	mg/L	J	MDLRL
trans-1,2-Dichloroethene	SW8260B	OW-66	2109A01-009a	2.7	10	µg/L	J	MDLRL
trans-1,2-Dichloroethene	SW8260B	DUP-09-17-21	2109A01-010a	0.32	1	µg/L	J	MDLRL
trans-1,3-Dichloropropene	SW8260B	OW-66	2109A01-009a	6.5	10	µg/L	J	MDLRL
trans-1,3-Dichloropropene	SW8260B	DUP-09-17-21	2109A01-010a	0.9	1	µg/L	J	MDLRL
Trichloroethene	SW8260B	MKTF-04R	2109A01-004a	2.1	5	µg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-02R	2109A01-006G	0.0022	0.05	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	OW-68	2109A01-007G	0.0023	0.05	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	OW-66	2109A01-009G	0.0023	0.05	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-18R	2109A01-003F	0.0031	0.05	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-04R	2109A01-004F	0.016	0.05	mg/L	J	MDLRL

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Vanadium, Total	E 200.7	OW-66	2109A01-009F	0.0083	0.05	mg/L	J	MDLRL
Vanadium, Total	E 200.7	DUP-09-17-21	2109A01-010F	0.033	0.05	mg/L	J	MDLRL
Vinyl Chloride	SW8260B	MKTF-02R	2109A01-006a	1.9	5	µg/L	J	MDLRL
Vinyl Chloride	SW8260B	DUP-09-17-21	2109A01-010a	0.41	1	µg/L	J	MDLRL
Xylenes, Total	SW8260B	MKTF-18R	2109A01-003a	370	7.5	µg/L	J	ERPD-FD
Xylenes, Total	SW8260B	OW-68	2109A01-007a	0.87	1.5	µg/L	J	MDLRL
Xylenes, Total	SW8260B	DUP-09-17-21	2109A01-010a	260	1.5	µg/L	J	ERPD-FD
Zinc, Dissolved	E 200.7	EB-09-17-21	2109A01-001G	0.0071	0.01	mg/L	J	MDLRL
Zinc, Dissolved	E 200.7	MKTF-17R	2109A01-002G	0.0096	0.01	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	MKTF-18R	2109A01-003G	0.0093	0.01	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	MKTF-04R	2109A01-004G	0.011	0.01	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-01R	2109A01-005G	0.011	0.01	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-02R	2109A01-006G	0.034	0.01	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	OW-68	2109A01-007G	0.039	0.01	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	OW-67	2109A01-008G	0.016	0.01	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	DUP-09-17-21	2109A01-010G	0.011	0.01	mg/L	JB	EBD
Zinc, Total	E 200.7	MKTF-18R	2109A01-003F	ND	0.01	mg/L	UJ	ERPD-FD
Zinc, Total	E 200.7	OW-66	2109A01-009F	0.0095	0.01	mg/L	J	MDLRL
Zinc, Total	E 200.7	DUP-09-17-21	2109A01-010F	0.036	0.01	mg/L	J	ERPD-FD

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 24, 2021

Lesli Alexander

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: MKTF Well Installation OrderNo.: 2108857

Dear Lesli Alexander:

Hall Environmental Analysis Laboratory received 11 sample(s) on 8/17/2021 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** RW-2R (16.5-17')
Project: MKTF Well Installation **Collection Date:** 8/13/2021 2:35:00 PM
Lab ID: 2108857-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 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)	86	4.8	9.6		mg/Kg	1	8/18/2021 5:26:48 PM	62028
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/18/2021 5:26:48 PM	62028
Surr: DNOP	125	0	70-130		%Rec	1	8/18/2021 5:26:48 PM	62028
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0025	0.032		mg/Kg	1	9/1/2021 11:00:05 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Arsenic	1.7	1.4	2.4	J	mg/Kg	1	8/18/2021 2:27:40 PM	62031
Barium	190	0.058	0.096		mg/Kg	1	8/18/2021 2:27:40 PM	62031
Cadmium	ND	0.048	0.096		mg/Kg	1	8/18/2021 2:27:40 PM	62031
Chromium	8.1	0.14	0.29		mg/Kg	1	8/18/2021 2:27:40 PM	62031
Iron	13000	240	240		mg/Kg	100	9/22/2021 3:34:29 PM	62031
Lead	1.0	0.26	0.29		mg/Kg	1	8/18/2021 4:57:16 PM	62031
Manganese	560	1.6	1.9		mg/Kg	10	9/22/2021 3:32:24 PM	62031
Selenium	ND	2.1	2.4		mg/Kg	1	8/18/2021 2:27:40 PM	62031
Silver	ND	0.14	0.24		mg/Kg	1	8/18/2021 2:27:40 PM	62031
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.087	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Acenaphthylene	ND	0.088	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Aniline	ND	0.067	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Anthracene	ND	0.088	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Azobenzene	ND	0.097	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Benz(a)anthracene	ND	0.063	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Benzo(a)pyrene	ND	0.092	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Benzo(g,h,i)perylene	ND	0.099	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Benzo(k)fluoranthene	ND	0.073	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Benzoic acid	ND	0.12	0.97		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Benzyl alcohol	ND	0.080	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Bis(2-chloroethoxy)methane	ND	0.075	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Bis(2-chloroisopropyl)ether	ND	0.099	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	8/26/2021 10:11:03 PM	62128
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Butyl benzyl phthalate	ND	0.059	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Carbazole	ND	0.086	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
4-Chloro-3-methylphenol	ND	0.082	0.49		mg/Kg	1	8/26/2021 10:11:03 PM	62128
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	8/26/2021 10:11:03 PM	62128
2-Chloronaphthalene	ND	0.092	0.24		mg/Kg	1	8/26/2021 10:11:03 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** RW-2R (16.5-17')
Project: MKTF Well Installation **Collection Date:** 8/13/2021 2:35:00 PM
Lab ID: 2108857-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
4-Chlorophenyl phenyl ether	ND	0.083	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Chrysene	ND	0.086	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Di-n-butyl phthalate	0.34	0.27	0.39	J	mg/Kg	1	8/26/2021 10:11:03 PM	62128
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
1,2-Dichlorobenzene	ND	0.079	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
1,3-Dichlorobenzene	ND	0.069	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
1,4-Dichlorobenzene	ND	0.083	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Dimethyl phthalate	ND	0.090	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	8/26/2021 10:11:03 PM	62128
2,4-Dimethylphenol	0.13	0.069	0.29	J	mg/Kg	1	8/26/2021 10:11:03 PM	62128
4,6-Dinitro-2-methylphenol	ND	0.082	0.39		mg/Kg	1	8/26/2021 10:11:03 PM	62128
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	8/26/2021 10:11:03 PM	62128
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	8/26/2021 10:11:03 PM	62128
2,6-Dinitrotoluene	ND	0.099	0.49		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Fluoranthene	ND	0.079	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Fluorene	ND	0.087	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Hexachlorobenzene	ND	0.087	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Hexachlorobutadiene	ND	0.091	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Hexachloroethane	ND	0.086	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Isophorone	ND	0.080	0.39		mg/Kg	1	8/26/2021 10:11:03 PM	62128
1-Methylnaphthalene	0.20	0.090	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
2-Methylnaphthalene	0.34	0.080	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
2-Methylphenol	0.25	0.082	0.39	J	mg/Kg	1	8/26/2021 10:11:03 PM	62128
3+4-Methylphenol	ND	0.081	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
N-Nitrosodi-n-propylamine	ND	0.090	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Naphthalene	0.40	0.092	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
2-Nitroaniline	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	8/26/2021 10:11:03 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** RW-2R (16.5-17')
Project: MKTF Well Installation **Collection Date:** 8/13/2021 2:35:00 PM
Lab ID: 2108857-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.084	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
4-Nitrophenol	ND	0.080	0.24		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Pentachlorophenol	ND	0.084	0.39		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Phenanthrene	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Phenol	0.27	0.075	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Pyrene	ND	0.074	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Pyridine	ND	0.16	0.39		mg/Kg	1	8/26/2021 10:11:03 PM	62128
1,2,4-Trichlorobenzene	ND	0.089	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
2,4,5-Trichlorophenol	ND	0.062	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
2,4,6-Trichlorophenol	ND	0.084	0.19		mg/Kg	1	8/26/2021 10:11:03 PM	62128
Surr: 2-Fluorophenol	0		20.3-74.1	S	%Rec	1	8/26/2021 10:11:03 PM	62128
Surr: Phenol-d5	65.9		23.1-92.7		%Rec	1	8/26/2021 10:11:03 PM	62128
Surr: 2,4,6-Tribromophenol	66.6		17.3-122		%Rec	1	8/26/2021 10:11:03 PM	62128
Surr: Nitrobenzene-d5	49.2		24.7-73.2		%Rec	1	8/26/2021 10:11:03 PM	62128
Surr: 2-Fluorobiphenyl	53.0		21.5-90.1		%Rec	1	8/26/2021 10:11:03 PM	62128
Surr: 4-Terphenyl-d14	70.1		15-140		%Rec	1	8/26/2021 10:11:03 PM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	9.7	0.023	0.060		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Toluene	44	0.31	2.4		mg/Kg	100	8/25/2021 1:27:21 PM	62009
Ethylbenzene	13	0.58	2.4		mg/Kg	100	8/25/2021 1:27:21 PM	62009
Methyl tert-butyl ether (MTBE)	ND	0.067	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,2,4-Trimethylbenzene	20	0.34	2.4		mg/Kg	100	8/25/2021 1:27:21 PM	62009
1,3,5-Trimethylbenzene	7.6	0.027	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,2-Dichloroethane (EDC)	ND	0.027	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,2-Dibromoethane (EDB)	ND	0.047	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Naphthalene	1.0	0.044	0.24		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1-Methylnaphthalene	0.42	0.14	0.48	J	mg/Kg	5	8/24/2021 5:49:46 PM	62009
2-Methylnaphthalene	0.72	0.11	0.48		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Acetone	ND	0.39	1.8		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Bromobenzene	ND	0.025	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Bromodichloromethane	ND	0.015	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Bromoform	ND	0.029	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Bromomethane	ND	0.20	0.36		mg/Kg	5	8/24/2021 5:49:46 PM	62009
2-Butanone	ND	0.52	1.2		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Carbon disulfide	ND	0.049	1.2		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Carbon tetrachloride	ND	0.013	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Chlorobenzene	0.10	0.021	0.12	J	mg/Kg	5	8/24/2021 5:49:46 PM	62009
Chloroethane	ND	0.045	0.24		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Chloroform	ND	0.017	0.12		mg/Kg	5	8/24/2021 5:49:46 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** RW-2R (16.5-17')
Project: MKTF Well Installation **Collection Date:** 8/13/2021 2:35:00 PM
Lab ID: 2108857-001 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Chloromethane	0.19	0.042	0.36	J	mg/Kg	5	8/24/2021 5:49:46 PM	62009
2-Chlorotoluene	ND	0.016	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
4-Chlorotoluene	ND	0.063	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
cis-1,2-DCE	ND	0.059	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
cis-1,3-Dichloropropene	ND	0.018	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,2-Dibromo-3-chloropropane	ND	0.052	0.24		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Dibromochloromethane	ND	0.019	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Dibromomethane	ND	0.028	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,2-Dichlorobenzene	ND	0.025	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,3-Dichlorobenzene	ND	0.023	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,4-Dichlorobenzene	ND	0.032	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Dichlorodifluoromethane	ND	0.046	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,1-Dichloroethane	ND	0.035	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,1-Dichloroethene	ND	0.026	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,2-Dichloropropane	ND	0.023	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,3-Dichloropropane	ND	0.026	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
2,2-Dichloropropane	ND	0.017	0.24		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,1-Dichloropropene	ND	0.014	0.24		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Hexachlorobutadiene	ND	0.081	0.24		mg/Kg	5	8/24/2021 5:49:46 PM	62009
2-Hexanone	ND	0.052	1.2		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Isopropylbenzene	3.5	0.022	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
4-Isopropyltoluene	1.2	0.031	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
4-Methyl-2-pentanone	ND	0.14	1.2		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Methylene chloride	ND	0.086	0.36		mg/Kg	5	8/24/2021 5:49:46 PM	62009
n-Butylbenzene	1.6	0.032	0.36		mg/Kg	5	8/24/2021 5:49:46 PM	62009
n-Propylbenzene	5.3	0.019	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
sec-Butylbenzene	1.6	0.098	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Styrene	ND	0.016	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
tert-Butylbenzene	0.047	0.028	0.12	J	mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,1,1,2-Tetrachloroethane	ND	0.018	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,1,2,2-Tetrachloroethane	ND	0.039	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Tetrachloroethene (PCE)	ND	0.033	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
trans-1,2-DCE	ND	0.023	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
trans-1,3-Dichloropropene	ND	0.028	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,2,3-Trichlorobenzene	ND	0.018	0.24		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,2,4-Trichlorobenzene	ND	0.041	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,1,1-Trichloroethane	ND	0.026	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,1,2-Trichloroethane	ND	0.030	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Trichloroethene (TCE)	ND	0.023	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009

