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4 June 2020

Victoria Venegas
State of New Mexico
Energy, Minerals, and Natural Resources
Oil Conservation Division
811 S. First St.
Artesia, New Mexico 88210

**RE: Site Assessment and Closure Report**
**H F 7 Federal Com #001H**
**Marathon Oil EF, LLC**
**Incident ID. NRM2002458606**

Dear Ms. Venegas:

On behalf of Marathon Oil Permian, LLC (Marathon), Weston Solutions, Inc. (WESTON®) respectfully submits this Site Assessment/Characterization Report and Closure Request for the release of production fluids at H F 7 Federal Com #001H (Site) pursuant to the State of New Mexico Energy, Minerals, and Natural Resources Oil Conservation Division's (NMOCD's) spill response rules. This report is intended to provide the NMOCD with a comprehensive account of delineation and remediation measures conducted at the Site to-date. A Site Location Map depicting the location of the project area is provided as **Figure 1**.

## RELEASE INFORMATION

The release occurred on 5 December 2019 when a produced water tank ruptured at the H F 7 Federal Com #001 well site. **Figure 2** illustrates the impacted surface area and surface features of the site. The rupture resulted in the unintentional release of 41.67 barrels (bbls) of produced water onto the surrounding engineered pad. Due to the volume of produced water released being greater than 25 bbls, the release was considered a major release in accordance with New Mexico Administrative Code (NMAC) 19.15.29.7(A). The release was reported to the NMOCD District 2 office and the Bureau of Land Management (BLM) via email on 6 December 2019. The initial notification email and C-141 are included as **Attachment A** and **Attachment B** respectively.

## INITIAL RESPONSE

Marathon's initial response to the release was to shut in the well to stop the flow of produced water to the ruptured tank. A vacuum truck was immediately mobilized to the site to recover the released fluids. The vacuum truck was able to recover 30 bbls (**Attachment C**) of the released fluids. In addition, to prevent the fluids from leaving the engineered pad, an emergency scrape was conducted pending over-excavation of impacted soils.

## SITE ASSESSMENT/CHARACTERIZATION

The H F Federal Com #001 release was not observed to have impacted any surface water bodies and is not believed to have affected groundwater beneath the site. There is no readily available depth to groundwater information for the exact location of the site, but borings installed during WESTON investigation to approximately 21 feet below ground surface (ft bgs) did not encounter evidence of groundwater. A depth to water determination was prepared for the site by reviewing available information on nearby groundwater wells available through the New Mexico Office of the State Engineer records. The record search identified one well within 1 mile of the site as shown on **Figure 3**. The identified well is approximately 0.8 mile from the site and had a single reported depth to water measurement of 9.83 feet reported in 1950. The New Mexico Office of the State Engineer query indicated that, based upon available data for water levels within an approximately 1.5 mile radius, the depth to groundwater ranges from 10 to 200 ft bgs, with an average depth to groundwater of 53 ft bgs (**Attachment D**).

A survey of nearby surface water bodies and groundwater supply sources found the following:

- No continuously flowing watercourse or other significant watercourse within more than 300 feet (**Figure 4**).
- No lakebeds, sinkholes, or playa lakes were identified within in 200 feet of the lateral extent of the release (**Figure 4**).
- The lateral extent of the release does not come within 300 feet of an occupied permanent residence, school, hospital, institution, or church (**Figure 4**).
- There are no natural springs or private domestic water wells within 500 feet.
- No other fresh water wells or springs within 1,000 feet of the lateral extent of the release (**Figure 4**).
- There are no wetlands within 300 feet (**Figure 5**).
- The Site does not lie within a 100-year floodplain (**Figure 6**).

Furthermore, the following were not identified with the lateral extents of the site:

- An unstable area such as karst geology (**Figure 7**).
- A subsurface mine.

The release did not impact areas that are not on an exploration, development, production, or storage site.

# REMEDIATION ACTIVITIES

## TARGET REMEDIAL LEVELS

Target cleanup levels for the site were determined using the NMOCD Closure Criteria (19.15.29.12.B(4) and Table 1 NMAC) in combination with the Bureau of Land Management karst guidelines. **Table 1** summarizes the target cleanup levels, with the levels applicable to the site highlighted. The site Target Remedial Levels (RTLs) are based upon the fact that there is no groundwater data within ½ mile of the site. The following is a summary of the Target Remedial Levels utilized for remedial activities related to the release.

| Contaminant of Concern | Closure Criteria (mg/kg) |
|---|---|
| Chlorides | 600 |
| TPH | 100 |
| GRO-DRO | - |
| BTEX | 50 |
| Benzene | 10 |

## REMEDIATION ACTIVITIES

Initial response activities were conducted by Marathon contractor Wescom, Inc. (Wescom) between 5 and 12 December 2019. During the time the well was shut in, recoverable free liquids were recovered with a vacuum truck, the release area had the surface scraped, and the ruptured tank and associated infrastructure were removed.

Soil remediation activities began on 13 January 2020 and were completed 20 January 2020. Marathon's contractor excavated four areas of the site: the South Tank (S-Tank), North Tank (N-Tank), East Tank (E-Tank), and West Tank (W-Tank) areas (see **Figure 8**). The S-Tank area was excavated to depths ranging from 6 to 12 feet. The N-Tank area was excavated primarily to 7 feet, with some portions excavated as deep as 17 feet. The E-Tank and W-Tank areas were excavated to 5 and 4 feet respectively.

The excavation activities removed approximately 2,900 cubic yards of impacted material. The excavated material was transported off-site between 17 and 20 January 2020 for disposal at New Mexico R360. The excavation was backfilled with imported clean caliche fill.

Photographs for the remediation activities are provided in **Attachment E**.

## SOIL SAMPLING

Wescom collected confirmation samples between 16 and 19 January 2020 and submitted them to Hall Environmental Analysis Laboratory for analysis of total petroleum hydrocarbons (TPH) by

Method 8015M; benzene, toluene, ethylbenzene, and xylene (BTEX) by Method 8021B, and chlorides by Method 300.0. The soil samples were collected as composite samples based on approximately 200-square-foot areas of the side walls and bottom of the excavation. These samples were collected during the excavation activities, but the analytical data was not received until after the excavations had been backfilled, the containment reconstructed, and new equipment placed over large portions of the excavated areas. Marathon was not aware of the reported soil exceedances until after this had occurred. Marathon contacted the NMOCD and requested an extension to allow time to perform additional characterization and delineation activities to support the closure request for the site.

Since it was not possible to perform additional excavations without damaging the rebuilt containment and installed new equipment, Marathon contracted WESTON to collect additional samples to confirm that inaccessible impacted soils left in place beneath and adjacent to the remaining tanks, infrastructure, and nearby pipelines were sufficiently delineated. WESTON mobilized to the site on two occasions, between 14 and 15 April 2020, then again on 14 May 2020. During these two events, WESTON installed 21 soil borings.

The first event borings were located where safely accessible within 5 feet of the estimated location of the confirmation samples collected between 16 and 19 January 2020 that had reported concentrations exceeding one or more RTLs. These samples were all analyzed for chlorides and for TPH in a single sample (B-06 (3-4)). A single boring was also installed during this event to assess site-specific background chloride concentrations. Two composite background samples from the most relevant depth ranges based on the reported excavation depths, one from 5 – 7 feet bgs and one from 12 – 14 bgs. The following table indicates which soil borings were associated with which confirmation sampling location.

| Confirmation Sample Location ID | Soil Boring Location ID |
|---|---|
| N-Tank NE-FS | B-01 |
| N-Tank NW-FS | B-02 |
| N-Tank-FS-Comp | B-03 |
| E-Tank-S-WS-Comp | B-04 |
| E-Tank-W-WS-Comp | B-05 |
| W-Tank-E-WS-Comp | B-06 |
| SP-21 | B-07 |
| SP-26 | B-08 |
| SP-27 | B-09 |
| SP-28 | B-10 |
| SP-29 | B-11 |
| SP-30 | B-12 |
| SP-31 | B-13 |

The second event borings were installed to further qualify the findings of the first event. Four of these borings were installed within 5 feet of boring locations from the first event that had reported concentrations exceeding the RTL. Three of the remaining locations were selected to investigate the soils immediately adjacent to the pipeline corridor that runs along the southeast edge of the spill area. These borings were installed with a vacuum truck unit to clear the lines, and the samples were collected as a composite from the sidewall of the resulting boring. The final location was installed to confirm the extent of excavation in the northeast corner of the S-Tank excavation area as the boring installed during the first event appeared to have been installed in the clean caliche backfill material.

The sample locations are shown on **Figure 8** and soil boring logs are provided in **Attachment F**. All samples collected from the installed borings in two events were submitted to Xenco Laboratories in Carlsbad, New Mexico, for analysis of Chlorides by Method 300.0. A single sample (W-Tank-S-WS-Comp) was also analyzed for TPH by Method 8015M.

### SOIL ANALYTICAL RESULTS

A summary of the analytical results is provided in **Table 2**, and the laboratory data packages are included in **Attachment G**. A total of sixty-one soil samples were collected at the site. Forty-six of the samples collected were composite samples collected for confirmation following completion of the excavation activities, and prior to the backfilling of the excavated areas. Twenty-five of the samples were collected from soil borings that were installed at the after backfilling had been completed as described above.

The initial thirteen soil boing locations were selected to confirm the extent of the thirteen confirmation samples that had reported chloride concentrations that exceeded the RTL. Of these initial soil boring samples, five had reported chloride concentrations that still exceeded the RTL. The second round of soil boring samples were collected to address the five locations that still exceeded the RTLs. The remaining 5 locations were sampled to delineate the impacted soil immediately adjacent to the pipeline. Of these 10 samples, only two had chloride report above the RTL, a sample collected at 21 feet in B-03-2 that have a reported concentration of 757 mg/kg of chlorides, and sample B-10-2 immediately adjacent to the pipeline with a reported concentration of 749 mg/kg of chlorides.

The background samples had a reported chloride concentration of 360 mg/kg for the interval of 5–7 ft bgs, and 445 mg/kg for the 12–14 ft bgs interval.

## CLOSURE REQUEST

Based upon the confirmation sampling results and the subsequent soil boring sampling results, on behalf of Marathon Oil, WESTON requests that no further action be required at this time. The data indicate that only small volumes of impacted material remain in place, but access to these soils is restricted by the tank battery, infrastructure, and the adjacent

pipelines. All of these locations, including the pipeline right-of-ways are located in areas of the pad side that have been previously disturbed for and are currently utilized for oil and gas operations. The sample data also shows that the remaining soil has been characterized and delineated. The area that the access is restricted to has been vertically and horizontally delineated. There was no groundwater observed at the site to a depth of 21 ft bgs, and the bulk of the remaining soils occurs at depths between 2 and 6 feet. The impacted material identified in confirmation sample W-Tank-E-WS-Comp occurred at a depth of 17 feet, but was shown to be decreasing with depth in the sample collected from boring B-03-2 at a depth of 21 feet. Marathon believes that based upon the reported concentrations and limited volumes remaining, the material remaining in place poses no risk to human health or the environment. Marathon therefore requests that remediation of the remaining soils (as shown on **Figure 9**) be deferred until site abandonment.

## CLOSING

Should you have any questions or require additional information, please contact Melodie Sanjari with Marathon by phone at (575) 988-8453 or email (msanjari@marathonoil.com) or myself at (469) 666-5526 or by email (robert.appelt@westonsolutions.com).

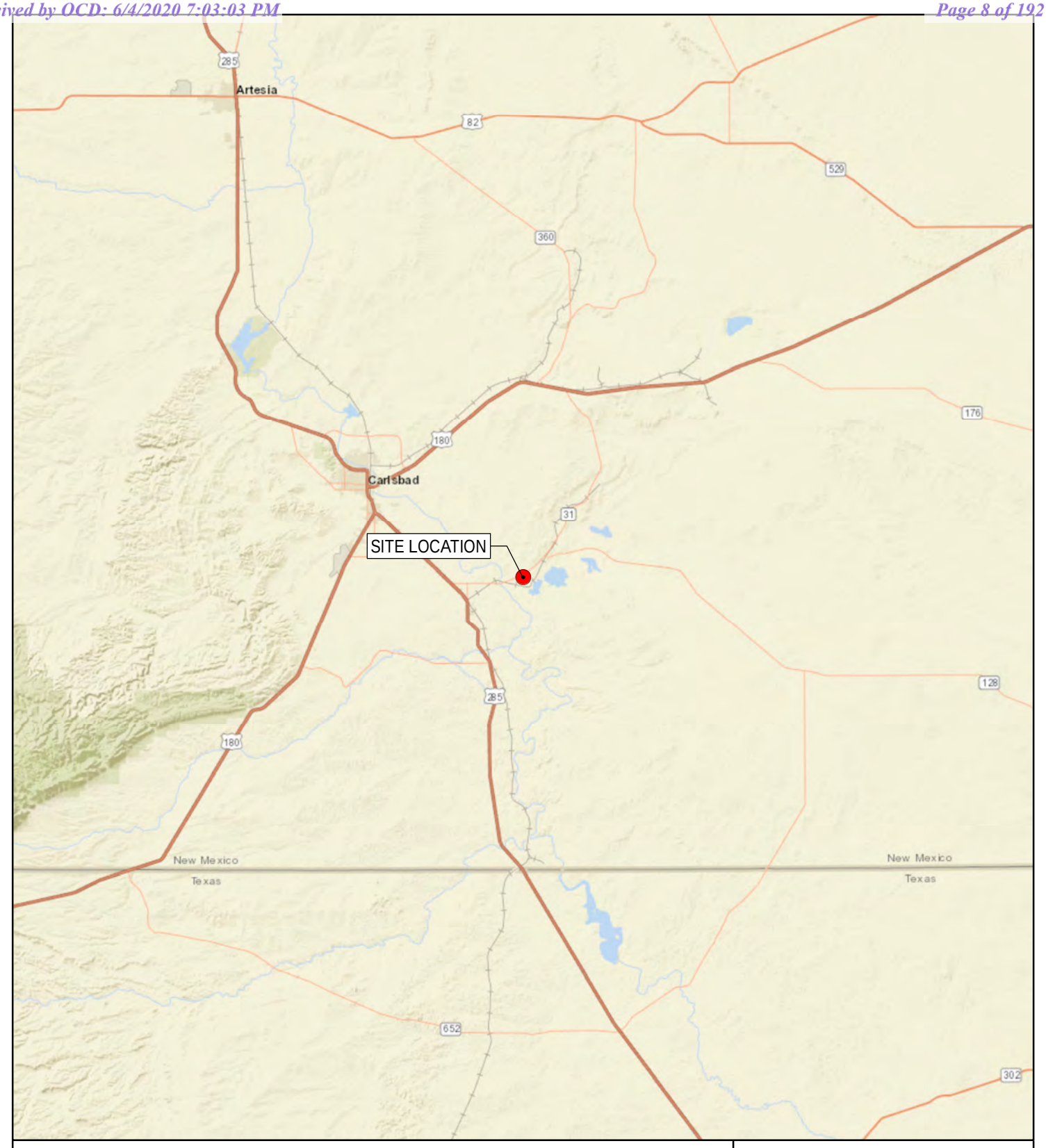
Sincerely,
**WESTON SOLUTIONS, INC.**

Robert M. Appelt
Project Manager

cc: Melodie Sanjari, Environmental Professional, Marathon Oil Company – Permian Asset

Attachments:
- Figures
- Tables
- Attachment A – Initial Release Notification Email
- Attachment B – Initial Form C-141
- Attachment C – Vacuum Truck Trip Ticket
- Attachment D – New Mexico Office of the State Engineer Water Level Query
- Attachment E – Photolog
- Attachment F – Soil Boring Logs
- Attachment G – Laboratory Analytical Reports

# FIGURES

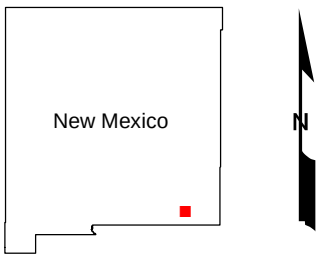



0 10 20

MILES

LEGEND

SITE LOCATION




SOURCE: © WORLD STREET MAPS; ESRI

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# FIGURE 1

## SITE LOCATION MAP

HF 7 FEDERAL COM 001
LATITUDE 32.3182259° N
LONGITUDE 104.0299149° W
EDDY COUNTY, NEW MEXICO

| DATE | PROJECT NO | SCALE |
|---|---|---|
| JUNE 2020 | 12553.023.001.0002 | AS SHOWN |

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 1 - Site Location Map.mxd 10:55:26 AM 6/1/2020 deguentm



LEGEND

OIL SPILL BOUNDARY

N

0 50 100

FEET

SOURCE: © GOOGLE EARTH, 2020

WESTON SOLUTIONS

FIGURE 2

SITE LAYOUT MAP

WITH IMPACTED AREA

HF 7 FEDERAL COM 001

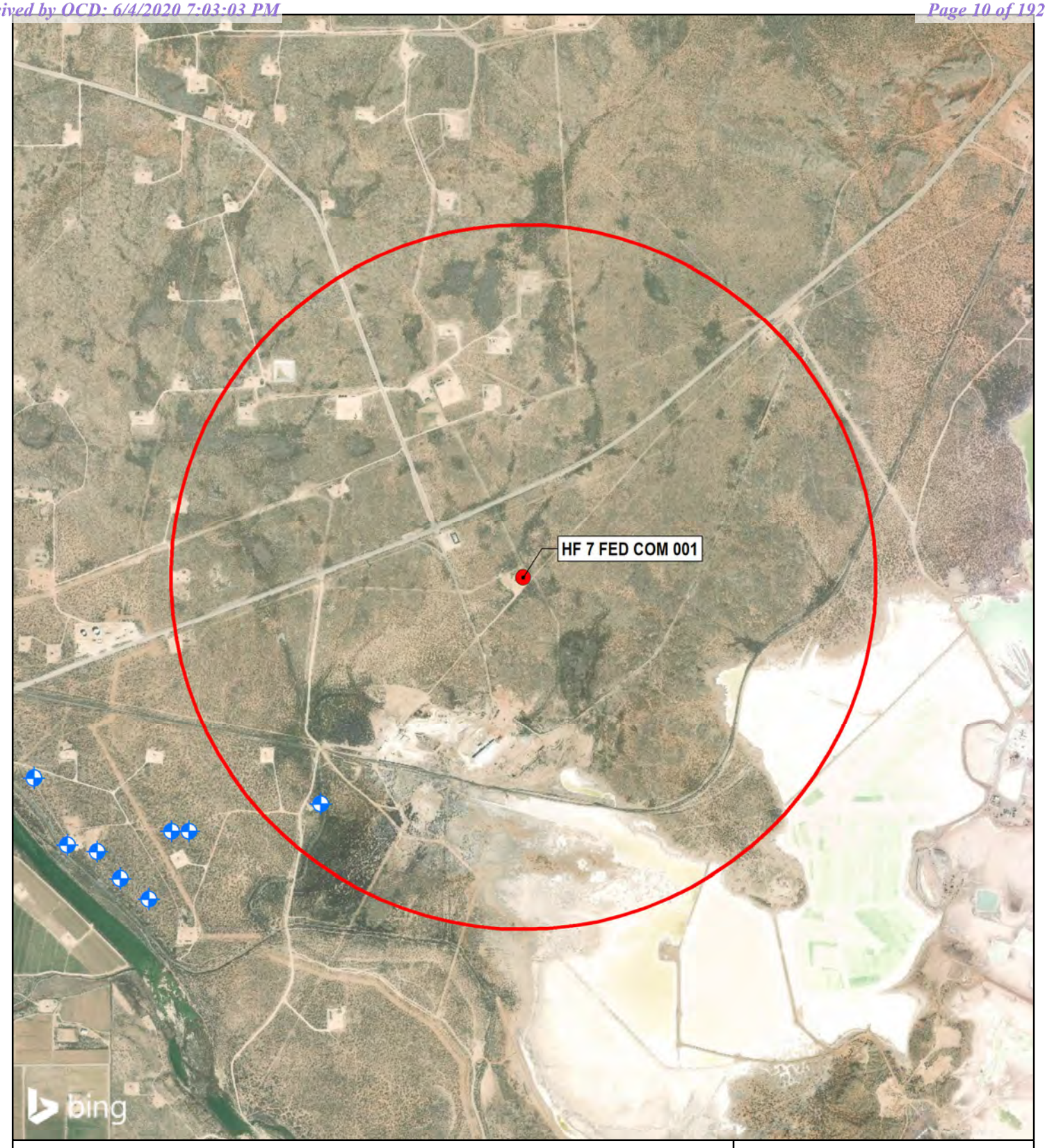
LATITUDE 32.3182259° N

LONGITUDE 104.0299149° W

EDDY COUNTY, NEW MEXICO

| DATE | PROJECT NO | SCALE |
|---|---|---|
| JUNE 2020 | 12553.023.001.0002 | AS SHOWN |

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 2 - Site Layout Map with Impacted Area.mxd 1:02:20 PM 6/2/2020 deguentr

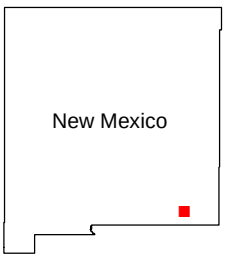



0 2,000 4,000

FEET

LEGEND

- SITE LOCATION
- MONITORING WELL
- 1-MILE BUFFER




N

SOURCE: © BING MAPS AERIAL; ESRI

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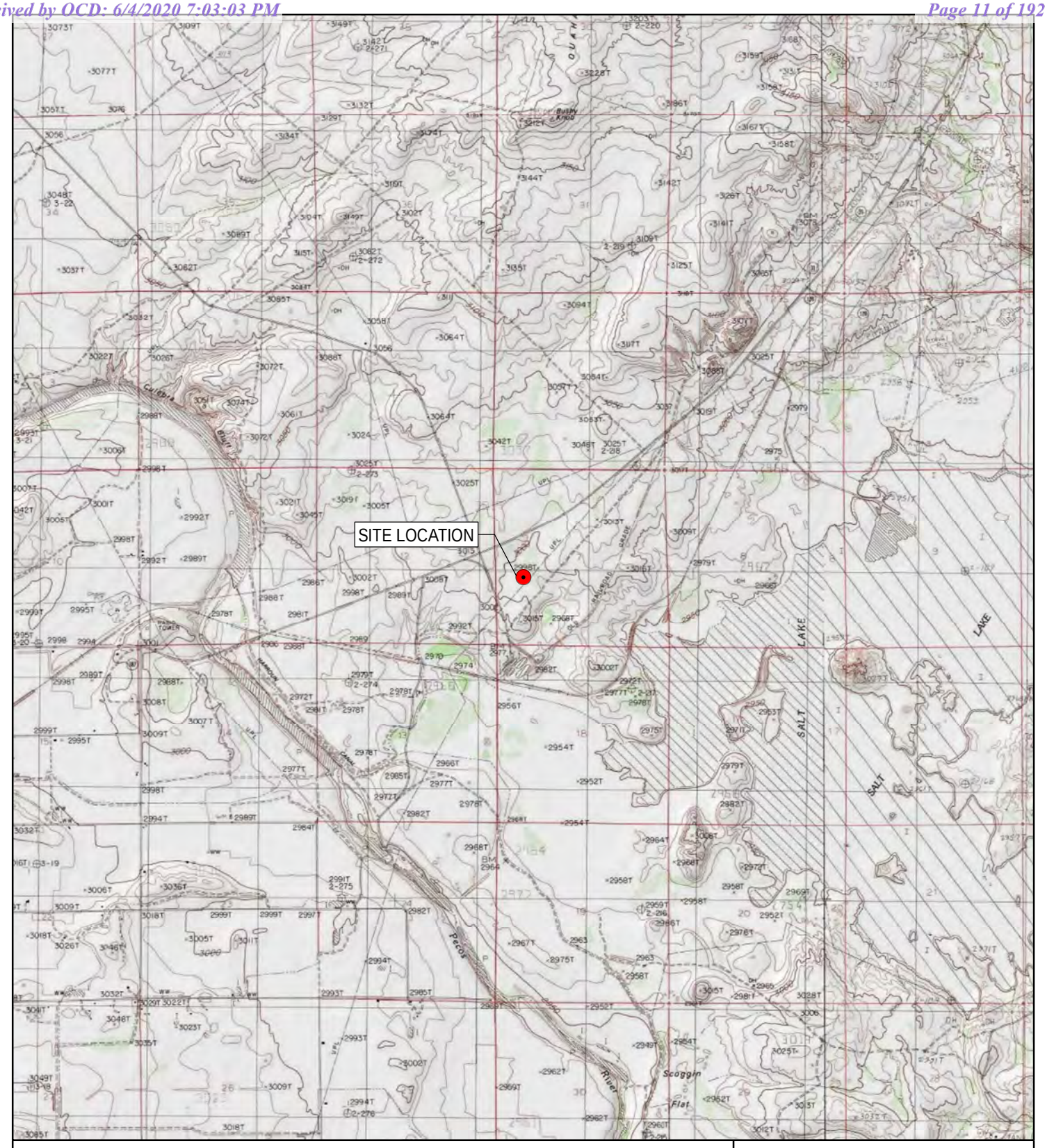
# FIGURE 3