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
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B	Analyte detected in the associated Method Blank
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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: RW-2R (16.5-17')
Project: MKTF Well Installation
Collection Date: 8/13/2021 2:35:00 PM
Lab ID: 2108857-001
Matrix: MEOH (SOIL)
Received Date: 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Trichlorofluoromethane	ND	0.027	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
1,2,3-Trichloropropane	ND	0.050	0.24		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Vinyl chloride	ND	0.023	0.12		mg/Kg	5	8/24/2021 5:49:46 PM	62009
Xylenes, Total	72	1.3	4.8		mg/Kg	100	8/25/2021 1:27:21 PM	62009
Surr: Dibromofluoromethane	73.6		70-130		%Rec	5	8/24/2021 5:49:46 PM	62009
Surr: 1,2-Dichloroethane-d4	75.7		70-130		%Rec	5	8/24/2021 5:49:46 PM	62009
Surr: Toluene-d8	124		70-130		%Rec	5	8/24/2021 5:49:46 PM	62009
Surr: 4-Bromofluorobenzene	134		70-130	S	%Rec	5	8/24/2021 5:49:46 PM	62009
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1900	66	240		mg/Kg	100	8/25/2021 1:27:21 PM	62009
Surr: BFB	102	0	70-130		%Rec	100	8/25/2021 1:27:21 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** RW-2R (32.5-33')
Project: MKTF Well Installation **Collection Date:** 8/13/2021 4:10:00 PM
Lab ID: 2108857-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 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	9.2		mg/Kg	1	8/18/2021 5:36:29 PM	62028
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/18/2021 5:36:29 PM	62028
Surr: DNOP	131	0	70-130	S	%Rec	1	8/18/2021 5:36:29 PM	62028
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0049	0.0026	0.032	J	mg/Kg	1	9/1/2021 11:02:14 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Arsenic	ND	15	26		mg/Kg	10	8/18/2021 3:52:45 PM	62031
Barium	1700	0.62	1.0		mg/Kg	10	8/18/2021 3:52:45 PM	62031
Cadmium	ND	0.52	1.0		mg/Kg	10	8/18/2021 3:52:45 PM	62031
Chromium	7.9	1.6	3.1		mg/Kg	10	8/18/2021 3:52:45 PM	62031
Iron	14000	260	260		mg/Kg	100	9/22/2021 3:43:21 PM	62031
Lead	8.1	2.8	3.1		mg/Kg	10	8/18/2021 5:00:04 PM	62031
Manganese	1300	1.7	2.1		mg/Kg	10	8/18/2021 3:52:45 PM	62031
Selenium	ND	23	26		mg/Kg	10	8/18/2021 3:52:45 PM	62031
Silver	ND	1.5	2.6		mg/Kg	10	8/18/2021 3:52:45 PM	62031
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.086	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Acenaphthylene	ND	0.087	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Aniline	ND	0.066	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Anthracene	ND	0.087	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Azobenzene	ND	0.096	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Benz(a)anthracene	ND	0.062	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Benzo(a)pyrene	ND	0.090	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Benzo(g,h,i)perylene	ND	0.098	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Benzo(k)fluoranthene	ND	0.072	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Benzoic acid	ND	0.12	0.96		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Benzyl alcohol	ND	0.079	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Bis(2-chloroethoxy)methane	ND	0.073	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Bis(2-chloroisopropyl)ether	ND	0.097	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.48		mg/Kg	1	8/26/2021 10:52:30 PM	62128
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Butyl benzyl phthalate	ND	0.058	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Carbazole	ND	0.084	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
4-Chloro-3-methylphenol	ND	0.081	0.48		mg/Kg	1	8/26/2021 10:52:30 PM	62128
4-Chloroaniline	ND	0.093	0.48		mg/Kg	1	8/26/2021 10:52:30 PM	62128
2-Chloronaphthalene	ND	0.091	0.24		mg/Kg	1	8/26/2021 10:52:30 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
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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** RW-2R (32.5-33')
Project: MKTF Well Installation **Collection Date:** 8/13/2021 4:10:00 PM
Lab ID: 2108857-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
4-Chlorophenyl phenyl ether	ND	0.081	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Chrysene	ND	0.085	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Di-n-butyl phthalate	ND	0.27	0.38		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Di-n-octyl phthalate	ND	0.12	0.38		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
1,2-Dichlorobenzene	ND	0.077	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
1,3-Dichlorobenzene	ND	0.068	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
1,4-Dichlorobenzene	ND	0.081	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Diethyl phthalate	ND	0.31	0.48		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Dimethyl phthalate	ND	0.089	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
2,4-Dichlorophenol	ND	0.078	0.38		mg/Kg	1	8/26/2021 10:52:30 PM	62128
2,4-Dimethylphenol	ND	0.068	0.29		mg/Kg	1	8/26/2021 10:52:30 PM	62128
4,6-Dinitro-2-methylphenol	ND	0.081	0.38		mg/Kg	1	8/26/2021 10:52:30 PM	62128
2,4-Dinitrophenol	ND	0.048	0.48		mg/Kg	1	8/26/2021 10:52:30 PM	62128
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	8/26/2021 10:52:30 PM	62128
2,6-Dinitrotoluene	ND	0.097	0.48		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Fluoranthene	ND	0.077	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Fluorene	ND	0.085	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Hexachlorobenzene	ND	0.085	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Hexachlorobutadiene	ND	0.090	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Hexachloroethane	ND	0.085	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Isophorone	ND	0.078	0.38		mg/Kg	1	8/26/2021 10:52:30 PM	62128
1-Methylnaphthalene	ND	0.088	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
2-Methylnaphthalene	ND	0.079	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
2-Methylphenol	ND	0.081	0.38		mg/Kg	1	8/26/2021 10:52:30 PM	62128
3+4-Methylphenol	ND	0.079	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
N-Nitrosodi-n-propylamine	ND	0.089	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Naphthalene	ND	0.090	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
2-Nitroaniline	ND	0.098	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Nitrobenzene	ND	0.079	0.38		mg/Kg	1	8/26/2021 10:52:30 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
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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** RW-2R (32.5-33')
Project: MKTF Well Installation **Collection Date:** 8/13/2021 4:10:00 PM
Lab ID: 2108857-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.083	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
4-Nitrophenol	ND	0.079	0.24		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Pentachlorophenol	ND	0.083	0.38		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Phenanthrene	ND	0.098	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Phenol	ND	0.074	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Pyrene	ND	0.073	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Pyridine	ND	0.15	0.38		mg/Kg	1	8/26/2021 10:52:30 PM	62128
1,2,4-Trichlorobenzene	ND	0.088	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
2,4,5-Trichlorophenol	ND	0.061	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
2,4,6-Trichlorophenol	ND	0.082	0.19		mg/Kg	1	8/26/2021 10:52:30 PM	62128
Surr: 2-Fluorophenol	42.8		20.3-74.1		%Rec	1	8/26/2021 10:52:30 PM	62128
Surr: Phenol-d5	49.8		23.1-92.7		%Rec	1	8/26/2021 10:52:30 PM	62128
Surr: 2,4,6-Tribromophenol	75.5		17.3-122		%Rec	1	8/26/2021 10:52:30 PM	62128
Surr: Nitrobenzene-d5	36.8		24.7-73.2		%Rec	1	8/26/2021 10:52:30 PM	62128
Surr: 2-Fluorobiphenyl	37.0		21.5-90.1		%Rec	1	8/26/2021 10:52:30 PM	62128
Surr: 4-Terphenyl-d14	75.2		15-140		%Rec	1	8/26/2021 10:52:30 PM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	1.0	0.0059	0.015		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Toluene	0.041	0.0039	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Ethylbenzene	0.070	0.0074	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Methyl tert-butyl ether (MTBE)	0.037	0.017	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,2,4-Trimethylbenzene	0.067	0.0043	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,3,5-Trimethylbenzene	0.019	0.0069	0.031	J	mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,2-Dichloroethane (EDC)	ND	0.0070	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,2-Dibromoethane (EDB)	ND	0.012	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Naphthalene	0.018	0.011	0.061	J	mg/Kg	1	8/25/2021 1:54:40 PM	62009
1-Methylnaphthalene	ND	0.035	0.12		mg/Kg	1	8/25/2021 1:54:40 PM	62009
2-Methylnaphthalene	ND	0.028	0.12		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Acetone	0.27	0.10	0.46	J	mg/Kg	1	8/25/2021 1:54:40 PM	62009
Bromobenzene	ND	0.0065	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Bromodichloromethane	0.0095	0.0039	0.031	J	mg/Kg	1	8/25/2021 1:54:40 PM	62009
Bromoform	ND	0.0074	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Bromomethane	ND	0.051	0.092		mg/Kg	1	8/25/2021 1:54:40 PM	62009
2-Butanone	ND	0.13	0.31		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Carbon disulfide	ND	0.013	0.31		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Carbon tetrachloride	ND	0.0034	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Chlorobenzene	0.0072	0.0055	0.031	J	mg/Kg	1	8/25/2021 1:54:40 PM	62009
Chloroethane	ND	0.011	0.061		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Chloroform	0.0088	0.0043	0.031	J	mg/Kg	1	8/25/2021 1:54:40 PM	62009

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
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: RW-2R (32.5-33')
Project: MKTF Well Installation
Collection Date: 8/13/2021 4:10:00 PM
Lab ID: 2108857-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Chloromethane	ND	0.011	0.092		mg/Kg	1	8/25/2021 1:54:40 PM	62009
2-Chlorotoluene	ND	0.0041	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
4-Chlorotoluene	ND	0.016	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
cis-1,2-DCE	ND	0.015	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
cis-1,3-Dichloropropene	ND	0.0045	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,2-Dibromo-3-chloropropane	ND	0.013	0.061		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Dibromochloromethane	ND	0.0049	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Dibromomethane	ND	0.0071	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,2-Dichlorobenzene	ND	0.0063	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,3-Dichlorobenzene	ND	0.0058	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,4-Dichlorobenzene	ND	0.0082	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Dichlorodifluoromethane	ND	0.012	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,1-Dichloroethane	ND	0.0089	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,1-Dichloroethene	ND	0.0065	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,2-Dichloropropane	ND	0.0059	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,3-Dichloropropane	ND	0.0067	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
2,2-Dichloropropane	ND	0.0043	0.061		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,1-Dichloropropene	ND	0.0037	0.061		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Hexachlorobutadiene	ND	0.021	0.061		mg/Kg	1	8/25/2021 1:54:40 PM	62009
2-Hexanone	0.095	0.013	0.31	J	mg/Kg	1	8/25/2021 1:54:40 PM	62009
Isopropylbenzene	0.0068	0.0057	0.031	J	mg/Kg	1	8/25/2021 1:54:40 PM	62009
4-Isopropyltoluene	ND	0.0079	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
4-Methyl-2-pentanone	ND	0.036	0.31		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Methylene chloride	ND	0.022	0.092		mg/Kg	1	8/25/2021 1:54:40 PM	62009
n-Butylbenzene	0.0092	0.0082	0.092	J	mg/Kg	1	8/25/2021 1:54:40 PM	62009
n-Propylbenzene	0.017	0.0049	0.031	J	mg/Kg	1	8/25/2021 1:54:40 PM	62009
sec-Butylbenzene	ND	0.025	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Styrene	ND	0.0042	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
tert-Butylbenzene	ND	0.0071	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,1,1,2-Tetrachloroethane	ND	0.0045	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,1,2,2-Tetrachloroethane	ND	0.0099	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Tetrachloroethene (PCE)	ND	0.0084	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
trans-1,2-DCE	ND	0.0059	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
trans-1,3-Dichloropropene	ND	0.0072	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,2,3-Trichlorobenzene	ND	0.0047	0.061		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,2,4-Trichlorobenzene	ND	0.011	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,1,1-Trichloroethane	ND	0.0067	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,1,2-Trichloroethane	ND	0.0076	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Trichloroethene (TCE)	ND	0.0060	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Value above quantitation range
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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: RW-2R (32.5-33')
Project: MKTF Well Installation
Collection Date: 8/13/2021 4:10:00 PM
Lab ID: 2108857-002 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Trichlorofluoromethane	ND	0.0069	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
1,2,3-Trichloropropane	ND	0.013	0.061		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Vinyl chloride	ND	0.0058	0.031		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Xylenes, Total	0.17	0.016	0.061		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Surr: Dibromofluoromethane	97.9		70-130		%Rec	1	8/25/2021 1:54:40 PM	62009
Surr: 1,2-Dichloroethane-d4	109		70-130		%Rec	1	8/25/2021 1:54:40 PM	62009
Surr: Toluene-d8	105		70-130		%Rec	1	8/25/2021 1:54:40 PM	62009
Surr: 4-Bromofluorobenzene	110		70-130		%Rec	1	8/25/2021 1:54:40 PM	62009
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	12	0.85	3.1		mg/Kg	1	8/25/2021 1:54:40 PM	62009
Surr: BFB	102	0	70-130		%Rec	1	8/25/2021 1:54:40 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** BD1-08132021
Project: MKTF Well Installation **Collection Date:** 8/13/2021
Lab ID: 2108857-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 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)	100	4.8	9.7		mg/Kg	1	8/18/2021 5:46:13 PM	62028
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	8/18/2021 5:46:13 PM	62028
Surr: DNOP	125	0	70-130		%Rec	1	8/18/2021 5:46:13 PM	62028
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0025	0.031		mg/Kg	1	9/1/2021 11:04:24 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Arsenic	ND	1.4	2.4		mg/Kg	1	8/18/2021 2:32:13 PM	62031
Barium	220	0.059	0.098		mg/Kg	1	8/18/2021 2:32:13 PM	62031
Cadmium	ND	0.049	0.098		mg/Kg	1	8/18/2021 2:32:13 PM	62031
Chromium	7.2	0.15	0.29		mg/Kg	1	8/18/2021 2:32:13 PM	62031
Iron	11000	240	240		mg/Kg	100	9/22/2021 3:47:42 PM	62031
Lead	1.5	0.26	0.29		mg/Kg	1	8/18/2021 5:05:47 PM	62031
Manganese	370	1.6	2.0		mg/Kg	10	9/22/2021 3:45:37 PM	62031
Selenium	ND	2.1	2.4		mg/Kg	1	8/18/2021 2:32:13 PM	62031
Silver	ND	0.14	0.24		mg/Kg	1	8/18/2021 2:32:13 PM	62031
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.084	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Acenaphthylene	ND	0.085	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Aniline	ND	0.065	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Anthracene	ND	0.085	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Azobenzene	ND	0.094	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Benz(a)anthracene	ND	0.061	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Benzo(a)pyrene	ND	0.089	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Benzo(g,h,i)perylene	ND	0.096	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Benzo(k)fluoranthene	ND	0.071	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Benzoic acid	ND	0.12	0.94		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Benzyl alcohol	ND	0.077	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Bis(2-chloroethoxy)methane	ND	0.072	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Bis(2-chloroethyl)ether	ND	0.098	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Bis(2-chloroisopropyl)ether	ND	0.096	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Bis(2-ethylhexyl)phthalate	ND	0.20	0.47		mg/Kg	1	8/26/2021 11:33:49 PM	62128
4-Bromophenyl phenyl ether	ND	0.098	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Butyl benzyl phthalate	ND	0.057	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Carbazole	ND	0.083	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
4-Chloro-3-methylphenol	ND	0.079	0.47		mg/Kg	1	8/26/2021 11:33:49 PM	62128
4-Chloroaniline	ND	0.092	0.47		mg/Kg	1	8/26/2021 11:33:49 PM	62128
2-Chloronaphthalene	ND	0.089	0.24		mg/Kg	1	8/26/2021 11:33:49 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** BD1-08132021
Project: MKTF Well Installation **Collection Date:** 8/13/2021
Lab ID: 2108857-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
4-Chlorophenyl phenyl ether	ND	0.080	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Chrysene	ND	0.083	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Di-n-butyl phthalate	ND	0.26	0.38		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Di-n-octyl phthalate	ND	0.12	0.38		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Dibenz(a,h)anthracene	ND	0.099	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Dibenzofuran	ND	0.098	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
1,2-Dichlorobenzene	ND	0.076	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
1,3-Dichlorobenzene	ND	0.067	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
1,4-Dichlorobenzene	ND	0.080	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Diethyl phthalate	ND	0.31	0.47		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Dimethyl phthalate	ND	0.087	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
2,4-Dichlorophenol	ND	0.076	0.38		mg/Kg	1	8/26/2021 11:33:49 PM	62128
2,4-Dimethylphenol	0.087	0.067	0.28	J	mg/Kg	1	8/26/2021 11:33:49 PM	62128
4,6-Dinitro-2-methylphenol	ND	0.079	0.38		mg/Kg	1	8/26/2021 11:33:49 PM	62128
2,4-Dinitrophenol	ND	0.047	0.47		mg/Kg	1	8/26/2021 11:33:49 PM	62128
2,4-Dinitrotoluene	ND	0.11	0.47		mg/Kg	1	8/26/2021 11:33:49 PM	62128
2,6-Dinitrotoluene	ND	0.096	0.47		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Fluoranthene	ND	0.076	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Fluorene	ND	0.084	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Hexachlorobenzene	ND	0.084	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Hexachlorobutadiene	ND	0.088	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Hexachloroethane	ND	0.083	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Isophorone	ND	0.077	0.38		mg/Kg	1	8/26/2021 11:33:49 PM	62128
1-Methylnaphthalene	0.12	0.087	0.19	J	mg/Kg	1	8/26/2021 11:33:49 PM	62128
2-Methylnaphthalene	0.21	0.078	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
2-Methylphenol	0.11	0.079	0.38	J	mg/Kg	1	8/26/2021 11:33:49 PM	62128
3+4-Methylphenol	ND	0.078	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
N-Nitrosodi-n-propylamine	ND	0.087	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
N-Nitrosodiphenylamine	ND	0.098	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Naphthalene	0.22	0.089	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
2-Nitroaniline	ND	0.096	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Nitrobenzene	ND	0.077	0.38		mg/Kg	1	8/26/2021 11:33:49 PM	62128

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D	Sample Diluted Due to Matrix
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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** BD1-08132021
Project: MKTF Well Installation **Collection Date:** 8/13/2021
Lab ID: 2108857-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.081	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
4-Nitrophenol	ND	0.077	0.24		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Pentachlorophenol	ND	0.081	0.38		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Phenanthrene	ND	0.096	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Phenol	0.12	0.073	0.19	J	mg/Kg	1	8/26/2021 11:33:49 PM	62128
Pyrene	ND	0.071	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Pyridine	ND	0.15	0.38		mg/Kg	1	8/26/2021 11:33:49 PM	62128
1,2,4-Trichlorobenzene	ND	0.086	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
2,4,5-Trichlorophenol	ND	0.060	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
2,4,6-Trichlorophenol	ND	0.081	0.19		mg/Kg	1	8/26/2021 11:33:49 PM	62128
Surr: 2-Fluorophenol	0		20.3-74.1	S	%Rec	1	8/26/2021 11:33:49 PM	62128
Surr: Phenol-d5	48.9		23.1-92.7		%Rec	1	8/26/2021 11:33:49 PM	62128
Surr: 2,4,6-Tribromophenol	55.6		17.3-122		%Rec	1	8/26/2021 11:33:49 PM	62128
Surr: Nitrobenzene-d5	39.4		24.7-73.2		%Rec	1	8/26/2021 11:33:49 PM	62128
Surr: 2-Fluorobiphenyl	39.9		21.5-90.1		%Rec	1	8/26/2021 11:33:49 PM	62128
Surr: 4-Terphenyl-d14	60.3		15-140		%Rec	1	8/26/2021 11:33:49 PM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	8.2	0.023	0.058		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Toluene	38	0.30	2.3		mg/Kg	100	8/25/2021 2:22:04 PM	62009
Ethylbenzene	12	0.57	2.3		mg/Kg	100	8/25/2021 2:22:04 PM	62009
Methyl tert-butyl ether (MTBE)	ND	0.066	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,2,4-Trimethylbenzene	18	0.33	2.3		mg/Kg	100	8/25/2021 2:22:04 PM	62009
1,3,5-Trimethylbenzene	7.4	0.026	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,2-Dichloroethane (EDC)	ND	0.027	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,2-Dibromoethane (EDB)	ND	0.046	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Naphthalene	1.0	0.043	0.23		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1-Methylnaphthalene	0.44	0.13	0.47	J	mg/Kg	5	8/24/2021 6:44:19 PM	62009
2-Methylnaphthalene	0.79	0.11	0.47		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Acetone	ND	0.38	1.8		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Bromobenzene	ND	0.025	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Bromodichloromethane	ND	0.015	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Bromoform	ND	0.028	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Bromomethane	ND	0.19	0.35		mg/Kg	5	8/24/2021 6:44:19 PM	62009
2-Butanone	ND	0.51	1.2		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Carbon disulfide	ND	0.048	1.2		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Carbon tetrachloride	ND	0.013	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Chlorobenzene	ND	0.021	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Chloroethane	ND	0.044	0.23		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Chloroform	ND	0.017	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009

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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
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P	Sample pH Not In Range
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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** BD1-08132021
Project: MKTF Well Installation **Collection Date:** 8/13/2021
Lab ID: 2108857-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Chloromethane	0.17	0.041	0.35	J	mg/Kg	5	8/24/2021 6:44:19 PM	62009
2-Chlorotoluene	ND	0.016	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
4-Chlorotoluene	ND	0.061	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
cis-1,2-DCE	ND	0.058	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
cis-1,3-Dichloropropene	ND	0.017	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,2-Dibromo-3-chloropropane	ND	0.050	0.23		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Dibromochloromethane	ND	0.019	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Dibromomethane	ND	0.027	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,2-Dichlorobenzene	ND	0.024	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,3-Dichlorobenzene	ND	0.022	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,4-Dichlorobenzene	ND	0.031	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Dichlorodifluoromethane	ND	0.045	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,1-Dichloroethane	ND	0.034	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,1-Dichloroethene	ND	0.025	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,2-Dichloropropane	ND	0.023	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,3-Dichloropropane	ND	0.026	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
2,2-Dichloropropane	ND	0.017	0.23		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,1-Dichloropropene	ND	0.014	0.23		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Hexachlorobutadiene	ND	0.080	0.23		mg/Kg	5	8/24/2021 6:44:19 PM	62009
2-Hexanone	ND	0.051	1.2		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Isopropylbenzene	3.1	0.022	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
4-Isopropyltoluene	1.2	0.030	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
4-Methyl-2-pentanone	ND	0.14	1.2		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Methylene chloride	ND	0.085	0.35		mg/Kg	5	8/24/2021 6:44:19 PM	62009
n-Butylbenzene	1.6	0.031	0.35		mg/Kg	5	8/24/2021 6:44:19 PM	62009
n-Propylbenzene	5.0	0.019	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
sec-Butylbenzene	1.5	0.096	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Styrene	ND	0.016	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
tert-Butylbenzene	0.043	0.027	0.12	J	mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,1,1,2-Tetrachloroethane	ND	0.017	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,1,2,2-Tetrachloroethane	ND	0.038	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Tetrachloroethene (PCE)	ND	0.032	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
trans-1,2-DCE	ND	0.023	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
trans-1,3-Dichloropropene	ND	0.027	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,2,3-Trichlorobenzene	ND	0.018	0.23		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,2,4-Trichlorobenzene	ND	0.041	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,1,1-Trichloroethane	ND	0.026	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,1,2-Trichloroethane	ND	0.029	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Trichloroethene (TCE)	ND	0.023	0.12		mg/Kg	5	8/24/2021 6:44:19 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** BD1-08132021
Project: MKTF Well Installation **Collection Date:** 8/13/2021
Lab ID: 2108857-003 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Trichlorofluoromethane	ND	0.027	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
1,2,3-Trichloropropane	ND	0.049	0.23		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Vinyl chloride	ND	0.022	0.12		mg/Kg	5	8/24/2021 6:44:19 PM	62009
Xylenes, Total	65	1.2	4.7		mg/Kg	100	8/25/2021 2:22:04 PM	62009
Surr: Dibromofluoromethane	76.5		70-130		%Rec	5	8/24/2021 6:44:19 PM	62009
Surr: 1,2-Dichloroethane-d4	79.5		70-130		%Rec	5	8/24/2021 6:44:19 PM	62009
Surr: Toluene-d8	130		70-130		%Rec	5	8/24/2021 6:44:19 PM	62009
Surr: 4-Bromofluorobenzene	141		70-130	S	%Rec	5	8/24/2021 6:44:19 PM	62009
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1900	65	230		mg/Kg	100	8/25/2021 2:22:04 PM	62009
Surr: BFB	103	0	70-130		%Rec	100	8/25/2021 2:22:04 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-17R-(6.5-7')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 11:02:00 AM
Lab ID: 2108857-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 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)	200	4.9	10		mg/Kg	1	8/20/2021 4:02:00 PM	62028
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	8/20/2021 4:02:00 PM	62028
Surr: DNOP	124	0	70-130		%Rec	1	8/20/2021 4:02:00 PM	62028
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.023	0.0028	0.035	J	mg/Kg	1	9/1/2021 11:06:34 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Arsenic	ND	7.3	13		mg/Kg	5	8/18/2021 3:05:25 PM	62031
Barium	810	0.31	0.51		mg/Kg	5	8/18/2021 3:05:25 PM	62031
Cadmium	ND	0.26	0.51		mg/Kg	5	8/18/2021 3:05:25 PM	62031
Chromium	7.8	0.77	1.5		mg/Kg	5	8/18/2021 3:05:25 PM	62031
Iron	11000	260	260		mg/Kg	100	9/22/2021 3:49:47 PM	62031
Lead	2.7	1.4	1.5		mg/Kg	5	8/18/2021 5:07:15 PM	62031
Manganese	880	0.85	1.0		mg/Kg	5	8/18/2021 3:05:25 PM	62031
Selenium	ND	11	13		mg/Kg	5	8/18/2021 3:05:25 PM	62031
Silver	0.95	0.75	1.3	J	mg/Kg	5	8/18/2021 3:05:25 PM	62031
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.88	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Acenaphthylene	ND	0.89	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Aniline	ND	0.68	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Anthracene	ND	0.89	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Azobenzene	ND	0.99	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Benz(a)anthracene	ND	0.64	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Benzo(a)pyrene	ND	0.93	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Benzo(b)fluoranthene	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Benzo(g,h,i)perylene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Benzo(k)fluoranthene	ND	0.74	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Benzoic acid	ND	1.2	9.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Benzyl alcohol	ND	0.81	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Bis(2-chloroethoxy)methane	ND	0.76	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Bis(2-chloroethyl)ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Bis(2-chloroisopropyl)ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Bis(2-ethylhexyl)phthalate	ND	2.1	4.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
4-Bromophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Butyl benzyl phthalate	ND	0.60	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Carbazole	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
4-Chloro-3-methylphenol	ND	0.83	4.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
4-Chloroaniline	ND	0.96	4.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
2-Chloronaphthalene	ND	0.94	2.5	D	mg/Kg	10	8/27/2021 12:15:12 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-17R-(6.5-7')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 11:02:00 AM
Lab ID: 2108857-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
4-Chlorophenyl phenyl ether	ND	0.84	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Chrysene	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Di-n-butyl phthalate	ND	2.8	3.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Di-n-octyl phthalate	ND	1.3	3.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Dibenz(a,h)anthracene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Dibenzofuran	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
1,2-Dichlorobenzene	ND	0.80	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
1,3-Dichlorobenzene	ND	0.70	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
1,4-Dichlorobenzene	ND	0.84	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
3,3´-Dichlorobenzidine	ND	1.5	2.5	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Diethyl phthalate	ND	3.2	4.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Dimethyl phthalate	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
2,4-Dichlorophenol	ND	0.80	3.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
2,4-Dimethylphenol	ND	0.70	3.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
4,6-Dinitro-2-methylphenol	ND	0.83	3.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
2,4-Dinitrophenol	ND	0.50	4.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
2,4-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
2,6-Dinitrotoluene	ND	1.0	4.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Fluoranthene	ND	0.80	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Fluorene	ND	0.88	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Hexachlorobenzene	ND	0.88	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Hexachlorobutadiene	ND	0.93	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Hexachlorocyclopentadiene	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Hexachloroethane	ND	0.87	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Indeno(1,2,3-cd)pyrene	ND	1.1	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Isophorone	ND	0.81	3.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
1-Methylnaphthalene	1.3	0.91	2.0	JD	mg/Kg	10	8/27/2021 12:15:12 AM	62128
2-Methylnaphthalene	2.5	0.82	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
2-Methylphenol	ND	0.83	3.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
3+4-Methylphenol	ND	0.82	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
N-Nitrosodi-n-propylamine	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
N-Nitrosodimethylamine	ND	1.5	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Naphthalene	3.4	0.93	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
2-Nitroaniline	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
3-Nitroaniline	ND	1.2	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
4-Nitroaniline	ND	1.3	3.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Nitrobenzene	ND	0.81	3.9	D	mg/Kg	10	8/27/2021 12:15:12 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-17R-(6.5-7')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 11:02:00 AM
Lab ID: 2108857-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.85	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
4-Nitrophenol	ND	0.81	2.5	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Pentachlorophenol	ND	0.85	3.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Phenanthrene	ND	1.0	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Phenol	ND	0.76	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Pyrene	ND	0.75	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Pyridine	ND	1.6	3.9	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
1,2,4-Trichlorobenzene	ND	0.91	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
2,4,5-Trichlorophenol	ND	0.63	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
2,4,6-Trichlorophenol	ND	0.85	2.0	D	mg/Kg	10	8/27/2021 12:15:12 AM	62128
Surr: 2-Fluorophenol	0		20.3-74.1	SD	%Rec	10	8/27/2021 12:15:12 AM	62128
Surr: Phenol-d5	0		23.1-92.7	SD	%Rec	10	8/27/2021 12:15:12 AM	62128
Surr: 2,4,6-Tribromophenol	0		17.3-122	SD	%Rec	10	8/27/2021 12:15:12 AM	62128
Surr: Nitrobenzene-d5	0		24.7-73.2	SD	%Rec	10	8/27/2021 12:15:12 AM	62128
Surr: 2-Fluorobiphenyl	0		21.5-90.1	SD	%Rec	10	8/27/2021 12:15:12 AM	62128
Surr: 4-Terphenyl-d14	0		15-140	SD	%Rec	10	8/27/2021 12:15:12 AM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	11	0.025	0.064		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Toluene	150	0.33	2.6		mg/Kg	100	8/25/2021 2:49:27 PM	62086
Ethylbenzene	17	0.63	2.6		mg/Kg	100	8/25/2021 2:49:27 PM	62086
Methyl tert-butyl ether (MTBE)	0.088	0.072	0.13	J	mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,2,4-Trimethylbenzene	29	0.36	2.6		mg/Kg	100	8/25/2021 2:49:27 PM	62086
1,3,5-Trimethylbenzene	8.2	0.029	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,2-Dichloroethane (EDC)	ND	0.029	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,2-Dibromoethane (EDB)	ND	0.050	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Naphthalene	3.6	0.048	0.26		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1-Methylnaphthalene	0.97	0.15	0.51		mg/Kg	5	8/24/2021 9:54:13 PM	62086
2-Methylnaphthalene	2.2	0.12	0.51		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Acetone	ND	0.42	1.9		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Bromobenzene	ND	0.027	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Bromodichloromethane	ND	0.016	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Bromoform	ND	0.031	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Bromomethane	ND	0.21	0.38		mg/Kg	5	8/24/2021 9:54:13 PM	62086
2-Butanone	ND	0.56	1.3		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Carbon disulfide	ND	0.053	1.3		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Carbon tetrachloride	ND	0.014	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Chlorobenzene	0.11	0.023	0.13	J	mg/Kg	5	8/24/2021 9:54:13 PM	62086
Chloroethane	ND	0.048	0.26		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Chloroform	ND	0.018	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-17R-(6.5-7')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 11:02:00 AM
Lab ID: 2108857-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Chloromethane	ND	0.045	0.38		mg/Kg	5	8/24/2021 9:54:13 PM	62086
2-Chlorotoluene	ND	0.017	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
4-Chlorotoluene	ND	0.067	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
cis-1,2-DCE	ND	0.064	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
cis-1,3-Dichloropropene	ND	0.019	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,2-Dibromo-3-chloropropane	ND	0.055	0.26		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Dibromochloromethane	ND	0.021	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Dibromomethane	ND	0.030	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,2-Dichlorobenzene	ND	0.027	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,3-Dichlorobenzene	ND	0.024	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,4-Dichlorobenzene	ND	0.034	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Dichlorodifluoromethane	ND	0.050	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,1-Dichloroethane	ND	0.037	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,1-Dichloroethene	ND	0.028	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,2-Dichloropropane	ND	0.025	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,3-Dichloropropane	ND	0.028	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
2,2-Dichloropropane	0.036	0.018	0.26	J	mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,1-Dichloropropene	ND	0.015	0.26		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Hexachlorobutadiene	ND	0.087	0.26		mg/Kg	5	8/24/2021 9:54:13 PM	62086
2-Hexanone	ND	0.056	1.3		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Isopropylbenzene	1.7	0.024	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
4-Isopropyltoluene	0.18	0.033	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
4-Methyl-2-pentanone	ND	0.15	1.3		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Methylene chloride	ND	0.093	0.38		mg/Kg	5	8/24/2021 9:54:13 PM	62086
n-Butylbenzene	1.9	0.034	0.38		mg/Kg	5	8/24/2021 9:54:13 PM	62086
n-Propylbenzene	6.2	0.021	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
sec-Butylbenzene	0.70	0.11	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Styrene	0.030	0.017	0.13	J	mg/Kg	5	8/24/2021 9:54:13 PM	62086
tert-Butylbenzene	ND	0.030	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,1,1,2-Tetrachloroethane	ND	0.019	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,1,2,2-Tetrachloroethane	ND	0.042	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Tetrachloroethene (PCE)	ND	0.035	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
trans-1,2-DCE	ND	0.025	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
trans-1,3-Dichloropropene	ND	0.030	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,2,3-Trichlorobenzene	ND	0.020	0.26		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,2,4-Trichlorobenzene	ND	0.045	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,1,1-Trichloroethane	ND	0.028	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,1,2-Trichloroethane	ND	0.032	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Trichloroethene (TCE)	ND	0.025	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-17R-(6.5-7')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 11:02:00 AM
Lab ID: 2108857-004 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Trichlorofluoromethane	ND	0.029	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
1,2,3-Trichloropropane	ND	0.054	0.26		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Vinyl chloride	ND	0.024	0.13		mg/Kg	5	8/24/2021 9:54:13 PM	62086
Xylenes, Total	92	1.3	5.1		mg/Kg	100	8/25/2021 2:49:27 PM	62086
Surr: Dibromofluoromethane	77.6		70-130		%Rec	5	8/24/2021 9:54:13 PM	62086
Surr: 1,2-Dichloroethane-d4	89.9		70-130		%Rec	5	8/24/2021 9:54:13 PM	62086
Surr: Toluene-d8	118		70-130		%Rec	5	8/24/2021 9:54:13 PM	62086
Surr: 4-Bromofluorobenzene	120		70-130		%Rec	5	8/24/2021 9:54:13 PM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	2100	71	260		mg/Kg	100	8/25/2021 2:49:27 PM	62086
Surr: BFB	102	0	70-130		%Rec	100	8/25/2021 2:49:27 PM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-17R-(20.5-21')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 11:40:00 AM
Lab ID: 2108857-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 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	8/18/2021 5:55:56 PM	62028
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	8/18/2021 5:55:56 PM	62028
Surr: DNOP	133	0	70-130	S	%Rec	1	8/18/2021 5:55:56 PM	62028
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0028	0.035		mg/Kg	1	9/1/2021 11:08:43 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Arsenic	ND	7.2	13		mg/Kg	5	8/18/2021 3:09:35 PM	62031
Barium	170	0.31	0.51		mg/Kg	5	8/18/2021 3:09:35 PM	62031
Cadmium	ND	0.26	0.51		mg/Kg	5	8/18/2021 3:09:35 PM	62031
Chromium	12	0.77	1.5		mg/Kg	5	8/18/2021 3:09:35 PM	62031
Iron	18000	260	260		mg/Kg	100	9/22/2021 3:52:16 PM	62031
Lead	3.3	1.4	1.5		mg/Kg	5	8/18/2021 5:08:36 PM	62031
Manganese	300	0.85	1.0		mg/Kg	5	8/18/2021 3:09:35 PM	62031
Selenium	ND	11	13		mg/Kg	5	8/18/2021 3:09:35 PM	62031
Silver	ND	0.74	1.3		mg/Kg	5	8/18/2021 3:09:35 PM	62031
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Aniline	ND	0.068	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Anthracene	ND	0.089	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Azobenzene	ND	0.099	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Benz(a)anthracene	ND	0.064	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Benzo(a)pyrene	ND	0.093	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Benzo(b)fluoranthene	ND	0.11	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Benzoic acid	ND	0.12	0.99		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Benzyl alcohol	ND	0.081	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Bis(2-chloroethoxy)methane	ND	0.076	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	8/27/2021 12:56:29 AM	62128
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Carbazole	ND	0.087	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	8/27/2021 12:56:29 AM	62128
4-Chloroaniline	ND	0.096	0.49		mg/Kg	1	8/27/2021 12:56:29 AM	62128
2-Chloronaphthalene	ND	0.094	0.25		mg/Kg	1	8/27/2021 12:56:29 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-17R-(20.5-21')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 11:40:00 AM
Lab ID: 2108857-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
4-Chlorophenyl phenyl ether	ND	0.084	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Chrysene	ND	0.087	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Di-n-butyl phthalate	0.39	0.28	0.39	J	mg/Kg	1	8/27/2021 12:56:29 AM	62128
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
1,2-Dichlorobenzene	ND	0.080	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	8/27/2021 12:56:29 AM	62128
2,4-Dimethylphenol	ND	0.070	0.30		mg/Kg	1	8/27/2021 12:56:29 AM	62128
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	8/27/2021 12:56:29 AM	62128
2,4-Dinitrophenol	ND	0.050	0.49		mg/Kg	1	8/27/2021 12:56:29 AM	62128
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	8/27/2021 12:56:29 AM	62128
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Fluoranthene	ND	0.080	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Fluorene	ND	0.088	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Hexachlorobenzene	ND	0.088	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Hexachlorobutadiene	ND	0.093	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Isophorone	ND	0.081	0.39		mg/Kg	1	8/27/2021 12:56:29 AM	62128
1-Methylnaphthalene	ND	0.091	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
2-Methylnaphthalene	ND	0.082	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
2-Methylphenol	ND	0.083	0.39		mg/Kg	1	8/27/2021 12:56:29 AM	62128
3+4-Methylphenol	ND	0.082	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Naphthalene	ND	0.093	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
3-Nitroaniline	ND	0.12	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Nitrobenzene	ND	0.081	0.39		mg/Kg	1	8/27/2021 12:56:29 AM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-17R-(20.5-21')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 11:40:00 AM
Lab ID: 2108857-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.085	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
4-Nitrophenol	ND	0.081	0.25		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Phenanthrene	ND	0.10	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Phenol	ND	0.076	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Pyrene	ND	0.075	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Pyridine	ND	0.16	0.39		mg/Kg	1	8/27/2021 12:56:29 AM	62128
1,2,4-Trichlorobenzene	ND	0.091	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
2,4,6-Trichlorophenol	ND	0.085	0.20		mg/Kg	1	8/27/2021 12:56:29 AM	62128
Surr: 2-Fluorophenol	49.7		20.3-74.1		%Rec	1	8/27/2021 12:56:29 AM	62128
Surr: Phenol-d5	60.0		23.1-92.7		%Rec	1	8/27/2021 12:56:29 AM	62128
Surr: 2,4,6-Tribromophenol	70.7		17.3-122		%Rec	1	8/27/2021 12:56:29 AM	62128
Surr: Nitrobenzene-d5	45.8		24.7-73.2		%Rec	1	8/27/2021 12:56:29 AM	62128
Surr: 2-Fluorobiphenyl	55.2		21.5-90.1		%Rec	1	8/27/2021 12:56:29 AM	62128
Surr: 4-Terphenyl-d14	71.8		15-140		%Rec	1	8/27/2021 12:56:29 AM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0050	0.013		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Toluene	0.0045	0.0033	0.026	J	mg/Kg	1	8/25/2021 12:35:58 AM	62086
Ethylbenzene	ND	0.0063	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Methyl tert-butyl ether (MTBE)	0.021	0.015	0.026	J	mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,2,4-Trimethylbenzene	ND	0.0036	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,3,5-Trimethylbenzene	ND	0.0058	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,2-Dichloroethane (EDC)	ND	0.0059	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,2-Dibromoethane (EDB)	ND	0.010	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Naphthalene	ND	0.0096	0.052		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1-Methylnaphthalene	ND	0.030	0.10		mg/Kg	1	8/25/2021 12:35:58 AM	62086
2-Methylnaphthalene	ND	0.024	0.10		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Acetone	ND	0.084	0.39		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Bromobenzene	ND	0.0055	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Bromodichloromethane	ND	0.0033	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Bromoform	ND	0.0062	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Bromomethane	ND	0.043	0.078		mg/Kg	1	8/25/2021 12:35:58 AM	62086
2-Butanone	ND	0.11	0.26		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Carbon disulfide	ND	0.011	0.26		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Carbon tetrachloride	ND	0.0029	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Chlorobenzene	ND	0.0046	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Chloroethane	ND	0.0097	0.052		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Chloroform	ND	0.0037	0.026		mg/Kg	1	8/25/2021 12:35:58 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-17R-(20.5-21')
Project: MKTF Well Installation
Collection Date: 8/14/2021 11:40:00 AM
Lab ID: 2108857-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Chloromethane	ND	0.0091	0.078		mg/Kg	1	8/25/2021 12:35:58 AM	62086
2-Chlorotoluene	ND	0.0035	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
4-Chlorotoluene	ND	0.014	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
cis-1,2-DCE	ND	0.013	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
cis-1,3-Dichloropropene	ND	0.0038	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,2-Dibromo-3-chloropropane	ND	0.011	0.052		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Dibromochloromethane	ND	0.0041	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Dibromomethane	ND	0.0060	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,2-Dichlorobenzene	ND	0.0054	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,3-Dichlorobenzene	ND	0.0049	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,4-Dichlorobenzene	ND	0.0069	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Dichlorodifluoromethane	ND	0.010	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,1-Dichloroethane	ND	0.0075	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,1-Dichloroethene	ND	0.0055	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,2-Dichloropropane	ND	0.0050	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,3-Dichloropropane	ND	0.0057	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
2,2-Dichloropropane	ND	0.0037	0.052		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,1-Dichloropropene	ND	0.0031	0.052		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Hexachlorobutadiene	ND	0.018	0.052		mg/Kg	1	8/25/2021 12:35:58 AM	62086
2-Hexanone	ND	0.011	0.26		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Isopropylbenzene	ND	0.0048	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
4-Isopropyltoluene	ND	0.0067	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
4-Methyl-2-pentanone	ND	0.030	0.26		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Methylene chloride	ND	0.019	0.078		mg/Kg	1	8/25/2021 12:35:58 AM	62086
n-Butylbenzene	ND	0.0069	0.078		mg/Kg	1	8/25/2021 12:35:58 AM	62086
n-Propylbenzene	ND	0.0042	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
sec-Butylbenzene	ND	0.021	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Styrene	ND	0.0035	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
tert-Butylbenzene	ND	0.0060	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,1,1,2-Tetrachloroethane	ND	0.0038	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,1,2,2-Tetrachloroethane	ND	0.0084	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Tetrachloroethene (PCE)	ND	0.0071	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
trans-1,2-DCE	ND	0.0050	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
trans-1,3-Dichloropropene	ND	0.0061	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,2,3-Trichlorobenzene	ND	0.0040	0.052		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,2,4-Trichlorobenzene	ND	0.0090	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,1,1-Trichloroethane	ND	0.0057	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,1,2-Trichloroethane	ND	0.0065	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Trichloroethene (TCE)	ND	0.0051	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086