## WATER WELL MAP

HF 7 FEDERAL COM 001
LATITUDE 32.3182259° N
LONGITUDE 104.0299149° W
EDDY COUNTY, NEW MEXICO

| DATE | PROJECT NO | SCALE |
|---|---|---|
| JUNE 2020 | 12553.023.001.0002 | AS SHOWN |

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 3 - Water Well Map.mxd 12:28:08 PM 6/2/2020 deguentm




0 4,000 8,000

FEET

LEGEND

SITE LOCATION

New Mexico

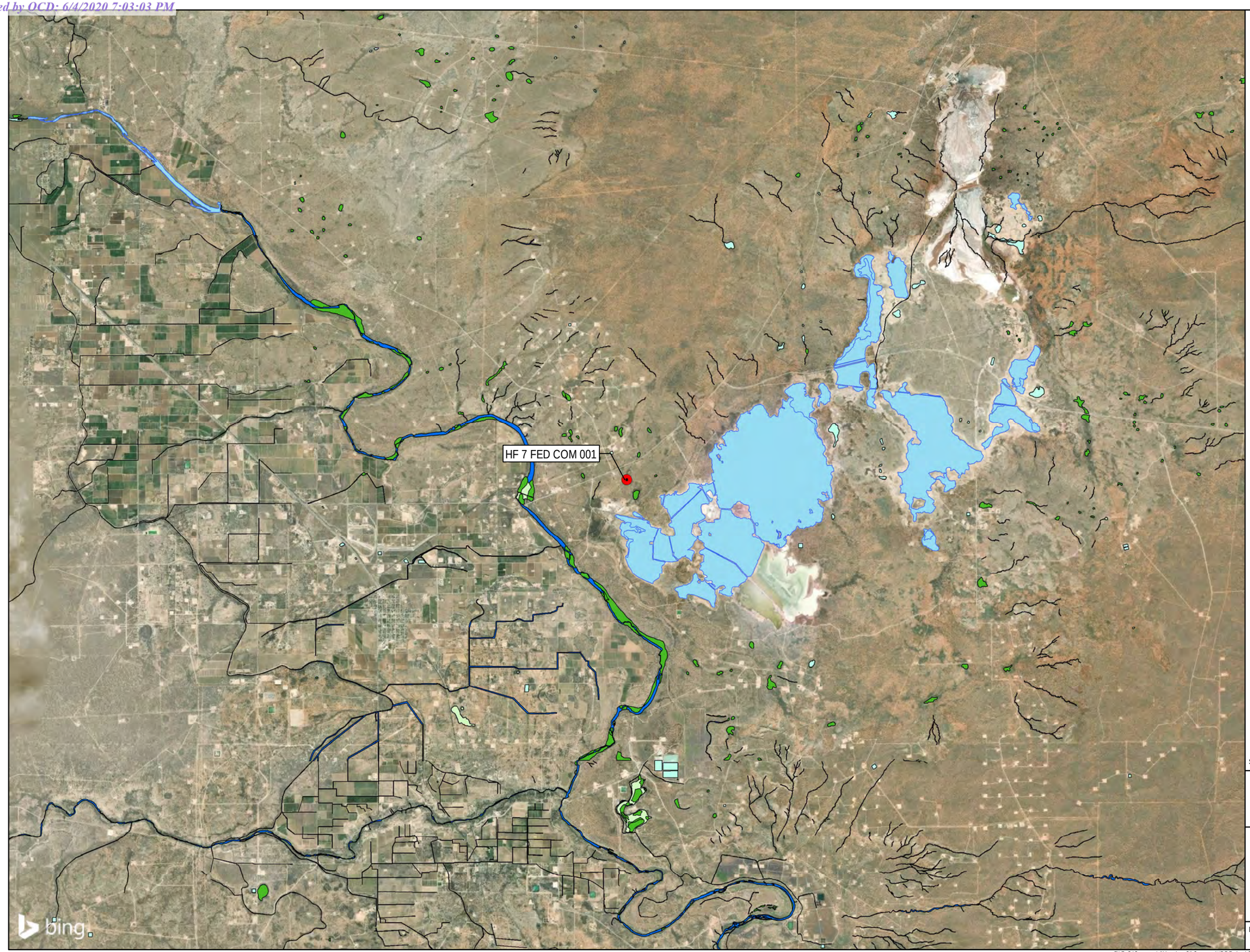
N

SOURCE: © NATIONAL GEOGRAPHIC TOPO; ESRI

# FIGURE 4
## SITE AREA TOPOGRAPHIC MAP
HF 7 FEDERAL COM 001
LATITUDE 32.3182259° N
LONGITUDE 104.0299149° W
EDDY COUNTY, NEW MEXICO

| DATE | PROJECT NO | SCALE |
|---|---|---|
| JUNE 2020 | 12553.023.001.0002 | AS SHOWN |

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 4 - Site Area Topographic Map.mxd 7:28:26 PM 6/2/2020 deguentm





LEGEND

SITE LOCATION

WETLAND TYPE

FRESHWATER EMERGENT WETLAND

FRESHWATER FORESTED/SHRUB WETLAND

FRESHWATER POND

LAKE

RIVERINE

N

0 1.5 3

Miles

SOURCE: © BING MAPS AERIAL; ESRI

# FIGURE 5

## WETLANDS INVENTORY MAP

HF 7 FEDERAL COM 001

LATITUDE 32.3182259° N

LONGITUDE 104.0299149° W

EDDY COUNTY, NEW MEXICO

| DATE | PROJECT NO | SCALE |
|---|---|---|
| JUNE 2020 | 12553.023.001.0002 | AS SHOWN |

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 5 - Wetlands Inventory Map.mxd 12:30:35 PM 6/2/2020 deguentin



LEGEND

SITE LOCATION

FLOOD ZONE

A

X

NOTE:
1. Zone A - Special Flood Hazard Area Without Base Flood Elevation (BFE).
2. Zone X - Area of Minimal Flood Hazard.

N

0 200 400

FEET

SOURCE: © GOOGLE EARTH, 2020

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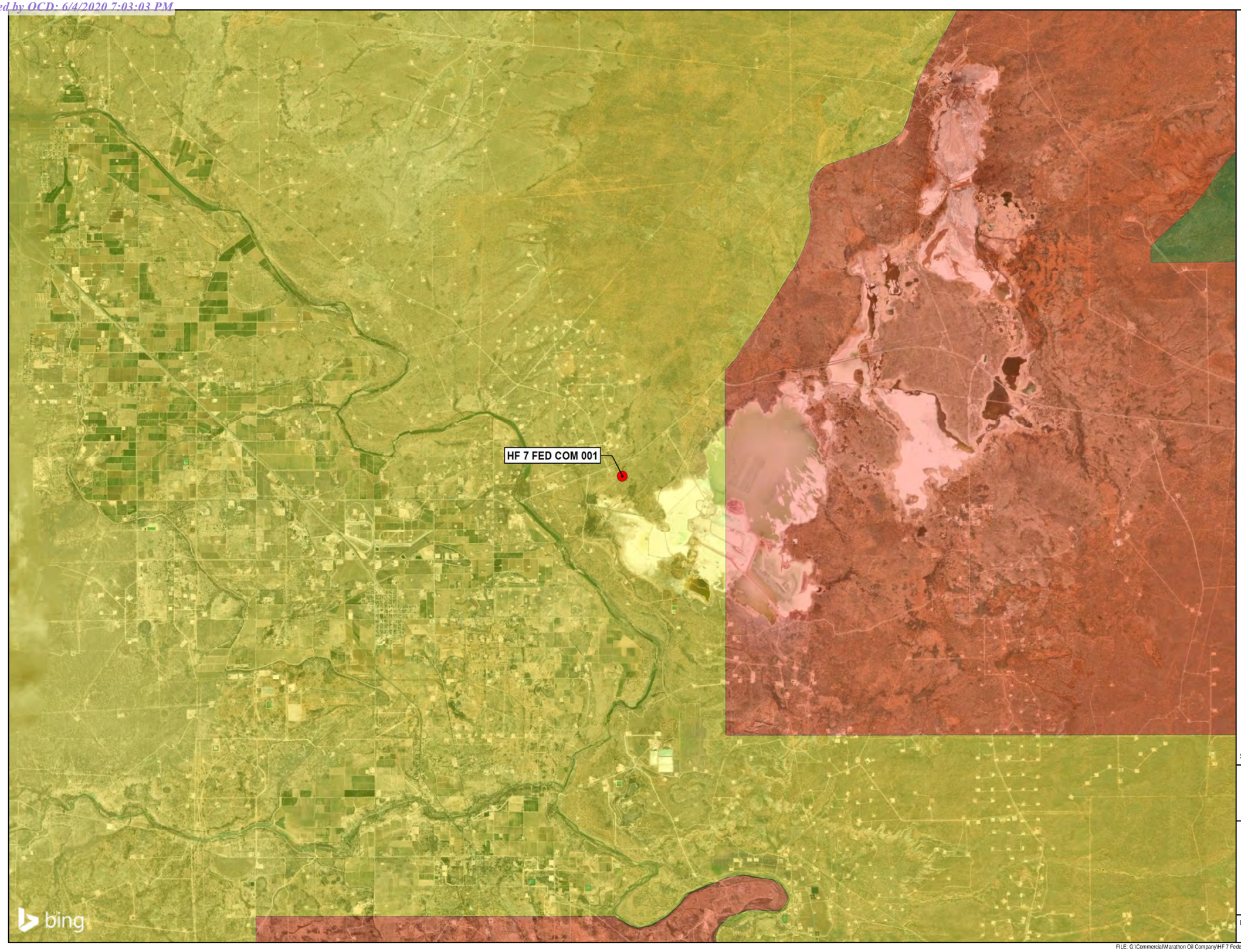
# FIGURE 6

## FEMA FLOOD HAZARD MAP

HF 7 FEDERAL COM 001
LATITUDE 32.3182259° N
LONGITUDE 104.0299149° W
EDDY COUNTY, NEW MEXICO

| DATE | PROJECT NO | SCALE |
|---|---|---|
| JUNE 2020 | 12553.023.001.0002 | AS SHOWN |

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 6 - FEMA Flood Hazard Map.mxd 12:24:55 PM 6/1/2020 deguentr





LEGEND

SITE LOCATION

KARST POTENTIAL

LOW

MEDIUM

HIGH

N

0 1.5 3

Miles

SOURCE: © BING MAPS AERIAL; ESRI

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# FIGURE 7

## KARST POTENTIAL MAP

HF 7 FEDERAL COM 001

LATITUDE 32.3182259° N

LONGITUDE 104.0299149° W

EDDY COUNTY, NEW MEXICO

| DATE | PROJECT NO | SCALE |
|---|---|---|
| JUNE 2020 | 12553.023.001.0002 | AS SHOWN |

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 7 - Karst Potential Map.mxd 12:16:18 PM 6/1/2020 deguentru



LEGEND

BORING LOCATION
CHLORIDE EXCEEDANCE

- BELOW CRITERIA
- ABOVE CRITERIA

SAMPLE LOCATION
CHLORIDE EXCEEDANCE

- BELOW CRITERIA
- ABOVE CRITERIA

EXCAVATIONS

- E-TANK EXCAVATION
- N-TANK EXCAVATION
- S-TANK EXCAVATION
- W-TANK EXCAVATION

NOTE:
1. Sample W-TANK-E-WS exceeded TPH and Chloride (mg/kg) closure criteria.