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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-17R-(20.5-21')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 11:40:00 AM
Lab ID: 2108857-005 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Trichlorofluoromethane	ND	0.0059	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
1,2,3-Trichloropropane	ND	0.011	0.052		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Vinyl chloride	ND	0.0049	0.026		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Xylenes, Total	ND	0.014	0.052		mg/Kg	1	8/25/2021 12:35:58 AM	62086
Surr: Dibromofluoromethane	102		70-130		%Rec	1	8/25/2021 12:35:58 AM	62086
Surr: 1,2-Dichloroethane-d4	111		70-130		%Rec	1	8/25/2021 12:35:58 AM	62086
Surr: Toluene-d8	101		70-130		%Rec	1	8/25/2021 12:35:58 AM	62086
Surr: 4-Bromofluorobenzene	105		70-130		%Rec	1	8/25/2021 12:35:58 AM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	0.75	0.72	2.6	J	mg/Kg	1	8/25/2021 12:35:58 AM	62086
Surr: BFB	98.7	0	70-130		%Rec	1	8/25/2021 12:35:58 AM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-18R-(9.5-10')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 2:30:00 PM
Lab ID: 2108857-006 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 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)	830	4.6	9.3		mg/Kg	1	8/28/2021 10:00:48 AM	62245
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	8/28/2021 10:00:48 AM	62245
Surr: DNOP	108	0	70-130		%Rec	1	8/28/2021 10:00:48 AM	62245
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0090	0.0026	0.033	J	mg/Kg	1	9/1/2021 11:10:52 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Arsenic	ND	13	24		mg/Kg	10	8/18/2021 3:54:48 PM	62031
Barium	1200	0.57	0.95		mg/Kg	10	8/18/2021 3:54:48 PM	62031
Cadmium	ND	0.48	0.95		mg/Kg	10	8/18/2021 3:54:48 PM	62031
Chromium	3.8	1.4	2.9		mg/Kg	10	8/18/2021 3:54:48 PM	62031
Iron	7700	240	240		mg/Kg	100	9/22/2021 3:56:35 PM	62031
Lead	3.5	2.5	2.9		mg/Kg	10	8/18/2021 5:09:57 PM	62031
Manganese	7200	16	19		mg/Kg	100	9/22/2021 3:56:35 PM	62031
Selenium	ND	21	24		mg/Kg	10	8/18/2021 3:54:48 PM	62031
Silver	1.8	1.4	2.4	J	mg/Kg	10	8/18/2021 3:54:48 PM	62031
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.085	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Acenaphthylene	ND	0.086	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Aniline	ND	0.066	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Anthracene	0.12	0.086	0.19	J	mg/Kg	1	8/27/2021 1:38:01 AM	62128
Azobenzene	ND	0.095	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Benz(a)anthracene	ND	0.061	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Benzo(a)pyrene	ND	0.090	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Benzo(g,h,i)perylene	ND	0.097	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Benzo(k)fluoranthene	ND	0.071	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Benzoic acid	ND	0.12	0.95		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Benzyl alcohol	ND	0.078	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Bis(2-chloroethoxy)methane	ND	0.073	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Bis(2-chloroethyl)ether	ND	0.099	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Bis(2-chloroisopropyl)ether	ND	0.097	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Bis(2-ethylhexyl)phthalate	0.41	0.20	0.47	J	mg/Kg	1	8/27/2021 1:38:01 AM	62128
4-Bromophenyl phenyl ether	ND	0.099	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Butyl benzyl phthalate	ND	0.058	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Carbazole	ND	0.084	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
4-Chloro-3-methylphenol	ND	0.080	0.47		mg/Kg	1	8/27/2021 1:38:01 AM	62128
4-Chloroaniline	ND	0.092	0.47		mg/Kg	1	8/27/2021 1:38:01 AM	62128
2-Chloronaphthalene	ND	0.090	0.24		mg/Kg	1	8/27/2021 1:38:01 AM	62128

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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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-18R-(9.5-10')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 2:30:00 PM
Lab ID: 2108857-006 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
4-Chlorophenyl phenyl ether	ND	0.081	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Chrysene	ND	0.084	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Di-n-butyl phthalate	0.28	0.27	0.38	J	mg/Kg	1	8/27/2021 1:38:01 AM	62128
Di-n-octyl phthalate	ND	0.12	0.38		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Dibenzofuran	ND	0.099	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
1,2-Dichlorobenzene	ND	0.077	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
1,3-Dichlorobenzene	ND	0.068	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
1,4-Dichlorobenzene	ND	0.081	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Diethyl phthalate	ND	0.31	0.47		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Dimethyl phthalate	ND	0.088	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
2,4-Dichlorophenol	ND	0.077	0.38		mg/Kg	1	8/27/2021 1:38:01 AM	62128
2,4-Dimethylphenol	ND	0.068	0.28		mg/Kg	1	8/27/2021 1:38:01 AM	62128
4,6-Dinitro-2-methylphenol	ND	0.080	0.38		mg/Kg	1	8/27/2021 1:38:01 AM	62128
2,4-Dinitrophenol	ND	0.048	0.47		mg/Kg	1	8/27/2021 1:38:01 AM	62128
2,4-Dinitrotoluene	ND	0.12	0.47		mg/Kg	1	8/27/2021 1:38:01 AM	62128
2,6-Dinitrotoluene	ND	0.097	0.47		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Fluoranthene	ND	0.077	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Fluorene	0.48	0.085	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Hexachlorobenzene	ND	0.085	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Hexachlorobutadiene	ND	0.089	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Hexachloroethane	ND	0.084	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Isophorone	ND	0.078	0.38		mg/Kg	1	8/27/2021 1:38:01 AM	62128
1-Methylnaphthalene	3.0	0.087	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
2-Methylnaphthalene	4.4	0.78	1.9	D	mg/Kg	10	8/30/2021 12:00:28 PM	62128
2-Methylphenol	ND	0.080	0.38		mg/Kg	1	8/27/2021 1:38:01 AM	62128
3+4-Methylphenol	ND	0.078	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
N-Nitrosodi-n-propylamine	ND	0.088	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
N-Nitrosodiphenylamine	ND	0.099	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Naphthalene	3.2	0.089	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
2-Nitroaniline	ND	0.097	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Nitrobenzene	ND	0.078	0.38		mg/Kg	1	8/27/2021 1:38:01 AM	62128

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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-18R-(9.5-10')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 2:30:00 PM
Lab ID: 2108857-006 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.082	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
4-Nitrophenol	ND	0.078	0.24		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Pentachlorophenol	ND	0.082	0.38		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Phenanthrene	1.2	0.097	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Phenol	0.13	0.073	0.19	J	mg/Kg	1	8/27/2021 1:38:01 AM	62128
Pyrene	0.17	0.072	0.19	J	mg/Kg	1	8/27/2021 1:38:01 AM	62128
Pyridine	ND	0.15	0.38		mg/Kg	1	8/27/2021 1:38:01 AM	62128
1,2,4-Trichlorobenzene	ND	0.087	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
2,4,5-Trichlorophenol	ND	0.061	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
2,4,6-Trichlorophenol	ND	0.082	0.19		mg/Kg	1	8/27/2021 1:38:01 AM	62128
Surr: 2-Fluorophenol	0		20.3-74.1	S	%Rec	1	8/27/2021 1:38:01 AM	62128
Surr: Phenol-d5	79.8		23.1-92.7		%Rec	1	8/27/2021 1:38:01 AM	62128
Surr: 2,4,6-Tribromophenol	77.2		17.3-122		%Rec	1	8/27/2021 1:38:01 AM	62128
Surr: Nitrobenzene-d5	60.7		24.7-73.2		%Rec	1	8/27/2021 1:38:01 AM	62128
Surr: 2-Fluorobiphenyl	63.1		21.5-90.1		%Rec	1	8/27/2021 1:38:01 AM	62128
Surr: 4-Terphenyl-d14	72.7		15-140		%Rec	1	8/27/2021 1:38:01 AM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	6.1	0.029	0.076		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Toluene	98	0.39	3.0		mg/Kg	100	8/25/2021 3:16:51 PM	62086
Ethylbenzene	25	0.74	3.0		mg/Kg	100	8/25/2021 3:16:51 PM	62086
Methyl tert-butyl ether (MTBE)	0.096	0.086	0.15	J	mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,2,4-Trimethylbenzene	52	0.43	3.0		mg/Kg	100	8/25/2021 3:16:51 PM	62086
1,3,5-Trimethylbenzene	16	0.68	3.0		mg/Kg	100	8/25/2021 3:16:51 PM	62086
1,2-Dichloroethane (EDC)	ND	0.035	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,2-Dibromoethane (EDB)	ND	0.060	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Naphthalene	9.4	0.057	0.30		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1-Methylnaphthalene	7.3	0.17	0.61		mg/Kg	5	8/25/2021 1:02:56 AM	62086
2-Methylnaphthalene	12	0.14	0.61		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Acetone	ND	0.50	2.3		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Bromobenzene	ND	0.032	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Bromodichloromethane	ND	0.019	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Bromoform	ND	0.037	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Bromomethane	ND	0.25	0.46		mg/Kg	5	8/25/2021 1:02:56 AM	62086
2-Butanone	ND	0.66	1.5		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Carbon disulfide	ND	0.063	1.5		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Carbon tetrachloride	ND	0.017	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Chlorobenzene	0.10	0.027	0.15	J	mg/Kg	5	8/25/2021 1:02:56 AM	62086
Chloroethane	ND	0.057	0.30		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Chloroform	ND	0.022	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086

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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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-18R-(9.5-10')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 2:30:00 PM
Lab ID: 2108857-006 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Chloromethane	0.41	0.053	0.46	J	mg/Kg	5	8/25/2021 1:02:56 AM	62086
2-Chlorotoluene	ND	0.020	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
4-Chlorotoluene	ND	0.080	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
cis-1,2-DCE	ND	0.075	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
cis-1,3-Dichloropropene	ND	0.023	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,2-Dibromo-3-chloropropane	ND	0.066	0.30		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Dibromochloromethane	ND	0.024	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Dibromomethane	ND	0.036	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,2-Dichlorobenzene	ND	0.032	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,3-Dichlorobenzene	ND	0.029	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,4-Dichlorobenzene	ND	0.041	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Dichlorodifluoromethane	ND	0.059	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,1-Dichloroethane	ND	0.044	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,1-Dichloroethene	ND	0.033	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,2-Dichloropropane	ND	0.030	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,3-Dichloropropane	ND	0.033	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
2,2-Dichloropropane	ND	0.022	0.30		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,1-Dichloropropene	ND	0.018	0.30		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Hexachlorobutadiene	ND	0.10	0.30		mg/Kg	5	8/25/2021 1:02:56 AM	62086
2-Hexanone	ND	0.066	1.5		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Isopropylbenzene	3.0	0.028	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
4-Isopropyltoluene	0.74	0.039	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
4-Methyl-2-pentanone	ND	0.18	1.5		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Methylene chloride	ND	0.11	0.46		mg/Kg	5	8/25/2021 1:02:56 AM	62086
n-Butylbenzene	4.3	0.041	0.46		mg/Kg	5	8/25/2021 1:02:56 AM	62086
n-Propylbenzene	12	0.025	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
sec-Butylbenzene	1.7	0.13	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Styrene	0.042	0.021	0.15	J	mg/Kg	5	8/25/2021 1:02:56 AM	62086
tert-Butylbenzene	ND	0.035	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,1,1,2-Tetrachloroethane	ND	0.022	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,1,2,2-Tetrachloroethane	ND	0.049	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Tetrachloroethene (PCE)	ND	0.042	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
trans-1,2-DCE	ND	0.029	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
trans-1,3-Dichloropropene	ND	0.036	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,2,3-Trichlorobenzene	ND	0.024	0.30		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,2,4-Trichlorobenzene	ND	0.053	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,1,1-Trichloroethane	ND	0.034	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,1,2-Trichloroethane	ND	0.038	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Trichloroethene (TCE)	ND	0.030	0.15		mg/Kg	5	8/25/2021 1:02:56 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-18R-(9.5-10')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 2:30:00 PM
Lab ID: 2108857-006 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Trichlorofluoromethane	ND	0.034	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
1,2,3-Trichloropropane	ND	0.064	0.30		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Vinyl chloride	ND	0.029	0.15		mg/Kg	5	8/25/2021 1:02:56 AM	62086
Xylenes, Total	130	1.6	6.1		mg/Kg	100	8/25/2021 3:16:51 PM	62086
Surr: Dibromofluoromethane	79.2		70-130		%Rec	5	8/25/2021 1:02:56 AM	62086
Surr: 1,2-Dichloroethane-d4	92.3		70-130		%Rec	5	8/25/2021 1:02:56 AM	62086
Surr: Toluene-d8	122		70-130		%Rec	5	8/25/2021 1:02:56 AM	62086
Surr: 4-Bromofluorobenzene	153		70-130	S	%Rec	5	8/25/2021 1:02:56 AM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	2400	84	300		mg/Kg	100	8/25/2021 3:16:51 PM	62086
Surr: BFB	105	0	70-130		%Rec	100	8/25/2021 3:16:51 PM	62086