N

0 25 50

FEET

SOURCE: © GOOGLE EARTH, 2020

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# FIGURE 8

## EXCAVATION AREAS WITH SAMPLE AND EXCEEDANCE LOCATIONS

HF 7 FEDERAL COM 001
LATITUDE 32.3182259° N
LONGITUDE 104.0299149° W
EDDY COUNTY, NEW MEXICO

| DATE | PROJECT NO | SCALE |
|---|---|---|
| JUNE 2020 | 12553.023.001.0002 | AS SHOWN |

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 8 - Excavation Areas with Sample and Exceedance Locations.mxd 7:26:15 PM 6/2/2020 deguentri



LEGEND

DEFERRAL REQUEST AREAS

N

0 50 100

FEET

SOURCE: © GOOGLE EARTH, 2020

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# FIGURE 9

## SITE LAYOUT MAP WITH DEFERRAL REQUEST AREAS

HF 7 FEDERAL COM 001

LATITUDE 32.3182259° N

LONGITUDE 104.0299149° W

EDDY COUNTY, NEW MEXICO

| DATE | PROJECT NO | SCALE |
|---|---|---|
| JUNE 2020 | 12553.023.001.0002 | AS SHOWN |

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 9 - Site Layout Map with Deferral Request Areas.mxd 8:25:41 AM 6/4/2020 deguentin

# TABLES

# Table 1 - Remedial Target Levels

| Closure Criteria (19.15.29.12.B(4) and Table 1 NMAC | | | | | | |
|---|---|---|---|---|---|---|
| H F 7 Fed Com 001: 32.3182259, -104.0299149 | | | | | | |
| **Depth to Groundwater Description** | | **Closure Criteria (units in mg/kg)** | | | | |
| | **Depth to Water (ft bgs)** | **Chloride *** | **TPH** | **GRO+DRO** | **BTEX** | **Benzene** |
| Based on high karst potential | – | 600 | 100 | – | 50 | 10 |
| less than 50 ft bgs or no water data within 1/2 mile | | 600 | **100** | – | **50** | **10** |
| 51 ft to 100 ft | – | 10000 | 2500 | 1000 | 50 | 10 |
| greater than 100 ft | – | 20000 | 2500 | 1000 | 50 | 10 |
| **Location Type** | | | | | | |
| **Surface water** | **Yes or No** | **If yes, then the Closure Criteria is…** | | | | |
| < 300 feet from continuously flowing watercourse or other significant watercourse? | no | 600 | 100 | – | 50 | 10 |
| < 200 feet from lakebed, sinkhole or playa lake? | no | 600 | 100 | – | 50 | 10 |
| **Water Well or Water Source** | **Yes or No** | **If yes, then the Closure Criteria is…** | | | | |
| < 500 feet from spring or a private, domestic fresh water well used by less than 5 households for domestic or stock watering purposes? | no | 600 | 100 | – | 50 | 10 |
| < 1000 feet from fresh water well or spring? | no | 600 | 100 | – | 50 | 10 |
| **Human and Other Areas** | **Yes or No** | **If yes, then the Closure Criteria is…** | | | | |
| < 300 feet from an occupied permanent residence, school, hospital, institution or church? | no | 600 | 100 | – | 50 | 10 |
| within incorporated municipal boundaries or within a defined municipal fresh water well field? | no | 600 | 100 | – | 50 | 10 |
| < 100 feet from wetland? | no | 600 | 100 | – | 50 | 10 |
| within area overlying a subsurface mine? | no | 600 | 100 | – | 50 | 10 |
| within an unstable area? | no | 600 | 100 | – | 50 | 10 |
| within a 100-year floodplain? | no | 600 | 100 | – | 50 | 10 |

*NOTE: Chloride is the numerical limit or background value, whichever is greater

## Table 2. Laboratory Confirmation Analysis Results

Samples Analyzed at the Hall Environmental Analysis Laboratory

| Sample Description | | | | | Field Screening | | Petroleum Hydrocarbons | | | Inorganic | Lab Order # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Volatile | | Extractable | | |
| Sample ID | Time | Depth (ft.) | Area | Date | Mohr Method ppm | Petroflag ppm | Benzene (mg/kg) | BTEX (total) (mg/kg) | TPH (mg/kg) | Chloride (mg/kg) | |
| South Tank Excavation - Closure Criteria | | | | | | | 10 | 50 | 100 | 600 | |
| SP-1 | – | 8 | S-Tank | 1/18/2020 | NA | NA | ND | ND | ND | 400 | 2002627 |
| SP-2 | – | 8 | S-Tank | 1/18/2020 | NA | NA | ND | ND | ND | 530 | 2002627 |
| SP-3 | – | 8 | S-Tank | 1/18/2020 | NA | NA | ND | ND | ND | 400 | 2002627 |
| SP-4 | – | 12 | S-Tank | 1/18/2020 | NA | NA | ND | ND | ND | 420 | 2002627 |
| SP-5 | – | 12 | S-Tank | 1/18/2020 | NA | NA | ND | ND | ND | 420 | 2002627 |
| SP-6 | – | 12 | S-Tank | 1/18/2020 | NA | NA | ND | ND | ND | 430 | 2002627 |
| SP-7 | – | 12 | S-Tank | 1/17/2020 | NA | NA | ND | ND | ND | 330 | 2002627 |
| SP-8 | – | 12 | S-Tank | 1/17/2020 | NA | NA | ND | ND | ND | 440 | 2002627 |
| SP-9 | – | 14 | S-Tank | 1/17/2020 | NA | NA | ND | ND | ND | 420 | 2002627 |
| SP-10 | – | 12 | S-Tank | 1/17/2020 | NA | NA | ND | ND | ND | 400 | 2002627 |
| SP-11 | – | 12 | S-Tank | 1/17/2020 | NA | NA | ND | ND | ND | 450 | 2002627 |
| SP-12 | – | 12 | S-Tank | 1/16/2020 | NA | NA | ND | ND | ND | 460 | 2002627 |
| SP-13 | – | 12 | S-Tank | 1/16/2020 | NA | NA | ND | ND | ND | 440 | 2002627 |
| SP-14 | – | 12 | S-Tank | 1/16/2020 | NA | NA | ND | ND | ND | 430 | 2002627 |
| SP-15 | – | 12 | S-Tank | 1/16/2020 | NA | NA | ND | ND | ND | 350 | 2002627 |
| SP-16 | – | 12 | S-Tank | 1/16/2020 | NA | NA | ND | ND | ND | 430 | 2002627 |
| SP-17 | – | 10 | S-Tank | 1/16/2020 | NA | NA | ND | ND | ND | 400 | 2002627 |
| SP-18 | – | 10 | S-Tank | 1/16/2020 | NA | NA | ND | ND | ND | 450 | 2002627 |
| SP-19 | – | 8 | S-Tank | 1/18/2020 | NA | NA | ND | ND | ND | 480 | 2002627 |
| SP-20 | – | 6 | S-Tank | 1/18/2020 | NA | NA | ND | ND | ND | 510 | 2002627 |
| SP-21 | – | 6 | S-Tank | 1/18/2020 | NA | NA | ND | ND | ND | 740 | 2002627 |
| B-07 | 1120 | 5.5-6.5 | Boring | 4/16/2020 | NA | NA | NA | NA | NA | 386 | 658990 |
| SP-22 | – | Wall | S-Tank | 1/18/2020 | NA | NA | ND | ND | ND | 270 | 2002627 |
| SP-23 | – | Wall | S-Tank | 1/19/2020 | NA | NA | ND | ND | ND | ND | 2002627 |
| SP-24 | – | Wall | S-Tank | 1/19/2020 | NA | NA | ND | ND | ND | 240 | 2002627 |
| SP-25 | – | Wall | S-Tank | 1/19/2020 | NA | NA | ND | ND | ND | ND | 2002627 |
| SP-26 | – | Wall | S-Tank | 1/19/2020 | NA | NA | ND | ND | ND | 720 | 2002627 |
| B-08 | 1055 | 6-12 | Boring | 4/16/2020 | NA | NA | NA | NA | NA | 334 | 658990 |
| SP-27 | – | Wall | S-Tank | 1/19/2020 | NA | NA | ND | ND | ND | 750 | 2002627 |
| B-09 | 1200 | 6-12 | Boring | 4/16/2020 | NA | NA | NA | NA | NA | 355 | 658990 |
| B-09-2-1 | 1220 | 1-5.5 | Boring | 5/14/2020 | NA | NA | NA | NA | NA | 222 | 661758 |
| SP-28 | – | Wall | S-Tank | 1/19/2020 | NA | NA | ND | ND | ND | 730 | 2002627 |
| B-10 | 1245 | 6-12 | Boring | 4/16/2020 | NA | NA | NA | NA | NA | 281 | 658990 |
| B-10-2-1 | 1230 | 1-5.5 | Boring | 5/14/2020 | NA | NA | NA | NA | NA | 749 | 661758 |
| SP-29 | – | Wall | S-Tank | 1/19/2020 | NA | NA | ND | ND | ND | 670 | 2002627 |
| B-11 | 1330 | 6-12 | Boring | 4/16/2020 | NA | NA | NA | NA | NA | 905 | 658990 |
| B-11-2-1 | 1130 | 1-5.5 | Boring | 5/14/2020 | NA | NA | NA | NA | NA | 205 | 661758 |
| SP-30 | – | Wall | S-Tank | 1/19/2020 | NA | NA | ND | ND | ND | 830 | 2002627 |
| B-12 | 1535 | 6-12 | Boring | 4/15/2020 | NA | NA | NA | NA | NA | 9.85 | 658990 |
| B-12-2-1 | 1430 | 0-4 | Boring | 5/14/2020 | NA | NA | NA | NA | NA | 58 | 661758 |
| SP-31 | – | Wall | S-Tank | 1/19/2020 | NA | NA | ND | ND | ND | 730 | 2002627 |
| B-13 | 1430 | 6-12 | Boring | 4/15/2020 | NA | NA | NA | NA | NA | 646 | 658990 |
| B-13-2-1 | 1355 | 2-6 | Boring | 5/14/2020 | NA | NA | NA | NA | NA | 244 | 661758 |

## Table 2. Laboratory Confirmation Analysis Results

Samples Analyzed at the Hall Environmental Analysis Laboratory

| Sample Description | | | | | Field Screening | | Petroleum Hydrocarbons | | | Inorganic | Lab Order # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Volatile | | Extractable | | |
| Sample ID | Time | Depth (ft.) | Area | Date | Mohr Method ppm | Petroflag ppm | Benzene (mg/kg) | BTEX (total) (mg/kg) | TPH (mg/kg) | Chloride (mg/kg) | |
| **South Tank Excavation - Closure Criteria** | | | | | | | 10 | 50 | 100 | 600 | |
| **East Tank Excavation - Closure Criteria** | | | | | | | 10 | 50 | 100 | 600 | |
| E-Tank-FS-Comp | 1800 | 4 | E-Tank | 1/18/2020 | 170 | ND | ND | ND | ND | **210** | 2002628 |
| E-Tank-NE-WS-Comp | 1840 | Wall | E-Tank | 1/18/2020 | 420 | ND | ND | ND | ND | **310** | 2002628 |
| E-Tank-S-WS-Comp | 1830 | Wall | E-Tank | 1/18/2020 | 1000 | – | ND | ND | ND | **2100** | 2002628 |
| B-04 | 1300 | 4-5 | Boring | 4/15/2020 | NA | NA | NA | NA | NA | **134** | 658990 |
| E-Tank-W-WS-Comp | 1630 | Wall | E-Tank | 1/18/2020 | 750 | – | ND | ND | **39** | **1200** | 2002628 |
| B-05 | 1345 | 4-5 | Boring | 4/15/2020 | NA | NA | NA | NA | NA | **985** | 658990 |
| B-05-2 | 1330 | 1-4 | Boring | 5/14/2020 | NA | NA | NA | NA | NA | **119** | 661758 |
| **North Tank Excavation - Closure Criteria** | | | | | | | 10 | 50 | 100 | 600 | |
| N-Tank-FS-Comp | 1800 | 17 | N-Tank | 1/18/2020 | 630 | ND | ND | ND | ND | **830** | 2002628 |
| B-03 | 950 | 16.5-17.5 | Boring | 4/15/2020 | NA | NA | NA | NA | NA | **1350** | 658990 |
| B-03-2-1 | 940 | 6.5-7.5 | Boring | 5/14/2020 | NA | NA | NA | NA | NA | **492** | 661758 |
| B-03-2-2 | 1115 | 20-21 | Boring | 5/14/2020 | NA | NA | NA | NA | NA | **757** | 661758 |
| N-Tank-NE-FS-Comp | 1840 | 7 | N-Tank | 1/18/2020 | 520 | ND | ND | ND | ND | **750** | 2002628 |
| B-01 | 1210 | 6.5-7.5 | Boring | 4/15/2020 | NA | NA | NA | NA | NA | **489** | 658990 |
| N-Tank-NW-FS-Comp | 1845 | 7 | N-Tank | 1/18/2020 | 480 | ND | ND | ND | ND | **830** | 2002628 |
| B-02 | 1620 | 6.5-7.5 | Boring | 4/15/2020 | NA | NA | NA | NA | NA | **75.5** | 658990 |
| N-Tank-E-WS-Comp | 1835 | Wall | N-Tank | 1/18/2020 | 500 | – | ND | ND | 18 | **540** | 2002628 |
| N-Tank-N-WS-Comp | 1530 | Wall | N-Tank | 1/18/2020 | 550 | ND | ND | ND | ND | **500** | 2002628 |
| N-Tank-W-WS-Comp | 1830 | Wall | N-Tank | 1/18/2020 | 450 | ND | ND | ND | ND | **400** | 2002628 |
| N-Tank-E-WS-Comp | 1850 | S-Wall | N-Tank | 1/19/2020 | – | – | ND | ND | ND | **110** | 2002628 |
| **West Tank Excavation - Closure Criteria** | | | | | | | 10 | 50 | 100 | 600 | |
| W-Tank-E-WS-Comp | 1500 | Wall | W-Tank | 1/17/2020 | 1000 | – | ND | ND | **4250** | **1200** | 2002628 |
| B-06 | 1650 | 3-4 | Boring | 4/15/2020 | NA | NA | NA | NA | **<11.5** | **977** | 658990 |
| B-06-3 | 1200 | 1-5 | Boring | 5/14/2020 | NA | NA | NA | NA | NA | **548** | 661758 |
| W-Tank-FS-Comp | 1515 | 5 | W-Tank | 1/17/2020 | 330 | – | ND | ND | ND | **460** | 2002628 |
| W-Tank-S-WS-Comp | 1800 | Wall | W-Tank | 1/17/2020 | 400 | ND | ND | ND | ND | **400** | 2002628 |
| W-Tank-W-WS-Comp | 1600 | Wall | W-Tank | 1/18/2020 | 310 | ND | ND | ND | ND | **270** | 2002628 |
| **Background Samples** | | | | | | | | | | | |
| BKGD | 1025 | 5-7 | Boring | 4/15/2020 | NA | NA | NA | NA | NA | **360** | 658990 |
| BKGD | 1045 | 12-14 | Boring | 4/15/2020 | NA | NA | NA | NA | NA | **445** | 658990 |

| | |
|---|---|
| **830** | Confirmation Sample Analytical Results exceed Remedial Target Level |
| **1350** | Soil Boring Sample Analytical Results exceed Remedial Target Level |
| **ND** | Analytical results for the sample were below the lab's detectable limits |
| **NA** | Sample was not alayzed for this analyte. |

# ATTACHMENT A

# INITIAL RELEASE NOTIFICATION EMAIL

## Appelt, Robert

**From:** Castro, Isaac (MRO) <icastro@marathonoil.com>
**Sent:** Friday, December 6, 2019 12:27 PM
**To:** blm_nm_cfo_spill@blm.gov; mike.bratcher@state.nm.us; robert.hamlet@state.nm.us; victoria.venegas@state.nm.us
**Cc:** Saa, Maria (MRO); Derry, Dwayne R. (MRO)
**Subject:** Marathon Oil Company - 24 hour notification - H F 7 FEDERAL COM #001

Good Morning,

On December 5, 2019 around 3:15pm production reported a spill due to a produced water tank rupturing. 41.67 bbls of produced water were released onto the ground. Initial response shut in the well to stop the flow. A vacuum truck was immediately dispatched to recover fluids. The vac truck was able to recover 30 bbls. An emergency scrape was also ordered to prevent fluids from going off pad. This was a **major** release as defined by NMAC 19.15.29.7(A) based on volume released. The Initial C-141 will be submitted into the NMOCD online system as required by SB 553.

Thank you,

Isaac Castro
Environmental Professional
Marathon Oil Company - Permian Asset
4111 S. Tidwell Road
Carlsbad, NM 88220
**Cell:** (575) 988-0561 **Email:** icastro@marathonoil.com

# ATTACHMENT B

# INITIAL FORM C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

| | |
|---|---|
| Incident ID | NRM2002458606 |
| District RP | |
| Facility ID | |
| Application ID | |

# Release Notification

## Responsible Party

| | |
|---|---|
| Responsible Party Marathon Oil Permian LLC | OGRID 372098 |
| Contact Name Melodie Sanjari | Contact Telephone 575-988-8753 |
| Contact email msanjari@marathonoil.com | Incident # *(assigned by OCD)* |
| Contact mailing address 4111 S. Tidwell Rd., Carlsbad, NM 8220 | |

## Location of Release Source

Latitude 32.3182259 Longitude -104.0299149
*(NAD 83 in decimal degrees to 5 decimal places)*

| | |
|---|---|
| Site Name H F 7 FEDERAL COM #001 | Site Type Oil and gas drilling facility |
| Date Release Discovered 12/5/2019 | API# *(if applicable)* 30-015-28509 |

| Unit Letter | Section | Township | Range | County |
|---|---|---|---|---|
| L | 07 | 23S | 29E | Eddy |

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (*Name:* *MOSAIC POTASH CARLSBAD INC*)

## Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

| | | |
|---|---|---|
| ☐ Crude Oil | Volume Released (bbls) | Volume Recovered (bbls) |
| ☒ Produced Water | Volume Released (bbls) 41.67 | Volume Recovered (bbls) 30 bbls |
| | Is the concentration of dissolved chloride in the produced water >10,000 mg/l? | ☒ Yes ☐ No |
| ☐ Condensate | Volume Released (bbls) | Volume Recovered (bbls) |
| ☐ Natural Gas | Volume Released (Mcf) | Volume Recovered (Mcf) |
| ☐ Other (describe) | Volume/Weight Released (provide units) | Volume/Weight Recovered (provide units) |

Cause of Release

On December 5, 2019 around 3:15pm production reported a spill due to a produced water tank rupturing. 41.67 bbls of produced water were released onto the ground. Initial response shut in the well to stop the flow. A vacuum truck was immediately dispatched to recover fluids. The vac truck was able to recover 30 bbls. An emergency scrape was also ordered to prevent fluids from going off pad.

State of New Mexico
Oil Conservation Division

| | |
|---|---|
| Incident ID | NRM2002458606 |
| District RP | |
| Facility ID | |
| Application ID | |

| | |
|---|---|
| Was this a major release as defined by 19.15.29.7(A) NMAC?<br><br>☒ Yes ☐ No | If YES, for what reason(s) does the responsible party consider this a major release?<br>This was a major release as defined by NMAC 19.15.29.7(A) based on volume of material released. |

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
Yes by Marathon to NMOCD District 2 and BLM on 12/6/2019 via email

## Initial Response

*The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury*

☒ The source of the release has been stopped.
☒ The impacted area has been secured to protect human health and the environment.
☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Melodie Sanjari Title: Environmental Professional

Signature: Melodie Sanjari Date: 12/11/2019

email: msanjari@marathonoil.com Telephone: 575-988-8753

**OCD Only**

Received by: _____ Date: _____

| | |
|---|---|
| Incident ID | NRM2002458606 |
| District RP | |
| Facility ID | |
| Application ID | |

# Site Assessment/Characterization

*This information must be provided to the appropriate district office no later than 90 days after the release discovery date.*

| | |
|---|---|
| What is the shallowest depth to groundwater beneath the area affected by the release? | <u>≤50</u> (ft bgs) |
| Did this release impact groundwater or surface water? | ☐ Yes ☒ No |
| Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse? | ☐ Yes ☒ No |
| Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)? | ☐ Yes ☒ No |
| Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church? | ☐ Yes ☒ No |
| Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes? | ☐ Yes ☒ No |
| Are the lateral extents of the release within 1000 feet of any other fresh water well or spring? | ☐ Yes ☒ No |
| Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field? | ☐ Yes ☒ No |
| Are the lateral extents of the release within 300 feet of a wetland? | ☐ Yes ☒ No |
| Are the lateral extents of the release overlying a subsurface mine? | ☐ Yes ☒ No |
| Are the lateral extents of the release overlying an unstable area such as karst geology? | ☐ Yes ☒ No |
| Are the lateral extents of the release within a 100-year floodplain? | ☐ Yes ☒ No |
| Did the release impact areas **not** on an exploration, development, production, or storage site? | ☐ Yes ☒ No |

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

**<u>Characterization Report Checklist</u>:** ***Each of the following items must be included in the report.***

☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
☒ Field data
☒ Data table of soil contaminant concentration data
☒ Depth to water determination
☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
☒ Boring or excavation logs
☒ Photographs including date and GIS information
☒ Topographic/Aerial maps
☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

| | |
|---|---|
| Incident ID | NRM2002458606 |
| District RP | |
| Facility ID | |
| Application ID | |

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Melodie Sanjari Title: Environmental Professional

Signature: Melodie Sanjari Date: 6/4/2020

email: msanjari@marathonoil.com Telephone: 575-988-8753

**OCD Only**

Received by: _____ Date: _____

| | |
|---|---|
| Incident ID | NRM2002458606 |
| District RP | |
| Facility ID | |
| Application ID | |

# Remediation Plan

**Remediation Plan Checklist**: ***Each of the following items must be included in the plan.***

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

**Deferral Requests Only**: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☒ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☒ Extents of contamination must be fully delineated.

☒ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Melodie Sanjari Title: Environmental Professional

Signature: Melodie Sanjari Date: 6/4/2020

email: msanjari@marathonoil.com Telephone: 575-988-8753

**OCD Only**

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

# ATTACHMENT C

# VACUUM TRUCK TRIP TICKET

AGAVE
Transportation Services, Inc.
accounting@agavetransportation.com
910-K E. Redd Rd. # 443 • El Paso, TX 79912

M10299

BILL TO

**MARATHON OIL CO.**

| | | | |
|---|---|---|---|
| DISPOSAL NUMBER | | DATE | 12-5-19 |
| COST CENTER | | ORDERED BY | |

DELIVERED FROM: HF7 Fed Com #1 — TO: Wash at

LOCATION LEASE: Eddy 30-015-28509 — ○ RIG ◉ BATTERY ○ COMPLETION ○ FLOW BACK

TRUCK OR UNIT NO.: 2522 — AMOUNT HAULED: ~~125~~ 30 — GAUGE: TOP: BOTTOM:

| TIMES | | | DESCRIPTION | BILLING | RATE | AMOUNT |
|---|---|---|---|---|---|---|
| BATTERY | ARRIVE | 3:20 ○ A.M. ◉ P.M. | Arrive at Location Tick up spill 30 bbls & pkw Wash out tank at 2360 | Hrs. | | |
| | DEPART | 6:30 ○ A.M. ◉ P.M. | | F/W | | |
| | | | | B/W | | |
| DISPOSAL | ARRIVE | ○ A.M. ○ P.M. | | P/W | | |
| | DEPART | ○ A.M. ○ P.M. | | CRI | | |
| | | | | | | |

SUB TOTAL
TAX
TOTAL

Andres Cano — DRIVER PRINT NAME

DRIVER SIGNATURE

LA Isaac Cardo — COMPANY MAN PRINT NAME

COMPANY MAN SIGNATURE

Thank You!