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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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-18R-(25.5-26')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 3:20:00 PM
Lab ID: 2108857-007 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 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)	260	4.7	9.5		mg/Kg	1	8/18/2021 6:15:27 PM	62028
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/18/2021 6:15:27 PM	62028
Surr: DNOP	128	0	70-130		%Rec	1	8/18/2021 6:15:27 PM	62028
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.0030	0.0026	0.033	J	mg/Kg	1	9/1/2021 11:13:01 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Arsenic	ND	2.8	4.9		mg/Kg	2	8/18/2021 3:13:54 PM	62031
Barium	280	0.12	0.20		mg/Kg	2	8/18/2021 3:13:54 PM	62031
Cadmium	ND	0.098	0.20		mg/Kg	2	8/18/2021 3:13:54 PM	62031
Chromium	8.1	0.29	0.59		mg/Kg	2	8/18/2021 3:13:54 PM	62031
Iron	12000	240	240		mg/Kg	100	9/22/2021 3:58:46 PM	62031
Lead	ND	0.52	0.59		mg/Kg	2	8/18/2021 5:11:19 PM	62031
Manganese	560	0.81	0.98		mg/Kg	5	8/18/2021 3:16:07 PM	62031
Selenium	ND	4.3	4.9		mg/Kg	2	8/18/2021 3:13:54 PM	62031
Silver	ND	0.28	0.49		mg/Kg	2	8/18/2021 3:13:54 PM	62031
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Aniline	ND	0.068	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Anthracene	ND	0.089	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Azobenzene	ND	0.098	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Benzo(a)pyrene	ND	0.093	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Benzoic acid	ND	0.12	0.98		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Benzyl alcohol	ND	0.081	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	8/27/2021 2:19:21 AM	62128
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Carbazole	ND	0.087	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	8/27/2021 2:19:21 AM	62128
4-Chloroaniline	ND	0.096	0.49		mg/Kg	1	8/27/2021 2:19:21 AM	62128
2-Chloronaphthalene	ND	0.093	0.25		mg/Kg	1	8/27/2021 2:19:21 AM	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
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S	% Recovery outside of range due to dilution or matrix
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P	Sample pH Not In Range
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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-18R-(25.5-26')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 3:20:00 PM
Lab ID: 2108857-007 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.11	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
4-Chlorophenyl phenyl ether	ND	0.084	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Chrysene	ND	0.087	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
1,2-Dichlorobenzene	ND	0.080	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	8/27/2021 2:19:21 AM	62128
2,4-Dimethylphenol	ND	0.070	0.30		mg/Kg	1	8/27/2021 2:19:21 AM	62128
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	8/27/2021 2:19:21 AM	62128
2,4-Dinitrophenol	ND	0.050	0.49		mg/Kg	1	8/27/2021 2:19:21 AM	62128
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	8/27/2021 2:19:21 AM	62128
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Fluoranthene	ND	0.080	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Fluorene	0.088	0.088	0.20	J	mg/Kg	1	8/27/2021 2:19:21 AM	62128
Hexachlorobenzene	ND	0.088	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Isophorone	ND	0.080	0.39		mg/Kg	1	8/27/2021 2:19:21 AM	62128
1-Methylnaphthalene	0.49	0.091	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
2-Methylnaphthalene	0.53	0.081	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
2-Methylphenol	ND	0.083	0.39		mg/Kg	1	8/27/2021 2:19:21 AM	62128
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Naphthalene	ND	0.093	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Nitrobenzene	ND	0.081	0.39		mg/Kg	1	8/27/2021 2:19:21 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-18R-(25.5-26')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 3:20:00 PM
Lab ID: 2108857-007 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.085	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
4-Nitrophenol	ND	0.081	0.25		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Phenanthrene	0.34	0.10	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Phenol	ND	0.076	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Pyrene	ND	0.075	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Pyridine	ND	0.16	0.39		mg/Kg	1	8/27/2021 2:19:21 AM	62128
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
2,4,5-Trichlorophenol	ND	0.063	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
2,4,6-Trichlorophenol	ND	0.085	0.20		mg/Kg	1	8/27/2021 2:19:21 AM	62128
Surr: 2-Fluorophenol	41.9		20.3-74.1		%Rec	1	8/27/2021 2:19:21 AM	62128
Surr: Phenol-d5	46.0		23.1-92.7		%Rec	1	8/27/2021 2:19:21 AM	62128
Surr: 2,4,6-Tribromophenol	62.7		17.3-122		%Rec	1	8/27/2021 2:19:21 AM	62128
Surr: Nitrobenzene-d5	39.0		24.7-73.2		%Rec	1	8/27/2021 2:19:21 AM	62128
Surr: 2-Fluorobiphenyl	39.1		21.5-90.1		%Rec	1	8/27/2021 2:19:21 AM	62128
Surr: 4-Terphenyl-d14	66.2		15-140		%Rec	1	8/27/2021 2:19:21 AM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0094	0.025		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Toluene	0.0064	0.0063	0.049	J	mg/Kg	2	8/25/2021 3:44:21 PM	62086
Ethylbenzene	ND	0.012	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Methyl tert-butyl ether (MTBE)	0.041	0.028	0.049	J	mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,2,4-Trimethylbenzene	ND	0.0069	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,3,5-Trimethylbenzene	ND	0.011	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,2-Dichloroethane (EDC)	ND	0.011	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,2-Dibromoethane (EDB)	ND	0.019	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Naphthalene	ND	0.018	0.098		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1-Methylnaphthalene	0.59	0.056	0.20		mg/Kg	2	8/25/2021 3:44:21 PM	62086
2-Methylnaphthalene	0.50	0.045	0.20		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Acetone	ND	0.16	0.74		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Bromobenzene	ND	0.010	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Bromodichloromethane	0.026	0.0062	0.049	J	mg/Kg	2	8/25/2021 3:44:21 PM	62086
Bromoform	ND	0.012	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Bromomethane	ND	0.081	0.15		mg/Kg	2	8/25/2021 3:44:21 PM	62086
2-Butanone	ND	0.21	0.49		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Carbon disulfide	ND	0.020	0.49		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Carbon tetrachloride	ND	0.0055	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Chlorobenzene	0.014	0.0088	0.049	J	mg/Kg	2	8/25/2021 3:44:21 PM	62086
Chloroethane	ND	0.018	0.098		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Chloroform	ND	0.0070	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-18R-(25.5-26')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 3:20:00 PM
Lab ID: 2108857-007 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Chloromethane	ND	0.017	0.15		mg/Kg	2	8/25/2021 3:44:21 PM	62086
2-Chlorotoluene	ND	0.0066	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
4-Chlorotoluene	ND	0.026	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
cis-1,2-DCE	ND	0.024	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
cis-1,3-Dichloropropene	ND	0.0073	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,2-Dibromo-3-chloropropane	ND	0.021	0.098		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Dibromochloromethane	ND	0.0079	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Dibromomethane	ND	0.011	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,2-Dichlorobenzene	ND	0.010	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,3-Dichlorobenzene	ND	0.0093	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,4-Dichlorobenzene	ND	0.013	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Dichlorodifluoromethane	ND	0.019	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,1-Dichloroethane	ND	0.014	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,1-Dichloroethene	ND	0.011	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,2-Dichloropropane	ND	0.0096	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,3-Dichloropropane	ND	0.011	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
2,2-Dichloropropane	ND	0.0070	0.098		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,1-Dichloropropene	ND	0.0059	0.098		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Hexachlorobutadiene	ND	0.033	0.098		mg/Kg	2	8/25/2021 3:44:21 PM	62086
2-Hexanone	0.11	0.021	0.49	J	mg/Kg	2	8/25/2021 3:44:21 PM	62086
Isopropylbenzene	ND	0.0091	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
4-Isopropyltoluene	ND	0.013	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
4-Methyl-2-pentanone	0.065	0.057	0.49	J	mg/Kg	2	8/25/2021 3:44:21 PM	62086
Methylene chloride	ND	0.036	0.15		mg/Kg	2	8/25/2021 3:44:21 PM	62086
n-Butylbenzene	0.036	0.013	0.15	J	mg/Kg	2	8/25/2021 3:44:21 PM	62086
n-Propylbenzene	0.0084	0.0079	0.049	J	mg/Kg	2	8/25/2021 3:44:21 PM	62086
sec-Butylbenzene	ND	0.040	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Styrene	ND	0.0067	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
tert-Butylbenzene	ND	0.011	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,1,1,2-Tetrachloroethane	ND	0.0072	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,1,2,2-Tetrachloroethane	ND	0.016	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Tetrachloroethene (PCE)	ND	0.013	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
trans-1,2-DCE	ND	0.0095	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
trans-1,3-Dichloropropene	ND	0.012	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,2,3-Trichlorobenzene	ND	0.0076	0.098		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,2,4-Trichlorobenzene	ND	0.017	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,1,1-Trichloroethane	ND	0.011	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,1,2-Trichloroethane	ND	0.012	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Trichloroethene (TCE)	ND	0.0096	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-18R-(25.5-26')
Project: MKTF Well Installation **Collection Date:** 8/14/2021 3:20:00 PM
Lab ID: 2108857-007 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Trichlorofluoromethane	ND	0.011	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
1,2,3-Trichloropropane	ND	0.021	0.098		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Vinyl chloride	ND	0.0094	0.049		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Xylenes, Total	ND	0.026	0.098		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Surr: Dibromofluoromethane	105		70-130		%Rec	2	8/25/2021 3:44:21 PM	62086
Surr: 1,2-Dichloroethane-d4	114		70-130		%Rec	2	8/25/2021 3:44:21 PM	62086
Surr: Toluene-d8	104		70-130		%Rec	2	8/25/2021 3:44:21 PM	62086
Surr: 4-Bromofluorobenzene	117		70-130		%Rec	2	8/25/2021 3:44:21 PM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	11	1.4	4.9		mg/Kg	2	8/25/2021 3:44:21 PM	62086
Surr: BFB	117	0	70-130		%Rec	2	8/25/2021 3:44:21 PM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** BD1-08142021
Project: MKTF Well Installation **Collection Date:** 8/14/2021
Lab ID: 2108857-008 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 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	10		mg/Kg	1	8/18/2021 6:25:14 PM	62028
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	8/18/2021 6:25:14 PM	62028
Surr: DNOP	126	0	70-130		%Rec	1	8/18/2021 6:25:14 PM	62028
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0027	0.034		mg/Kg	1	9/1/2021 11:19:27 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Arsenic	ND	2.7	4.8		mg/Kg	2	8/18/2021 3:39:59 PM	62031
Barium	210	0.12	0.19		mg/Kg	2	8/18/2021 3:39:59 PM	62031
Cadmium	ND	0.096	0.19		mg/Kg	2	8/18/2021 3:39:59 PM	62031
Chromium	12	0.29	0.58		mg/Kg	2	8/18/2021 3:39:59 PM	62031
Iron	19000	240	240		mg/Kg	100	9/22/2021 4:00:49 PM	62031
Lead	2.5	0.51	0.58		mg/Kg	2	8/18/2021 5:14:07 PM	62031
Manganese	370	0.32	0.39		mg/Kg	2	8/18/2021 3:39:59 PM	62031
Selenium	ND	4.2	4.8		mg/Kg	2	8/18/2021 3:39:59 PM	62031
Silver	ND	0.28	0.48		mg/Kg	2	8/18/2021 3:39:59 PM	62031
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.086	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Acenaphthylene	ND	0.088	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Aniline	ND	0.067	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Anthracene	ND	0.088	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Azobenzene	ND	0.097	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Benz(a)anthracene	ND	0.062	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Benzo(a)pyrene	ND	0.091	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Benzo(g,h,i)perylene	ND	0.099	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Benzo(k)fluoranthene	ND	0.073	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Benzoic acid	ND	0.12	0.97		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Benzyl alcohol	ND	0.079	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Bis(2-chloroethoxy)methane	ND	0.074	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Bis(2-chloroisopropyl)ether	ND	0.098	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.48		mg/Kg	1	8/27/2021 3:01:24 AM	62128
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Butyl benzyl phthalate	ND	0.059	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Carbazole	ND	0.085	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
4-Chloro-3-methylphenol	ND	0.082	0.48		mg/Kg	1	8/27/2021 3:01:24 AM	62128
4-Chloroaniline	ND	0.094	0.48		mg/Kg	1	8/27/2021 3:01:24 AM	62128
2-Chloronaphthalene	ND	0.092	0.24		mg/Kg	1	8/27/2021 3:01:24 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
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** BD1-08142021
Project: MKTF Well Installation **Collection Date:** 8/14/2021
Lab ID: 2108857-008 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
4-Chlorophenyl phenyl ether	ND	0.082	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Chrysene	ND	0.085	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Di-n-octyl phthalate	ND	0.12	0.39		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
1,2-Dichlorobenzene	ND	0.078	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
1,3-Dichlorobenzene	ND	0.069	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
1,4-Dichlorobenzene	ND	0.082	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Diethyl phthalate	ND	0.32	0.48		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Dimethyl phthalate	ND	0.089	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
2,4-Dichlorophenol	ND	0.079	0.39		mg/Kg	1	8/27/2021 3:01:24 AM	62128
2,4-Dimethylphenol	ND	0.069	0.29		mg/Kg	1	8/27/2021 3:01:24 AM	62128
4,6-Dinitro-2-methylphenol	ND	0.081	0.39		mg/Kg	1	8/27/2021 3:01:24 AM	62128
2,4-Dinitrophenol	ND	0.049	0.48		mg/Kg	1	8/27/2021 3:01:24 AM	62128
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	8/27/2021 3:01:24 AM	62128
2,6-Dinitrotoluene	ND	0.098	0.48		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Fluoranthene	ND	0.078	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Fluorene	ND	0.086	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Hexachlorobenzene	ND	0.086	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Hexachlorobutadiene	ND	0.091	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Hexachloroethane	ND	0.086	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Isophorone	ND	0.079	0.39		mg/Kg	1	8/27/2021 3:01:24 AM	62128
1-Methylnaphthalene	ND	0.089	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
2-Methylnaphthalene	ND	0.080	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
2-Methylphenol	ND	0.081	0.39		mg/Kg	1	8/27/2021 3:01:24 AM	62128
3+4-Methylphenol	ND	0.080	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
N-Nitrosodi-n-propylamine	ND	0.090	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Naphthalene	ND	0.091	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
2-Nitroaniline	ND	0.099	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
4-Nitroaniline	ND	0.12	0.39		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Nitrobenzene	ND	0.079	0.39		mg/Kg	1	8/27/2021 3:01:24 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** BD1-08142021
Project: MKTF Well Installation **Collection Date:** 8/14/2021
Lab ID: 2108857-008 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.083	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
4-Nitrophenol	ND	0.079	0.24		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Pentachlorophenol	ND	0.083	0.39		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Phenanthrene	ND	0.099	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Phenol	ND	0.075	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Pyrene	ND	0.073	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Pyridine	ND	0.16	0.39		mg/Kg	1	8/27/2021 3:01:24 AM	62128
1,2,4-Trichlorobenzene	ND	0.089	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
2,4,5-Trichlorophenol	ND	0.062	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
2,4,6-Trichlorophenol	ND	0.083	0.19		mg/Kg	1	8/27/2021 3:01:24 AM	62128
Surr: 2-Fluorophenol	51.8		20.3-74.1		%Rec	1	8/27/2021 3:01:24 AM	62128
Surr: Phenol-d5	61.2		23.1-92.7		%Rec	1	8/27/2021 3:01:24 AM	62128
Surr: 2,4,6-Tribromophenol	76.8		17.3-122		%Rec	1	8/27/2021 3:01:24 AM	62128
Surr: Nitrobenzene-d5	47.8		24.7-73.2		%Rec	1	8/27/2021 3:01:24 AM	62128
Surr: 2-Fluorobiphenyl	48.0		21.5-90.1		%Rec	1	8/27/2021 3:01:24 AM	62128
Surr: 4-Terphenyl-d14	73.3		15-140		%Rec	1	8/27/2021 3:01:24 AM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0049	0.013		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Toluene	0.0050	0.0033	0.026	J	mg/Kg	1	8/25/2021 4:11:51 PM	62086
Ethylbenzene	ND	0.0062	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Methyl tert-butyl ether (MTBE)	0.021	0.014	0.026	J	mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,2,4-Trimethylbenzene	ND	0.0036	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,3,5-Trimethylbenzene	ND	0.0058	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,2-Dichloroethane (EDC)	ND	0.0058	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,2-Dibromoethane (EDB)	ND	0.010	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Naphthalene	ND	0.0095	0.051		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1-Methylnaphthalene	ND	0.029	0.10		mg/Kg	1	8/25/2021 4:11:51 PM	62086
2-Methylnaphthalene	ND	0.024	0.10		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Acetone	ND	0.084	0.38		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Bromobenzene	ND	0.0054	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Bromodichloromethane	ND	0.0033	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Bromoform	ND	0.0062	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Bromomethane	ND	0.043	0.077		mg/Kg	1	8/25/2021 4:11:51 PM	62086
2-Butanone	ND	0.11	0.26		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Carbon disulfide	ND	0.011	0.26		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Carbon tetrachloride	ND	0.0029	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Chlorobenzene	ND	0.0046	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Chloroethane	ND	0.0096	0.051		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Chloroform	ND	0.0036	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** BD1-08142021
Project: MKTF Well Installation **Collection Date:** 8/14/2021
Lab ID: 2108857-008 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Chloromethane	ND	0.0090	0.077		mg/Kg	1	8/25/2021 4:11:51 PM	62086
2-Chlorotoluene	ND	0.0034	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
4-Chlorotoluene	ND	0.013	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
cis-1,2-DCE	ND	0.013	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
cis-1,3-Dichloropropene	ND	0.0038	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,2-Dibromo-3-chloropropane	ND	0.011	0.051		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Dibromochloromethane	ND	0.0041	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Dibromomethane	ND	0.0060	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,2-Dichlorobenzene	ND	0.0053	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,3-Dichlorobenzene	ND	0.0048	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,4-Dichlorobenzene	ND	0.0069	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Dichlorodifluoromethane	ND	0.0099	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,1-Dichloroethane	ND	0.0075	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,1-Dichloroethene	ND	0.0055	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,2-Dichloropropane	ND	0.0050	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,3-Dichloropropane	ND	0.0056	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
2,2-Dichloropropane	ND	0.0036	0.051		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,1-Dichloropropene	ND	0.0031	0.051		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Hexachlorobutadiene	ND	0.017	0.051		mg/Kg	1	8/25/2021 4:11:51 PM	62086
2-Hexanone	0.022	0.011	0.26	J	mg/Kg	1	8/25/2021 4:11:51 PM	62086
Isopropylbenzene	ND	0.0048	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
4-Isopropyltoluene	ND	0.0066	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
4-Methyl-2-pentanone	ND	0.030	0.26		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Methylene chloride	ND	0.019	0.077		mg/Kg	1	8/25/2021 4:11:51 PM	62086
n-Butylbenzene	ND	0.0069	0.077		mg/Kg	1	8/25/2021 4:11:51 PM	62086
n-Propylbenzene	ND	0.0041	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
sec-Butylbenzene	ND	0.021	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Styrene	ND	0.0035	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
tert-Butylbenzene	ND	0.0059	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,1,1,2-Tetrachloroethane	ND	0.0038	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,1,2,2-Tetrachloroethane	ND	0.0083	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Tetrachloroethene (PCE)	ND	0.0070	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
trans-1,2-DCE	ND	0.0050	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
trans-1,3-Dichloropropene	ND	0.0060	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,2,3-Trichlorobenzene	ND	0.0040	0.051		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,2,4-Trichlorobenzene	ND	0.0089	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,1,1-Trichloroethane	ND	0.0057	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,1,2-Trichloroethane	ND	0.0064	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Trichloroethene (TCE)	ND	0.0050	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086

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
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B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** BD1-08142021
Project: MKTF Well Installation **Collection Date:** 8/14/2021
Lab ID: 2108857-008 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Trichlorofluoromethane	ND	0.0058	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
1,2,3-Trichloropropane	ND	0.011	0.051		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Vinyl chloride	ND	0.0049	0.026		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Xylenes, Total	ND	0.013	0.051		mg/Kg	1	8/25/2021 4:11:51 PM	62086
Surr: Dibromofluoromethane	110		70-130		%Rec	1	8/25/2021 4:11:51 PM	62086
Surr: 1,2-Dichloroethane-d4	118		70-130		%Rec	1	8/25/2021 4:11:51 PM	62086
Surr: Toluene-d8	107		70-130		%Rec	1	8/25/2021 4:11:51 PM	62086
Surr: 4-Bromofluorobenzene	113		70-130		%Rec	1	8/25/2021 4:11:51 PM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	1.4	0.71	2.6	J	mg/Kg	1	8/25/2021 4:11:51 PM	62086
Surr: BFB	102	0	70-130		%Rec	1	8/25/2021 4:11:51 PM	62086

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Qualifiers:

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-04R-(8.2-8.7')
Project: MKTF Well Installation **Collection Date:** 8/16/2021 11:12:00 AM
Lab ID: 2108857-009 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 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)	75	4.9	9.9		mg/Kg	1	8/19/2021 12:18:49 PM	62028
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	8/19/2021 12:18:49 PM	62028
Surr: DNOP	125	0	70-130		%Rec	1	8/19/2021 12:18:49 PM	62028
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	ND	0.0027	0.034		mg/Kg	1	9/1/2021 11:21:37 AM	62296
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Arsenic	ND	2.7	4.8		mg/Kg	2	8/18/2021 3:44:17 PM	62031
Barium	1500	0.58	0.96		mg/Kg	10	8/18/2021 3:59:03 PM	62031
Cadmium	ND	0.096	0.19		mg/Kg	2	8/18/2021 3:44:17 PM	62031
Chromium	8.6	0.29	0.57		mg/Kg	2	8/18/2021 3:44:17 PM	62031
Iron	15000	240	240		mg/Kg	100	9/22/2021 4:02:54 PM	62031
Lead	1.8	0.51	0.57		mg/Kg	2	8/18/2021 5:15:32 PM	62031
Manganese	320	0.32	0.38		mg/Kg	2	8/18/2021 3:44:17 PM	62031
Selenium	ND	4.2	4.8		mg/Kg	2	8/18/2021 3:44:17 PM	62031
Silver	ND	0.28	0.48		mg/Kg	2	8/18/2021 3:44:17 PM	62031
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.088	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Acenaphthylene	ND	0.089	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Aniline	ND	0.068	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Anthracene	ND	0.089	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Azobenzene	ND	0.098	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Benz(a)anthracene	ND	0.063	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Benzo(a)pyrene	ND	0.092	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Benzo(b)fluoranthene	ND	0.10	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Benzo(g,h,i)perylene	ND	0.10	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Benzo(k)fluoranthene	ND	0.074	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Benzoic acid	ND	0.12	0.98		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Benzyl alcohol	ND	0.080	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Bis(2-chloroethoxy)methane	ND	0.075	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Bis(2-chloroisopropyl)ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.49		mg/Kg	1	8/27/2021 3:42:44 AM	62128
4-Bromophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Butyl benzyl phthalate	ND	0.060	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Carbazole	ND	0.086	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
4-Chloro-3-methylphenol	ND	0.083	0.49		mg/Kg	1	8/27/2021 3:42:44 AM	62128
4-Chloroaniline	ND	0.095	0.49		mg/Kg	1	8/27/2021 3:42:44 AM	62128
2-Chloronaphthalene	ND	0.093	0.24		mg/Kg	1	8/27/2021 3:42:44 AM	62128

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
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PQL	Practical Quanitative Limit
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-04R-(8.2-8.7')
Project: MKTF Well Installation **Collection Date:** 8/16/2021 11:12:00 AM
Lab ID: 2108857-009 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
4-Chlorophenyl phenyl ether	ND	0.083	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Chrysene	ND	0.087	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Di-n-octyl phthalate	ND	0.13	0.39		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Dibenz(a,h)anthracene	ND	0.10	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
1,2-Dichlorobenzene	ND	0.079	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
1,3-Dichlorobenzene	ND	0.070	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
1,4-Dichlorobenzene	ND	0.083	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
3,3´-Dichlorobenzidine	ND	0.15	0.24		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Diethyl phthalate	ND	0.32	0.49		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Dimethyl phthalate	ND	0.091	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
2,4-Dichlorophenol	ND	0.080	0.39		mg/Kg	1	8/27/2021 3:42:44 AM	62128
2,4-Dimethylphenol	ND	0.070	0.29		mg/Kg	1	8/27/2021 3:42:44 AM	62128
4,6-Dinitro-2-methylphenol	ND	0.083	0.39		mg/Kg	1	8/27/2021 3:42:44 AM	62128
2,4-Dinitrophenol	ND	0.049	0.49		mg/Kg	1	8/27/2021 3:42:44 AM	62128
2,4-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	8/27/2021 3:42:44 AM	62128
2,6-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Fluoranthene	ND	0.079	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Fluorene	ND	0.087	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Hexachlorobenzene	ND	0.087	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Hexachlorobutadiene	ND	0.092	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Hexachloroethane	ND	0.087	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Isophorone	ND	0.080	0.39		mg/Kg	1	8/27/2021 3:42:44 AM	62128
1-Methylnaphthalene	0.18	0.090	0.20	J	mg/Kg	1	8/27/2021 3:42:44 AM	62128
2-Methylnaphthalene	0.33	0.081	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
2-Methylphenol	ND	0.082	0.39		mg/Kg	1	8/27/2021 3:42:44 AM	62128
3+4-Methylphenol	ND	0.081	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
N-Nitrosodi-n-propylamine	ND	0.091	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
N-Nitrosodimethylamine	ND	0.15	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Naphthalene	0.25	0.092	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
2-Nitroaniline	ND	0.10	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
4-Nitroaniline	ND	0.13	0.39		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Nitrobenzene	ND	0.080	0.39		mg/Kg	1	8/27/2021 3:42:44 AM	62128