# ATTACHMENT D

# NEW MEXICO OFFICE OF THE STATE ENGINEER WATER LEVEL QUERY

# New Mexico Office of the State Engineer
# Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

| POD Number | POD Sub-basin Code | County | Q 64 | Q 16 | Q 4 | Sec | Tws | Rng | X | Y | Distance | Depth Well | Depth Water | Water Column |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C 02702 | C | ED | | | 2 | 13 | 23S | 28E | 590715 | 3575108* | 1178 | 38 | 20 | 18 |
| C 01216 | CUB | ED | 4 | 1 | 1 | 13 | 23S | 28E | 589801 | 3575205* | 1768 | 60 | 45 | 15 |
| C 01214 | CUB | ED | 1 | 2 | 3 | 13 | 23S | 28E | 590010 | 3574597* | 2006 | 70 | 20 | 50 |
| C 01967 | C | ED | | 2 | 3 | 13 | 23S | 28E | 590111 | 3574498* | 2021 | 264 | 200 | 64 |
| C 01215 | CUB | ED | 4 | 2 | 3 | 13 | 23S | 28E | 590210 | 3574397* | 2048 | 104 | 15 | 89 |
| C 02706 | C | ED | | | 4 | 18 | 23S | 29E | 592302 | 3574291* | 2081 | 17 | 10 | 7 |
| C 02804 | CUB | ED | | 2 | 1 | 08 | 23S | 29E | 593262 | 3576905* | 2099 | 100 | | |
| C 02805 | CUB | ED | | 2 | 1 | 08 | 23S | 29E | 593262 | 3576905* | 2099 | 100 | | |
| C 01217 | CUB | ED | 4 | 1 | 3 | 13 | 23S | 28E | 589789 | 3574371 | 2321 | 87 | 50 | 37 |
| C 03059 EXPLORE | CUB | ED | 4 | 1 | 3 | 17 | 23S | 29E | 592993 | 3574378* | 2422 | | 65 | |

Average Depth to Water: **53 feet**
Minimum Depth: **10 feet**
Maximum Depth: **200 feet**

**Record Count:** 10

**Basin/County Search:**

**County:** Eddy

**UTMNAD83 Radius Search (in meters):**

**Easting (X):** 591313.17 **Northing (Y):** 3576122.83 **Radius:** 2500

***UTM location was derived from PLSS - see Help**

# ATTACHMENT E

# PHOTOLOG

# PHOTOGRAPH NO. 1

**Date:** 1/15/2020
**Direction:** Northeast

**Description:**

Site Information Signage.


# PHOTOGRAPH NO. 2

**Date:** 1/15/2020
**Direction:** West

**Description:**

Initial Site scrape; facing west.

# PHOTOGRAPH NO. 3

**Date:** 1/15/2020
**Direction:** Northwest

**Description:**

Initial scrape; facing north.

# PHOTOGRAPH NO. 4

**Date:** 1/15/2020
**Direction:** Northeast

**Description:**

Site signage.

# PHOTOGRAPH NO. 5

**Date:** 1/19/2020
**Direction:** Northeast

**Description:**

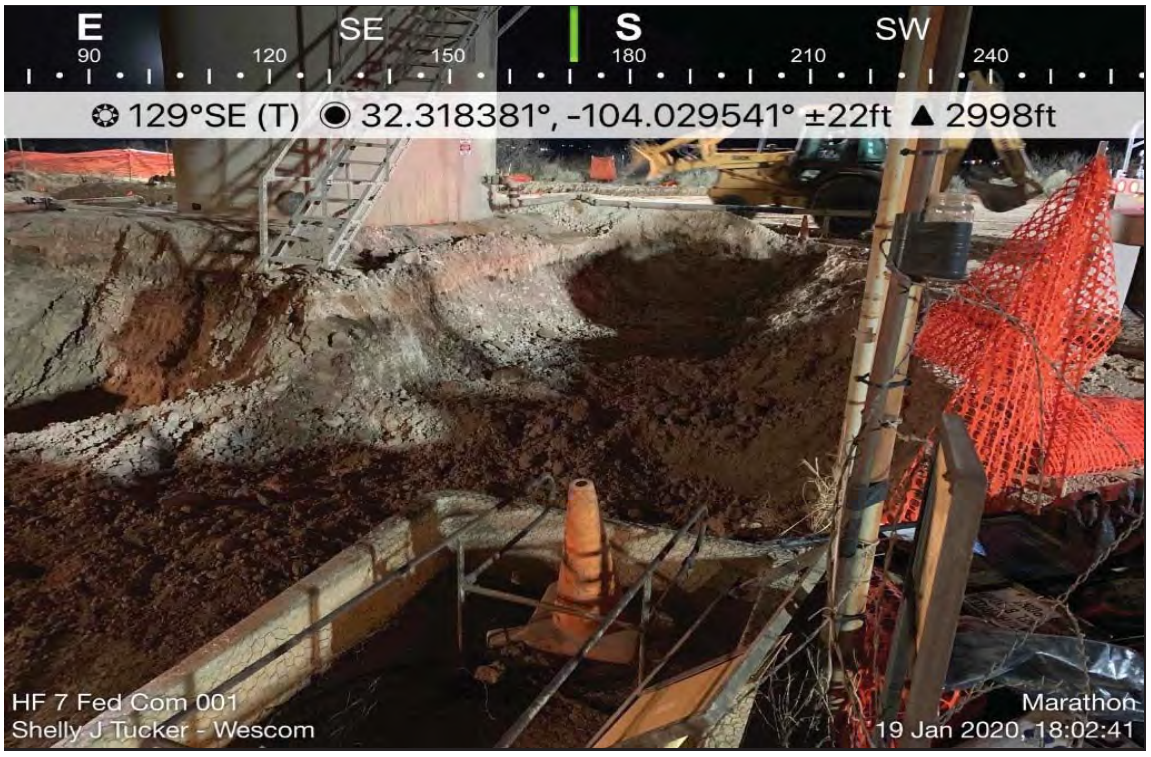
N-Tank Excavation 1/19/2020.

# PHOTOGRAPH NO. 6

**Date:** 1/19/2020
**Direction:** Southeast

**Description:**

W-Tank Excavation on Right, N-Tank Excavation on left.



# PHOTOGRAPH NO. 7

**Date:** 1/19/2020
**Direction:** Northwest

**Description:**

E-Tank Excavation.

# PHOTOGRAPH NO. 8

**Date:** 1/17/2020
**Direction:** South

**Description:**

S-Tank Excavation extent; facing south.

# PHOTOGRAPH NO. 9

**Date:** 1/17/2020
**Direction:** East

**Description:**

S-Tank excavation area – facing east.

# PHOTOGRAPH NO. 10

**Date:** 1/17/2020
**Direction:** East

**Description:**

S-Tank excavation area compaction– facing east.

# PHOTOGRAPH NO. 11

**Date:** 1/20/2020
**Direction:** West

**Description:**

Backfilled and compacted excavations; facing west.

# PHOTOGRAPH NO. 12

**Date:** 1/20/2020
**Direction:** North

**Description:**

Backfilled and compacted S-Tank Excavation; facing north.

# PHOTOGRAPH NO. 13

**Date:** 1/20/2020
**Direction:** South

**Description:**

Backfilled and Compacted N- and W-Tank Excavations; facing south.

# PHOTOGRAPH NO. 14

**Date:** 1/20/2020
**Direction:** East

**Description:**

Backfilled and compacted S-Tank Excavation; facing east.

# PHOTOGRAPH NO. 15

**Date:** 1/20/2020
**Direction:** East

**Description:**

Site excavation and backfill complete; facing east.

# PHOTOGRAPH NO. 16

**Date:** 4/14/2020
**Direction:** Southeast

**Description:**

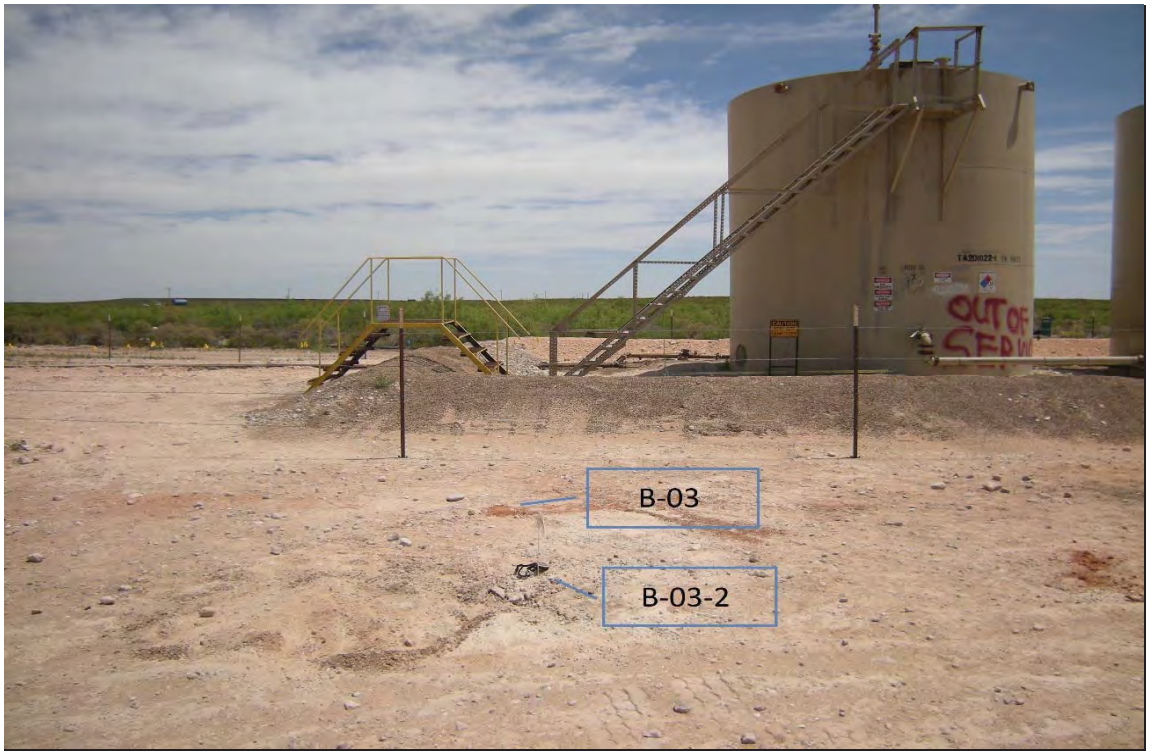
Respresentive view of the boring location drilled with a hollow stem auger. (Picture shown at location B-01)

# PHOTOGRAPH NO. 17

**Date:** 5/14/2020
**Direction:** North

**Description:**

View of boring locations B-03 and B-03-2.

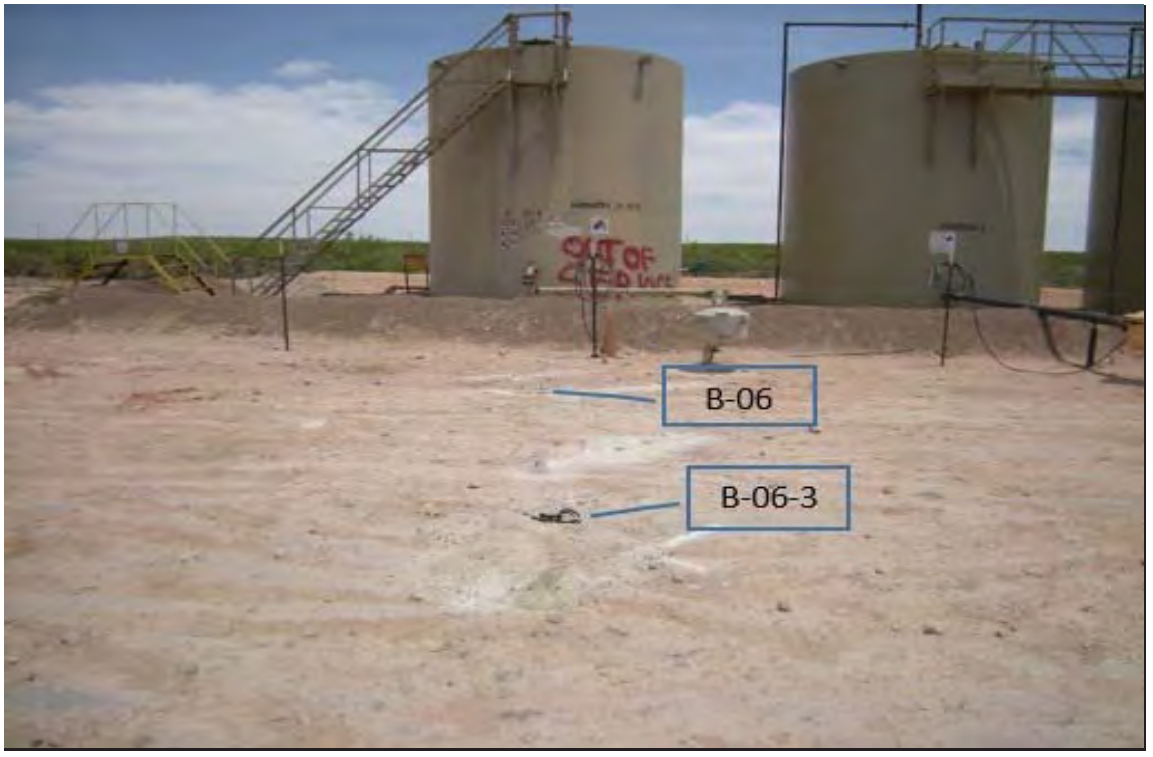



# PHOTOGRAPH NO. 18

**Date:** 5/14/2020
**Direction:** Northeast

**Description:**

View of boring locations B-06-3 and B-06.



# PHOTOGRAPH NO. 19

**Date:** 4/15/2020
**Direction:** Northeast

**Description:**

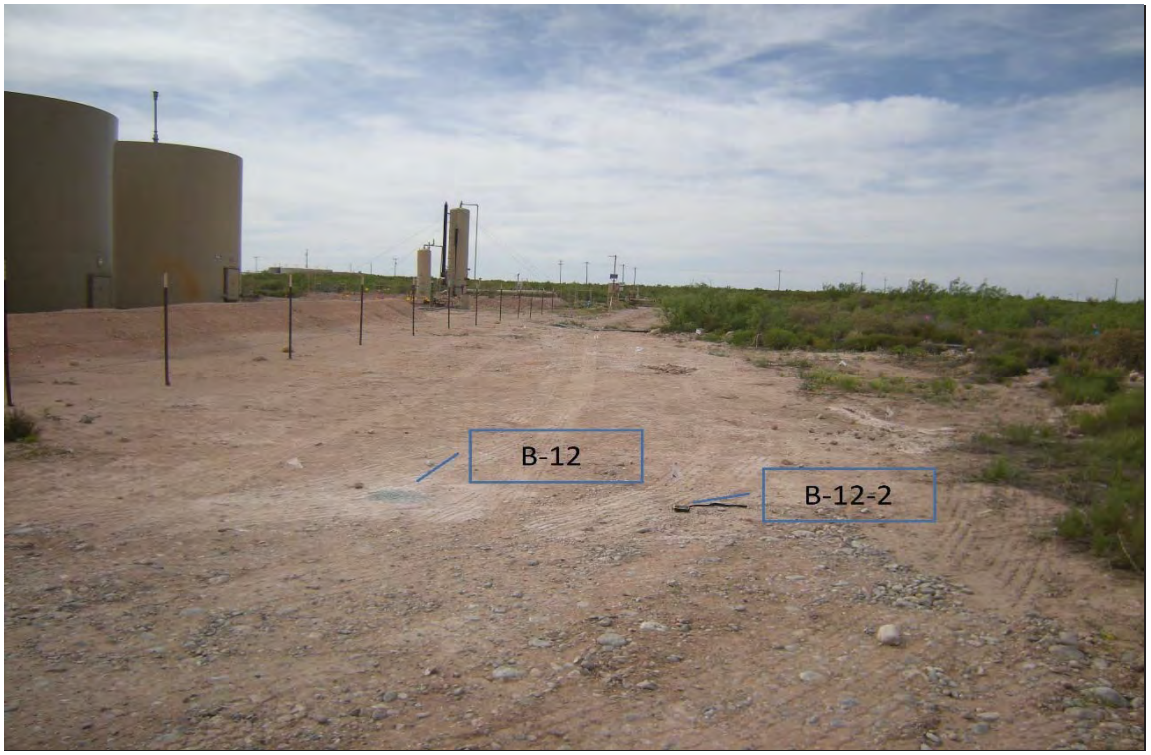
View of boring location B-08.


# PHOTOGRAPH NO. 20

**Date:** 5/14/2020
**Direction:** Northwest

**Description:**

View of boring locations B-12-2 and B-12.



# PHOTOGRAPH NO. 21

**Date:** 5/14/2020
**Direction:** Southwest

**Description:**

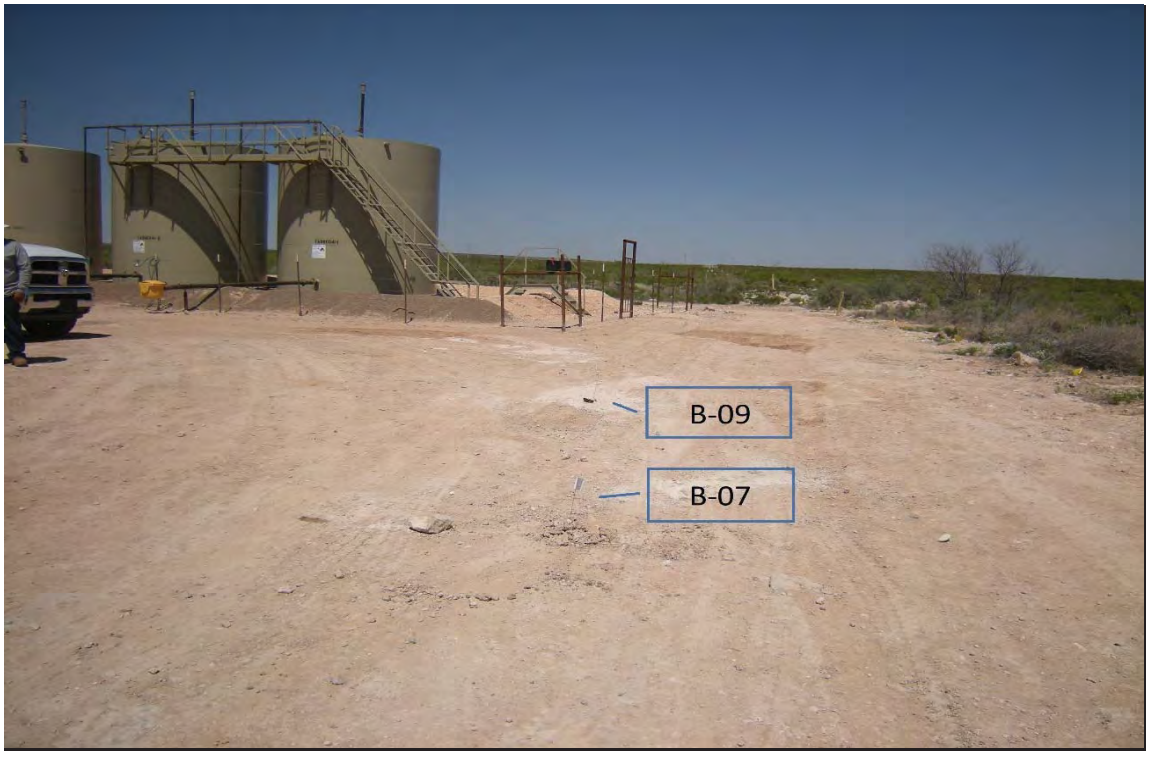
View of boring location B-11-2.


# PHOTOGRAPH NO. 22

**Date:** 4/15/2020
**Direction:** Northeast

**Description:**

View of boring locations B-09 and B-10.



# ATTACHMENT F

# SOIL BORING LOGS

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

# Boring/Well Log



BORING ID: **B-01**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/14/2020** |

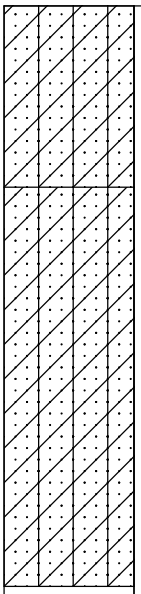
## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **8 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2996 ft MSL | 32° 19.111' | -104° 01.765' |

REMARKS: Refusal at 1.5 ft bgs, offset location ~3.0 ft.
Refusal at 0.5 ft bgs on cobbles. Proceeded with rig.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 |  | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | | | | | |
| | | | SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. | | | | | |
| 5 | | | At 5.0-6.0: dense. | B-01 (6.5-7.5) | 100% | | | Borehole backfilled with hydrated bentonite chips. |
| | | | End of boring at 8.0 ft bgs. | | | | | |
| 10 | | | | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

2600 Dallas Parkway
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(469) 666-5500

# Boring/Well Log



BORING ID: **B-02**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/14/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **8 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2995 ft MSL | 32° 19.102' | -104° 01.776 |

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | | | | | |
| | | | SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. | | | | | |
| 5 | | | At 5.0-6.0: dense. | B-02 (6.5-7.5) | 75% | | | |
| | | | End of boring at 8.0 ft bgs. | | | | | |
| 10 | | | | | | | | Borehole backfilled with cuttings and hydrated bentonite chips. |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

WESTON SOLUTIONS
2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

# Boring/Well Log



BORING ID: **B-03**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/15/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **18 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2995 ft MSL | 32° 19.100' | -104° 01.772' |

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | | | | | Borehole backfilled with cuttings and hydrated bentonite chips. |
| 5 | | | SILTY CLAYEY LOAM (caliche), fine to very fine grained sands, poorly cemented, few to many coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. Sticky when wetted.<br><br>At 5.0-6.0: dense. | | | | | |
| 10 | | | CLAYEY LOAM, poorly cemented, blocky, few nodules/concretions, dark reddish brown. | B-03 (16.5-17.5) | 100% | | | |
| 15 | | | | | | | | |
| 20 | | | End of boring at 18.0 ft bgs. | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

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WESTON SOLUTIONS
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Frisco, Texas 75034
(469) 666-5500

# Boring/Well Log



BORING ID: **B-03-2**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **5/14/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **21 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2995 ft MSL | 32.31833° | -104.02955° |

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | | | | | Borehole backfilled with cuttings and hydrated bentonite chips. |
| 5 | | | SILTY CLAYEY LOAM (caliche), fine to very fine grained sands, poorly cemented, few to many coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. Sticky when wetted.<br><br>At 6.0-7.0: dense caliche (white). | B-03-2-1 (6.5-7.5) | 50% | | | |
| 10 | | | CLAYEY LOAM, poorly cemented, blocky, few nodules/concretions, dry, dark reddish brown. | | | | | |
| 15 | | | At 16.5 ft bgs: slightly lighter (in color) with depth.<br>At 17.0 ft bgs: black stringers.<br>At 17.5 ft bgs: reddish brown mottled with gray. | | 75% | | | |
| 20 | | | End of boring at 21.0 ft bgs. | B-03-2-2 (20-21) | 100% | | | |

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*These logs should not be used separately from original report*

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# Boring/Well Log



BORING ID: **B-04**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/14/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **5 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2996 ft MSL | 32° 19.107' | -104° 01.761' |

REMARKS: Hand Auger from 0-2 ft bgs. Refusal on cobbles.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | CLAYEY SAND LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | B-04 (4-5) | 100% | | | Borehole backfilled with hydrated bentonite chips. |
| | | | SILTY CLAYEY LOAM (caliche), very fine grained sands, poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dense, dry, light brown/ tan. | | 100% | | | |
| 5 | | | End of boring at 5.0 ft bgs. | | | | | |
| 10 | | | | | | | | |