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
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Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-04R-(8.2-8.7')
Project: MKTF Well Installation **Collection Date:** 8/16/2021 11:12:00 AM
Lab ID: 2108857-009 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.084	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
4-Nitrophenol	ND	0.081	0.24		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Pentachlorophenol	ND	0.085	0.39		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Phenanthrene	ND	0.10	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Phenol	ND	0.076	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Pyrene	ND	0.074	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Pyridine	ND	0.16	0.39		mg/Kg	1	8/27/2021 3:42:44 AM	62128
1,2,4-Trichlorobenzene	ND	0.090	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
2,4,5-Trichlorophenol	ND	0.062	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
2,4,6-Trichlorophenol	ND	0.084	0.20		mg/Kg	1	8/27/2021 3:42:44 AM	62128
Surr: 2-Fluorophenol	47.4		20.3-74.1		%Rec	1	8/27/2021 3:42:44 AM	62128
Surr: Phenol-d5	57.0		23.1-92.7		%Rec	1	8/27/2021 3:42:44 AM	62128
Surr: 2,4,6-Tribromophenol	67.1		17.3-122		%Rec	1	8/27/2021 3:42:44 AM	62128
Surr: Nitrobenzene-d5	44.0		24.7-73.2		%Rec	1	8/27/2021 3:42:44 AM	62128
Surr: 2-Fluorobiphenyl	43.1		21.5-90.1		%Rec	1	8/27/2021 3:42:44 AM	62128
Surr: 4-Terphenyl-d14	79.6		15-140		%Rec	1	8/27/2021 3:42:44 AM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0052	0.014		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Toluene	0.0073	0.0035	0.027	J	mg/Kg	1	8/25/2021 2:23:58 AM	62086
Ethylbenzene	1.9	0.0066	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Methyl tert-butyl ether (MTBE)	0.018	0.015	0.027	J	mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,2,4-Trimethylbenzene	17	0.19	1.4		mg/Kg	50	8/25/2021 4:39:16 PM	62086
1,3,5-Trimethylbenzene	5.6	0.30	1.4		mg/Kg	50	8/25/2021 4:39:16 PM	62086
1,2-Dichloroethane (EDC)	ND	0.0062	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,2-Dibromoethane (EDB)	ND	0.011	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Naphthalene	1.5	0.010	0.054		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1-Methylnaphthalene	0.75	0.031	0.11		mg/Kg	1	8/25/2021 2:23:58 AM	62086
2-Methylnaphthalene	1.5	0.025	0.11		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Acetone	ND	0.088	0.41		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Bromobenzene	ND	0.0058	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Bromodichloromethane	ND	0.0035	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Bromoform	ND	0.0065	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Bromomethane	ND	0.045	0.081		mg/Kg	1	8/25/2021 2:23:58 AM	62086
2-Butanone	ND	0.12	0.27		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Carbon disulfide	ND	0.011	0.27		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Carbon tetrachloride	ND	0.0030	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Chlorobenzene	ND	0.0049	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Chloroethane	ND	0.010	0.054		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Chloroform	ND	0.0038	0.027		mg/Kg	1	8/25/2021 2:23:58 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-04R-(8.2-8.7')
Project: MKTF Well Installation **Collection Date:** 8/16/2021 11:12:00 AM
Lab ID: 2108857-009 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Chloromethane	ND	0.0095	0.081		mg/Kg	1	8/25/2021 2:23:58 AM	62086
2-Chlorotoluene	ND	0.0036	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
4-Chlorotoluene	ND	0.014	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
cis-1,2-DCE	ND	0.013	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
cis-1,3-Dichloropropene	ND	0.0040	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,2-Dibromo-3-chloropropane	ND	0.012	0.054		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Dibromochloromethane	ND	0.0043	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Dibromomethane	ND	0.0063	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,2-Dichlorobenzene	ND	0.0056	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,3-Dichlorobenzene	ND	0.0051	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,4-Dichlorobenzene	ND	0.0072	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Dichlorodifluoromethane	ND	0.010	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,1-Dichloroethane	ND	0.0079	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,1-Dichloroethene	ND	0.0058	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,2-Dichloropropane	ND	0.0053	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,3-Dichloropropane	ND	0.0060	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
2,2-Dichloropropane	ND	0.0039	0.054		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,1-Dichloropropene	ND	0.0033	0.054		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Hexachlorobutadiene	ND	0.018	0.054		mg/Kg	1	8/25/2021 2:23:58 AM	62086
2-Hexanone	ND	0.012	0.27		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Isopropylbenzene	0.63	0.0050	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
4-Isopropyltoluene	0.20	0.0070	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
4-Methyl-2-pentanone	ND	0.032	0.27		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Methylene chloride	ND	0.020	0.081		mg/Kg	1	8/25/2021 2:23:58 AM	62086
n-Butylbenzene	1.1	0.0072	0.081		mg/Kg	1	8/25/2021 2:23:58 AM	62086
n-Propylbenzene	3.5	0.22	1.4		mg/Kg	50	8/25/2021 4:39:16 PM	62086
sec-Butylbenzene	0.44	0.022	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Styrene	ND	0.0037	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
tert-Butylbenzene	ND	0.0063	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,1,1,2-Tetrachloroethane	ND	0.0040	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,1,2,2-Tetrachloroethane	ND	0.0088	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Tetrachloroethene (PCE)	ND	0.0074	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
trans-1,2-DCE	ND	0.0052	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
trans-1,3-Dichloropropene	ND	0.0064	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,2,3-Trichlorobenzene	ND	0.0042	0.054		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,2,4-Trichlorobenzene	ND	0.0094	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,1,1-Trichloroethane	ND	0.0060	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,1,2-Trichloroethane	ND	0.0068	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Trichloroethene (TCE)	ND	0.0053	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086

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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-04R-(8.2-8.7')
Project: MKTF Well Installation
Collection Date: 8/16/2021 11:12:00 AM
Lab ID: 2108857-009 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Trichlorofluoromethane	ND	0.0062	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
1,2,3-Trichloropropane	ND	0.011	0.054		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Vinyl chloride	ND	0.0052	0.027		mg/Kg	1	8/25/2021 2:23:58 AM	62086
Xylenes, Total	14	0.71	2.7		mg/Kg	50	8/25/2021 4:39:16 PM	62086
Surr: Dibromofluoromethane	94.7		70-130		%Rec	1	8/25/2021 2:23:58 AM	62086
Surr: 1,2-Dichloroethane-d4	111		70-130		%Rec	1	8/25/2021 2:23:58 AM	62086
Surr: Toluene-d8	125		70-130		%Rec	1	8/25/2021 2:23:58 AM	62086
Surr: 4-Bromofluorobenzene	152		70-130	S	%Rec	1	8/25/2021 2:23:58 AM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	300	38	140		mg/Kg	50	8/25/2021 4:39:16 PM	62086
Surr: BFB	101	0	70-130		%Rec	50	8/25/2021 4:39:16 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-04R-(19.5-20')
Project: MKTF Well Installation **Collection Date:** 8/16/2021 11:45:00 AM
Lab ID: 2108857-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 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)	130	4.6	9.3		mg/Kg	1	8/25/2021 11:21:02 AM	62132
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	8/25/2021 11:21:02 AM	62132
Surr: DNOP	117	0	70-130		%Rec	1	8/25/2021 11:21:02 AM	62132
EPA METHOD 7471B: MERCURY							Analyst: **ags**	
Mercury	0.016	0.0027	0.034	J	mg/Kg	1	9/1/2021 11:23:48 AM	62297
EPA METHOD 6010B: SOIL METALS							Analyst: **JLF**	
Arsenic	ND	2.9	5.0		mg/Kg	2	8/18/2021 3:48:32 PM	62031
Barium	820	0.30	0.50		mg/Kg	5	8/18/2021 3:50:44 PM	62031
Cadmium	ND	0.10	0.20		mg/Kg	2	8/18/2021 3:48:32 PM	62031
Chromium	8.5	0.30	0.61		mg/Kg	2	8/18/2021 3:48:32 PM	62031
Iron	11000	250	250		mg/Kg	100	9/22/2021 4:13:44 PM	62031
Lead	2.1	0.54	0.61		mg/Kg	2	8/18/2021 5:16:58 PM	62031
Manganese	770	0.84	1.0		mg/Kg	5	8/18/2021 3:50:44 PM	62031
Selenium	ND	4.4	5.0		mg/Kg	2	8/18/2021 3:48:32 PM	62031
Silver	ND	0.29	0.50		mg/Kg	2	8/18/2021 3:48:32 PM	62031
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
Acenaphthene	ND	0.086	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Acenaphthylene	ND	0.087	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Aniline	ND	0.066	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Anthracene	ND	0.087	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Azobenzene	ND	0.096	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Benz(a)anthracene	ND	0.062	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Benzo(a)pyrene	ND	0.090	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Benzo(b)fluoranthene	ND	0.10	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Benzo(g,h,i)perylene	ND	0.098	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Benzo(k)fluoranthene	ND	0.072	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Benzoic acid	ND	0.12	0.96		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Benzyl alcohol	ND	0.079	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Bis(2-chloroethoxy)methane	ND	0.073	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Bis(2-chloroethyl)ether	ND	0.10	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Bis(2-chloroisopropyl)ether	ND	0.097	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Bis(2-ethylhexyl)phthalate	ND	0.21	0.48		mg/Kg	1	8/27/2021 4:24:08 AM	62128
4-Bromophenyl phenyl ether	ND	0.10	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Butyl benzyl phthalate	ND	0.058	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Carbazole	ND	0.084	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
4-Chloro-3-methylphenol	ND	0.081	0.48		mg/Kg	1	8/27/2021 4:24:08 AM	62128
4-Chloroaniline	ND	0.093	0.48		mg/Kg	1	8/27/2021 4:24:08 AM	62128
2-Chloronaphthalene	ND	0.091	0.24		mg/Kg	1	8/27/2021 4:24:08 AM	62128

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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
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-04R-(19.5-20')
Project: MKTF Well Installation **Collection Date:** 8/16/2021 11:45:00 AM
Lab ID: 2108857-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Chlorophenol	ND	0.10	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
4-Chlorophenyl phenyl ether	ND	0.081	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Chrysene	ND	0.085	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Di-n-butyl phthalate	ND	0.27	0.38		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Di-n-octyl phthalate	ND	0.12	0.38		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Dibenz(a,h)anthracene	ND	0.10	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
1,2-Dichlorobenzene	ND	0.078	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
1,3-Dichlorobenzene	ND	0.068	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
1,4-Dichlorobenzene	ND	0.081	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
3,3´-Dichlorobenzidine	ND	0.14	0.24		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Diethyl phthalate	ND	0.31	0.48		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Dimethyl phthalate	ND	0.089	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
2,4-Dichlorophenol	ND	0.078	0.38		mg/Kg	1	8/27/2021 4:24:08 AM	62128
2,4-Dimethylphenol	ND	0.068	0.29		mg/Kg	1	8/27/2021 4:24:08 AM	62128
4,6-Dinitro-2-methylphenol	ND	0.081	0.38		mg/Kg	1	8/27/2021 4:24:08 AM	62128
2,4-Dinitrophenol	ND	0.048	0.48		mg/Kg	1	8/27/2021 4:24:08 AM	62128
2,4-Dinitrotoluene	ND	0.12	0.48		mg/Kg	1	8/27/2021 4:24:08 AM	62128
2,6-Dinitrotoluene	ND	0.098	0.48		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Fluoranthene	ND	0.078	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Fluorene	ND	0.086	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Hexachlorobenzene	ND	0.085	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Hexachlorobutadiene	ND	0.090	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Hexachlorocyclopentadiene	ND	0.11	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Hexachloroethane	ND	0.085	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Indeno(1,2,3-cd)pyrene	ND	0.11	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Isophorone	ND	0.078	0.38		mg/Kg	1	8/27/2021 4:24:08 AM	62128
1-Methylnaphthalene	ND	0.088	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
2-Methylnaphthalene	ND	0.079	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
2-Methylphenol	ND	0.081	0.38		mg/Kg	1	8/27/2021 4:24:08 AM	62128
3+4-Methylphenol	ND	0.079	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
N-Nitrosodi-n-propylamine	ND	0.089	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
N-Nitrosodimethylamine	ND	0.14	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
N-Nitrosodiphenylamine	ND	0.10	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Naphthalene	ND	0.090	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
2-Nitroaniline	ND	0.098	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
3-Nitroaniline	ND	0.11	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
4-Nitroaniline	ND	0.12	0.38		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Nitrobenzene	ND	0.079	0.38		mg/Kg	1	8/27/2021 4:24:08 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-04R-(19.5-20')
Project: MKTF Well Installation **Collection Date:** 8/16/2021 11:45:00 AM
Lab ID: 2108857-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: **DAM**	
2-Nitrophenol	ND	0.083	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
4-Nitrophenol	ND	0.079	0.24		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Pentachlorophenol	ND	0.083	0.38		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Phenanthrene	ND	0.098	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Phenol	ND	0.074	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Pyrene	ND	0.073	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Pyridine	ND	0.15	0.38		mg/Kg	1	8/27/2021 4:24:08 AM	62128
1,2,4-Trichlorobenzene	ND	0.088	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
2,4,5-Trichlorophenol	ND	0.061	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
2,4,6-Trichlorophenol	ND	0.083	0.19		mg/Kg	1	8/27/2021 4:24:08 AM	62128
Surr: 2-Fluorophenol	49.6		20.3-74.1		%Rec	1	8/27/2021 4:24:08 AM	62128
Surr: Phenol-d5	58.5		23.1-92.7		%Rec	1	8/27/2021 4:24:08 AM	62128
Surr: 2,4,6-Tribromophenol	72.0		17.3-122		%Rec	1	8/27/2021 4:24:08 AM	62128
Surr: Nitrobenzene-d5	44.8		24.7-73.2		%Rec	1	8/27/2021 4:24:08 AM	62128
Surr: 2-Fluorobiphenyl	45.5		21.5-90.1		%Rec	1	8/27/2021 4:24:08 AM	62128
Surr: 4-Terphenyl-d14	74.7		15-140		%Rec	1	8/27/2021 4:24:08 AM	62128
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Benzene	ND	0.0052	0.014		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Toluene	ND	0.0035	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Ethylbenzene	ND	0.0066	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Methyl tert-butyl ether (MTBE)	0.063	0.015	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,2,4-Trimethylbenzene	ND	0.0038	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,3,5-Trimethylbenzene	ND	0.0061	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,2-Dichloroethane (EDC)	ND	0.0062	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,2-Dibromoethane (EDB)	ND	0.011	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Naphthalene	ND	0.010	0.054		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1-Methylnaphthalene	ND	0.031	0.11		mg/Kg	1	8/25/2021 5:06:44 PM	62086
2-Methylnaphthalene	ND	0.025	0.11		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Acetone	ND	0.088	0.41		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Bromobenzene	ND	0.0058	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Bromodichloromethane	ND	0.0035	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Bromoform	ND	0.0065	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Bromomethane	ND	0.045	0.081		mg/Kg	1	8/25/2021 5:06:44 PM	62086
2-Butanone	0.12	0.12	0.27	J	mg/Kg	1	8/25/2021 5:06:44 PM	62086
Carbon disulfide	ND	0.011	0.27		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Carbon tetrachloride	ND	0.0030	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Chlorobenzene	ND	0.0049	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Chloroethane	ND	0.010	0.054		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Chloroform	ND	0.0038	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: MKTF-04R-(19.5-20')
Project: MKTF Well Installation
Collection Date: 8/16/2021 11:45:00 AM
Lab ID: 2108857-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Chloromethane	ND	0.0095	0.081		mg/Kg	1	8/25/2021 5:06:44 PM	62086
2-Chlorotoluene	ND	0.0036	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
4-Chlorotoluene	ND	0.014	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
cis-1,2-DCE	ND	0.013	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
cis-1,3-Dichloropropene	ND	0.0040	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,2-Dibromo-3-chloropropane	ND	0.012	0.054		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Dibromochloromethane	ND	0.0043	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Dibromomethane	ND	0.0063	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,2-Dichlorobenzene	ND	0.0056	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,3-Dichlorobenzene	ND	0.0051	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,4-Dichlorobenzene	ND	0.0072	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Dichlorodifluoromethane	ND	0.010	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,1-Dichloroethane	0.014	0.0079	0.027	J	mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,1-Dichloroethene	0.014	0.0058	0.027	J	mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,2-Dichloropropane	ND	0.0053	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,3-Dichloropropane	ND	0.0060	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
2,2-Dichloropropane	ND	0.0039	0.054		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,1-Dichloropropene	ND	0.0033	0.054		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Hexachlorobutadiene	ND	0.018	0.054		mg/Kg	1	8/25/2021 5:06:44 PM	62086
2-Hexanone	ND	0.012	0.27		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Isopropylbenzene	ND	0.0050	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
4-Isopropyltoluene	ND	0.0070	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
4-Methyl-2-pentanone	ND	0.032	0.27		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Methylene chloride	ND	0.020	0.081		mg/Kg	1	8/25/2021 5:06:44 PM	62086
n-Butylbenzene	ND	0.0072	0.081		mg/Kg	1	8/25/2021 5:06:44 PM	62086
n-Propylbenzene	ND	0.0044	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
sec-Butylbenzene	ND	0.022	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Styrene	ND	0.0037	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
tert-Butylbenzene	ND	0.0063	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,1,1,2-Tetrachloroethane	ND	0.0040	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,1,2,2-Tetrachloroethane	ND	0.0088	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Tetrachloroethene (PCE)	ND	0.0074	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
trans-1,2-DCE	ND	0.0052	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
trans-1,3-Dichloropropene	ND	0.0064	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,2,3-Trichlorobenzene	ND	0.0042	0.054		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,2,4-Trichlorobenzene	ND	0.0094	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,1,1-Trichloroethane	ND	0.0060	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,1,2-Trichloroethane	ND	0.0068	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Trichloroethene (TCE)	ND	0.0053	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MKTF-04R-(19.5-20')
Project: MKTF Well Installation **Collection Date:** 8/16/2021 11:45:00 AM
Lab ID: 2108857-010 **Matrix:** MEOH (SOIL) **Received Date:** 8/17/2021 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **RAA**	
Trichlorofluoromethane	ND	0.0062	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
1,2,3-Trichloropropane	ND	0.011	0.054		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Vinyl chloride	ND	0.0052	0.027		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Xylenes, Total	ND	0.014	0.054		mg/Kg	1	8/25/2021 5:06:44 PM	62086
Surr: Dibromofluoromethane	109		70-130		%Rec	1	8/25/2021 5:06:44 PM	62086
Surr: 1,2-Dichloroethane-d4	122		70-130		%Rec	1	8/25/2021 5:06:44 PM	62086
Surr: Toluene-d8	105		70-130		%Rec	1	8/25/2021 5:06:44 PM	62086
Surr: 4-Bromofluorobenzene	113		70-130		%Rec	1	8/25/2021 5:06:44 PM	62086
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	0.89	0.75	2.7	J	mg/Kg	1	8/25/2021 5:06:44 PM	62086
Surr: BFB	101	0	70-130		%Rec	1	8/25/2021 5:06:44 PM	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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MeOH Blank
Project: MKTF Well Installation **Collection Date:**
Lab ID: 2108857-011 **Matrix:** MEOH BLAN **Received Date:** 8/17/2021 7:30:00 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 3:18:14 AM	62086
Toluene	ND	0.0064	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Ethylbenzene	ND	0.012	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Methyl tert-butyl ether (MTBE)	ND	0.028	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,2,4-Trimethylbenzene	0.015	0.0071	0.050	J	mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,3,5-Trimethylbenzene	ND	0.011	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,2-Dichloroethane (EDC)	ND	0.011	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,2-Dibromoethane (EDB)	ND	0.020	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Naphthalene	ND	0.019	0.10		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1-Methylnaphthalene	ND	0.057	0.20		mg/Kg	1	8/25/2021 3:18:14 AM	62086
2-Methylnaphthalene	ND	0.046	0.20		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Acetone	ND	0.16	0.75		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Bromobenzene	ND	0.011	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Bromodichloromethane	ND	0.0064	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Bromoform	ND	0.012	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Bromomethane	ND	0.083	0.15		mg/Kg	1	8/25/2021 3:18:14 AM	62086
2-Butanone	0.25	0.22	0.50	J	mg/Kg	1	8/25/2021 3:18:14 AM	62086
Carbon disulfide	ND	0.021	0.50		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Carbon tetrachloride	ND	0.0056	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Chlorobenzene	ND	0.0090	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Chloroethane	ND	0.019	0.10		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Chloroform	ND	0.0071	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Chloromethane	ND	0.018	0.15		mg/Kg	1	8/25/2021 3:18:14 AM	62086
2-Chlorotoluene	ND	0.0067	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
4-Chlorotoluene	ND	0.026	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
cis-1,2-DCE	ND	0.025	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
cis-1,3-Dichloropropene	ND	0.0074	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,2-Dibromo-3-chloropropane	ND	0.022	0.10		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Dibromochloromethane	ND	0.0080	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Dibromomethane	ND	0.012	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,2-Dichlorobenzene	ND	0.010	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,3-Dichlorobenzene	ND	0.0094	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,4-Dichlorobenzene	ND	0.013	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Dichlorodifluoromethane	ND	0.019	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,1-Dichloroethane	ND	0.015	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,1-Dichloroethene	ND	0.011	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,2-Dichloropropane	ND	0.0097	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,3-Dichloropropane	ND	0.011	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
2,2-Dichloropropane	ND	0.0071	0.10		mg/Kg	1	8/25/2021 3:18:14 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 **2108857**
Date Reported: **9/24/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon **Client Sample ID:** MeOH Blank
Project: MKTF Well Installation **Collection Date:**
Lab ID: 2108857-011 **Matrix:** MEOH BLAN **Received Date:** 8/17/2021 7:30:00 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 3:18:14 AM	62086
Hexachlorobutadiene	ND	0.034	0.10		mg/Kg	1	8/25/2021 3:18:14 AM	62086
2-Hexanone	0.038	0.022	0.50	J	mg/Kg	1	8/25/2021 3:18:14 AM	62086
Isopropylbenzene	ND	0.0093	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
4-Isopropyltoluene	ND	0.013	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
4-Methyl-2-pentanone	ND	0.058	0.50		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Methylene chloride	ND	0.036	0.15		mg/Kg	1	8/25/2021 3:18:14 AM	62086
n-Butylbenzene	ND	0.013	0.15		mg/Kg	1	8/25/2021 3:18:14 AM	62086
n-Propylbenzene	ND	0.0081	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
sec-Butylbenzene	ND	0.041	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Styrene	ND	0.0068	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
tert-Butylbenzene	ND	0.012	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,1,1,2-Tetrachloroethane	ND	0.0073	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,1,2,2-Tetrachloroethane	0.021	0.016	0.050	J	mg/Kg	1	8/25/2021 3:18:14 AM	62086
Tetrachloroethene (PCE)	ND	0.014	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
trans-1,2-DCE	ND	0.0097	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
trans-1,3-Dichloropropene	ND	0.012	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,2,3-Trichlorobenzene	ND	0.0077	0.10		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,2,4-Trichlorobenzene	ND	0.017	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,1,1-Trichloroethane	ND	0.011	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,1,2-Trichloroethane	ND	0.013	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Trichloroethene (TCE)	ND	0.0098	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Trichlorofluoromethane	ND	0.011	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
1,2,3-Trichloropropane	ND	0.021	0.10		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Vinyl chloride	ND	0.0095	0.050		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Xylenes, Total	ND	0.026	0.10		mg/Kg	1	8/25/2021 3:18:14 AM	62086
Surr: Dibromofluoromethane	102		70-130		%Rec	1	8/25/2021 3:18:14 AM	62086
Surr: 1,2-Dichloroethane-d4	110		70-130		%Rec	1	8/25/2021 3:18:14 AM	62086
Surr: Toluene-d8	103		70-130		%Rec	1	8/25/2021 3:18:14 AM	62086
Surr: 4-Bromofluorobenzene	106		70-130		%Rec	1	8/25/2021 3:18:14 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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2108857**
24-Sep-21

Client: Marathon
Project: MKTF Well Installation

Sample ID: **MB-62028**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **62028**	RunNo: **80620**							
Prep Date: **8/17/2021**	Analysis Date: **8/18/2021**	SeqNo: **2844115**	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			

Sample ID: **LCS-62028**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **62028**	RunNo: **80662**							
Prep Date: **8/17/2021**	Analysis Date: **8/19/2021**	SeqNo: **2845395**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	55	10	50.00	0	109	68.9	141			
Surr: DNOP	5.5		5.000		111	70	130			

Sample ID: **2108857-010AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **MKTF-04R-(19.5-20')**	Batch ID: **62132**	RunNo: **80756**							
Prep Date: **8/23/2021**	Analysis Date: **8/24/2021**	SeqNo: **2849200**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	120	8.4	42.12	200.6	-201	15	184			S
Surr: DNOP	5.1		4.212		121	70	130			

Sample ID: **2108857-010AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **MKTF-04R-(19.5-20')**	Batch ID: **62132**	RunNo: **80756**							
Prep Date: **8/23/2021**	Analysis Date: **8/24/2021**	SeqNo: **2849201**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	130	9.6	48.22	200.6	-138	15	184	14.4	23.9	S
Surr: DNOP	5.7		4.822		117	70	130	0	0	

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			

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2108857**
24-Sep-21

Client: Marathon
Project: MKTF Well Installation

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: **LCS-62245**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **62245**	RunNo: **80890**							
Prep Date: **8/27/2021**	Analysis Date: **8/28/2021**	SeqNo: **2854941**	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	141			
Surr: DNOP	4.6		5.000		92.5	70	130			

Sample ID: **MB-62245**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **62245**	RunNo: **80890**							
Prep Date: **8/27/2021**	Analysis Date: **8/28/2021**	SeqNo: **2854944**	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			

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#: **2108857**
24-Sep-21

Client: Marathon
Project: MKTF Well Installation

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								
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:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2108857**
24-Sep-21

Client: Marathon
Project: MKTF Well Installation

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
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:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
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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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2108857**
24-Sep-21

Client: Marathon
Project: MKTF Well Installation

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
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			

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								

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2108857**
24-Sep-21

Client: Marathon
Project: MKTF Well Installation

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
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#: **2108857**
24-Sep-21

Client: Marathon
Project: MKTF Well Installation

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
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	0.50		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			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2108857**
24-Sep-21

Client: Marathon
Project: MKTF Well Installation

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#: **2108857**
24-Sep-21

Client: Marathon
Project: MKTF Well Installation

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.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108857**
24-Sep-21

Client: Marathon
Project: MKTF Well Installation

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			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108857**

24-Sep-21

Client: Marathon

Project: MKTF Well Installation

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: **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			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108857**
24-Sep-21

Client: Marathon
Project: MKTF Well Installation

Sample ID: **MB-62031**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **62031**	RunNo: **80615**
Prep Date: **8/17/2021**	Analysis Date: **8/18/2021**	SeqNo: **2843967** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Manganese	ND	0.20								
Selenium	ND	2.5								
Silver	ND	0.25								

Sample ID: **LCS-62031**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **62031**	RunNo: **80615**
Prep Date: **8/17/2021**	Analysis Date: **8/18/2021**	SeqNo: **2843969** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	24	2.5	25.00	0	96.9	80	120			
Barium	25	0.10	25.00	0	99.3	80	120			
Cadmium	24	0.10	25.00	0	97.7	80	120			
Chromium	25	0.30	25.00	0	99.3	80	120			
Manganese	25	0.20	25.00	0	98.2	80	120			
Selenium	23	2.5	25.00	0	92.7	80	120			
Silver	5.0	0.25	5.000	0	99.9	80	120			

Sample ID: **MB-62031**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **62031**	RunNo: **80615**
Prep Date: **8/17/2021**	Analysis Date: **8/18/2021**	SeqNo: **2844209** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.30								

Sample ID: **LCS-62031**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **LCSS**	Batch ID: **62031**	RunNo: **80615**
Prep Date: **8/17/2021**	Analysis Date: **8/18/2021**	SeqNo: **2844211** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	24	0.30	25.00	0	96.3	80	120			

Sample ID: **MB-62031**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**
Client ID: **PBS**	Batch ID: **62031**	RunNo: **81488**
Prep Date: **8/17/2021**	Analysis Date: **9/22/2021**	SeqNo: **2878761** 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#: **2108857**

24-Sep-21

Client: Marathon

Project: MKTF Well Installation

Sample ID: **MB-62031**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Soil Metals**							
Client ID: **PBS**	Batch ID: **62031**	RunNo: **81488**							
Prep Date: **8/17/2021**	Analysis Date: **9/22/2021**	SeqNo: **2878761**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	3.2	2.5								

Sample ID: **LCS-62031**	SampType: **LCS**	TestCode: **EPA Method 6010B: Soil Metals**							
Client ID: **LCSS**	Batch ID: **62031**	RunNo: **81488**							
Prep Date: **8/17/2021**	Analysis Date: **9/22/2021**	SeqNo: **2878762**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	26	2.5	25.00	0	105	80	120			B

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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#: **2108857**

24-Sep-21

Client: Marathon

Project: MKTF Well Installation

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			

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			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in 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: **2108857** RcptNo: 1

Received By: **Cheyenne Cason** **8/17/2021 7:30:00 AM**

Completed By: **Desiree Dominguez** **8/17/2021 8:38:49 AM**

Reviewed By: JR 8/17/21

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: SPA 8.17.21

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	1.8	Good				

Released to Imaging: 11/3/2022 2:26:36 PM
Received by OCD: 10/21/2022 2:38:50 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:
MKTF Well Installation

Project #:
697-092-001

Project Manager:
Lesli Alexander

Sampler: Kara Hoppes
On Ice: ☒ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 1.8-0=1.8

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. 2108857	TPH-DRO, Method 8015M/D	TPH-GRO, Method 8015D	VOCs, Method 8260B	RCRA 8 Metals	TPH-MRO, Method 8015D	SVOCs, Method 8270
8/13/2021	1435	Soil	RW-2R (16.5-17')	4		-001	x	x	x	x	x	x
8/13/2021	1610	Soil	RW-2R (32.5-33')	4		-002	x	x	x	x	x	x
8/13/2021		Soil	BD1-08132021	4		-003	x	x	x	x	x	x
8/14/2021	1102	Soil	MKTF-17R (6.5-7')	4		-004	x	x	x	x	x	x
8/14/2021	1140	Soil	MKTF-17R (20.5-21')	4		-005	x	x	x	x	x	x
8/14/2021	1430	Soil	MKTF-18R (9.5-10')	4		-006	x	x	x	x	x	x
8/14/2021	1520	Soil	MKTF-18R (25.5-26')	4		-007	x	x	x	x	x	x
8/14/2021		Soil	BD1-08142021	4		-008	x	x	x	x	x	x
8/16/21	1112	Soil	MKTF-04R (8.2-8.7')	4		-009	x	x	x	x	x	x
8/16/21	1145	Soil	MKTF-04R (19.5-20')	4		-010	x	x	x	x	x	x
			MeOH Blank DAD 8/17/21			-011						

Analysis Request

Date	Time:	Relinquished by:	Received by:	Via:	Date	Time
8/16/21	2:00 PM	Kara Hoppes	Cel	Courier	8/17/21	0730
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.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 152676

CONDITIONS

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 152676
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

CONDITIONS

Created By	Condition	Condition Date
jburdine	Accepted for Record Retention Purposes-Only	11/23/2022