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*These logs should not be used separately from original report*

2600 Dallas Parkway
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Frisco, Texas 75034
(469) 666-5500

# Boring/Well Log



BORING ID: **B-05**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/14/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **5 ft bg** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2996 ft MSL | 32° 19.104' | -104° 01.759' |

REMARKS: Refusal at ~1.0 ft bgs on cobbles. Proceed with rig.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | B-05 (4-5) | 100% | | | Borehole backfilled with hydrated bentonite chips. |
| | | | SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dry, light brown/ tan, grades lighter with depth. | | 50% | | | |
| 5 | | | End of boring at 5.0 ft bgs. | | | | | |
| 10 | | | | | | | | |

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2600 Dallas Parkway
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Frisco, Texas 75034
(469) 666-5500

# Boring/Well Log



BORING ID: **B-05-2**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **5/14/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **5 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2995 ft MSL | 32.31840° | -104.02931° |

REMARKS: Refusal of split spoon tooling at 3.5 ft bgs.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | B-05-2 (1-4) | 50% | | | Borehole backfilled with cuttings and hydrated bentonite chips. |
| | | | SILTY CLAYEY LOAM (caliche), few to many medium to coarse concretions, poorly cemented, blocky, dry, light brown, light pinkish brown with depth. | | 50% | | | |
| 5 | | | End of boring at 4 ft bgs. | | | | | |
| 10 | | | | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

# Boring/Well Log



BORING ID: **B-06**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/14/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **4 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2995 ft MSL | 32° 19.097' | -104° 01.770' |

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | | | | | |
| | | | SILTY CLAYEY LOAM (caliche), few to many medium to coarse concretions, poorly cemented, blocky, dry, light brown, light pinkish brown with depth | B-06 (3-4) | 50% | | | |
| 5 | | | End of boring at 4 ft bgs. | | | | | Borehole backfilled with cuttings and hydrated bentonite chips. |
| 10 | | | | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

2600 Dallas Parkway
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Frisco, Texas 75034
(469) 666-5500

# Boring/Well Log



BORING ID: **B-06-3**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **5/14/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **5 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2995 ft MSL | 32.31825° | -104.02953° |

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | B-06-3 (1-5) | 50% | | | Borehole backfilled with cuttings and hydrated bentonite chips. |
| | | | SILTY CLAYEY LOAM (caliche), few to many medium to coarse concretions, poorly cemented, blocky, dry, light brown, light pinkish brown with depth | | 70% | | | |
| 5 | | | End of boring at 5 ft bgs. | | 75% | | | |
| 10 | | | | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

2600 Dallas Parkway
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Frisco, Texas 75034
(469) 666-5500

# Boring/Well Log



BORING ID: **B-07**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/15/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **7 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2995 ft MSL | 32° 19.083' | -104° 01.765' |

REMARKS: Dense blow counts.
Location moved ~2 ft northeast out of NM gas pipeline easement.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | | | | | |
| | | | SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. | | | | | |
| 5 | | | At 5.0-6.0: dense. | B-07 (5.5-6.5) | 100% | | | |
| | | | End of boring at 7.0 ft bgs. | | | | | |
| 10 | | | | | | | | Borehole backfilled with cuttings and hydrated bentonite chips. |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

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Frisco, Texas 75034
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# Boring/Well Log



BORING ID: **B-08**
WELL ID:

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/15/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **12 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2994 ft MSL | 32° 19.081' | -104° 01.768' |

REMARKS: Refusal of split spoon tooling at 7 ft bgs.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | | | | | |
| | | | SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. | | | | | |
| 5 | | | | B-08 (6-12) | 50% | | | Borehole backfilled with cuttings and hydrated bentonite chips. |
| | | | | | 20% | | | |
| 10 | | | At 11.0-11.2: Hard (white) caliche gravel seam, poorly cemented. | | | | | |
| | | | CLAYEY LOAM, fine to very fine grained sands. poorly cemented, blocky, dry, dark reddish brown. Sticky when wetted. | | 75% | | | |
| | | | End of boring at 12.0 ft bgs. | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

2600 Dallas Parkway
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(469) 666-5500

# Boring/Well Log



BORING ID: **B-09**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/15/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **12 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2995 ft MSL | 32° 19.086' | -104° 01.763' |

REMARKS: Refusal of tooling at 6.5 ft bgs (hard/dense).
Location moved ~5 ft northwest out of NM gas pipeline easement.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | | | | | Borehole backfilled with cuttings and hydrated bentonite chips. |
| | | | SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, few to little coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. | | | | | |
| 5 | | | At 6.5: dense (white) caliche seam. | B-09 (6-12) | 100% | | | |
| | | | CLAYEY LOAM, fine to very fine grained sands, poorly cemented, blocky, dense, few to little nodules/concretions, dark reddish brown. | | 70% | | | |
| 10 | | | | | 75% | | | |
| | | | End of boring at 12.0 ft bgs. | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

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# Boring/Well Log



BORING ID: **B-09-2**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **5/14/2020** |

## DRILLING INFORMATION

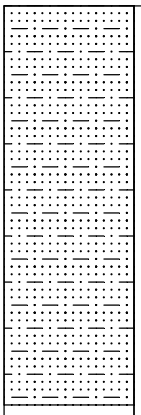
| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **5.5 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **~ 2 ft** | WELL DIAMETER: | **NA** |

TOP OF CASING ELEV: NA
GROUND ELEVATION: 2995 ft MSL

| N. LATITUDE | W. LONGITUDE |
|---|---|
| 32.31804° | -104.02937° |

REMARKS: Location is hydrovac hole along pipeline.
Sample composite collected from sidewall.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 |  | | SILTY SAND, trace to few clay, fine grained sands, few gravel (near surface), roots, dry, dark brown. | B-09-2-1 (1-5.5) | 100% | | | |
| 5 | | | End of boring at 5.5 ft bgs. | | | | | |
| 10 | | | | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

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# Boring/Well Log



BORING ID: **B-10**
WELL ID:

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/15/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **12 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2995 ft MSL | 32° 19.088' | -104° 01.762' |

REMARKS: Refusal of tooling at 7 ft bgs (hard/dense).
Location moved ~8-10 ft northwest out of NM gas pipeline easement.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | | | | | Borehole backfilled with cuttings and hydrated bentonite chips. |
| 5 | | | SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, few to little coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth.<br>At 7.0-7.2 ft bgs: caliche seam.<br>At 7.2 ft bgs: (white) caliche mottled with dark reddish brown. | B-10 (6-12) | 10%<br>40% | | | |
| 10 | | | CLAYEY LOAM, fine to very fine grained sands, poorly cemented, few nodules/concretions, dark reddish brown.<br>Sticky when wetted. | | 80% | | | |
| | | | End of boring at 12.0 ft bgs. | | | | | |

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# Boring/Well Log



BORING ID: **B-10-2**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **5/14/2020** |

## DRILLING INFORMATION

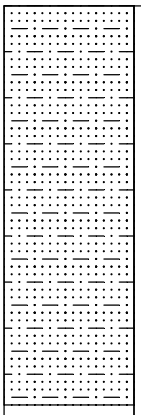
| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **5.5 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **~ 2 ft** | WELL DIAMETER: | **NA** |

TOP OF CASING ELEV: NA
GROUND ELEVATION: 2995 ft MSL

| N. LATITUDE | W. LONGITUDE |
|---|---|
| 32.31811° | -104.02930° |

REMARKS: Location is hydrovac hole along pipeline.
Sample composite collected from sidewall.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 |  | | SILTY SAND, trace to few clay, fine grained sands, few gravel (near surface), roots, dry, dark brown. | B-10-2-1 (1-5.5) | 100% | | | |
| 5 | | | End of boring at 5.5 ft bgs. | | | | | |
| 10 | | | | | | | | |

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# Boring/Well Log



BORING ID: **B-11**
WELL ID:

## PROJECT INFORMATION

PROJECT: **MRO: HF7 Fed Com 001**
SITE LOCATION: **Eddy Co., New Mexico**
JOB NUMBER: **12553.023.001**
PROJECT MANAGER: **Robert Appelt**
LOGGED BY: **C. Spangler**
DATE(S) DRILLED: **4/15/2020**

## DRILLING INFORMATION

DRILLING COMPANY: **Atkins Engineering Associates**
DRILLING METHOD: **Hollow Stem Auger with Split Spoon**
BORING DEPTH: **12 ft bgs** WELL DEPTH: **NA**
BORING DIAMETER: **8.25-in** WELL DIAMETER: **NA**

TOP OF CASING ELEV: NA
GROUND ELEVATION: 2995 ft MSL

| N. LATITUDE | W. LONGITUDE |
|---|---|
| 32° 19.093' | -104° 01.756 |

REMARKS: Location moved ~15 ft northwest out of NM gas pipeline easement.
Location moved to foot of berm, fence temporarily downed for access.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | | | | | |
| | | | SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, few to little coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. | | | | | |
| 5 | | | At 6.5-7.0 ft bgs: caliche seam.<br>At 7.0 ft bgs: (white) caliche mottled with dark reddish brown. | B-11 (6-12) | 30%<br>50% | | | |
| 10 | | | CLAYEY LOAM, fine to very fine grained sands, poorly cemented, few nodules/concretions, dark reddish brown.<br>Sticky when wetted. | | 100% | | | |
| | | | End of boring at 12.0 ft bgs. | | | | | |

Borehole backfilled with cuttings and hydrated bentonite chips.

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

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# Boring/Well Log



BORING ID: **B-11-2**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **5/14/2020** |

## DRILLING INFORMATION

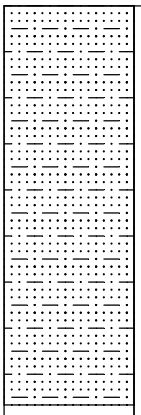
| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **5.5 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **~ 2 ft** | WELL DIAMETER: | **NA** |

TOP OF CASING ELEV: NA
GROUND ELEVATION: 2995 ft MSL

| N. LATITUDE | W. LONGITUDE |
|---|---|
| 32.31817° | -104.02923° |

REMARKS: Location is hydrovac hole along pipeline.
Sample composite collected from sidewall.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 |  | | SILTY SAND, trace to few clay, fine grained sands, few gravel (near surface), roots, dry, dark brown. | B-11-2-1 (1-5.5) | 100% | | | |
| 5 | | | End of boring at 5.5 ft bgs. | | | | | |
| 10 | | | | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

2600 Dallas Parkway
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# Boring/Well Log



BORING ID: **B-12**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/14/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **12 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2995 ft MSL | 32° 19.098' | -104° 01.752' |

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth. | | | | | Borehole backfilled with hydrated bentonite chips. |
| | | | SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. | | | | | |
| 5 | | | At 5.0-6.0: dense. | B-12 (6-12) | 50% | | | |
| | | | At 11.0-11.2: Hard (white) caliche seam. | | 50% | | | |
| 10 | | | CLAYEY LOAM, fine to very fine grained sands. poorly cemented, dry, dark reddish brown. Sticky when wetted. | | 50% | | | |
| | | | End of boring at 12.0 ft bgs. | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

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# Boring/Well Log



BORING ID: **B-12-2**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **5/14/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **8 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2996 ft | 32.31830° | -104.02918° |

REMARKS: Refusal of split spoon tooling at 3.0 ft bgs.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading lighter to brown with depth. | B-12-2 (0-4) | 100% | | | Borehole backfilled with hydrated bentonite chips. |
| | | | SILTY CLAYEY LOAM (caliche), poorly cemented, blocky, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. | | 50% | | | |
| 5 | | | At 6.0: dense/hard (white) caliche lense. | | 75% | | | |
| | | | CLAYEY LOAM, fine to very fine grained sands, trace rounded concretions, trace (white) caliche striations, fine to very fine grained sands, blocky, poorly cemented, dry, dark reddish brown. | | 100% | | | |
| | | | End of boring at 8.0 ft bgs. | | | | | |
| 10 | | | | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

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# Boring/Well Log



BORING ID: **B-13**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **4/14/2020** |

## DRILLING INFORMATION

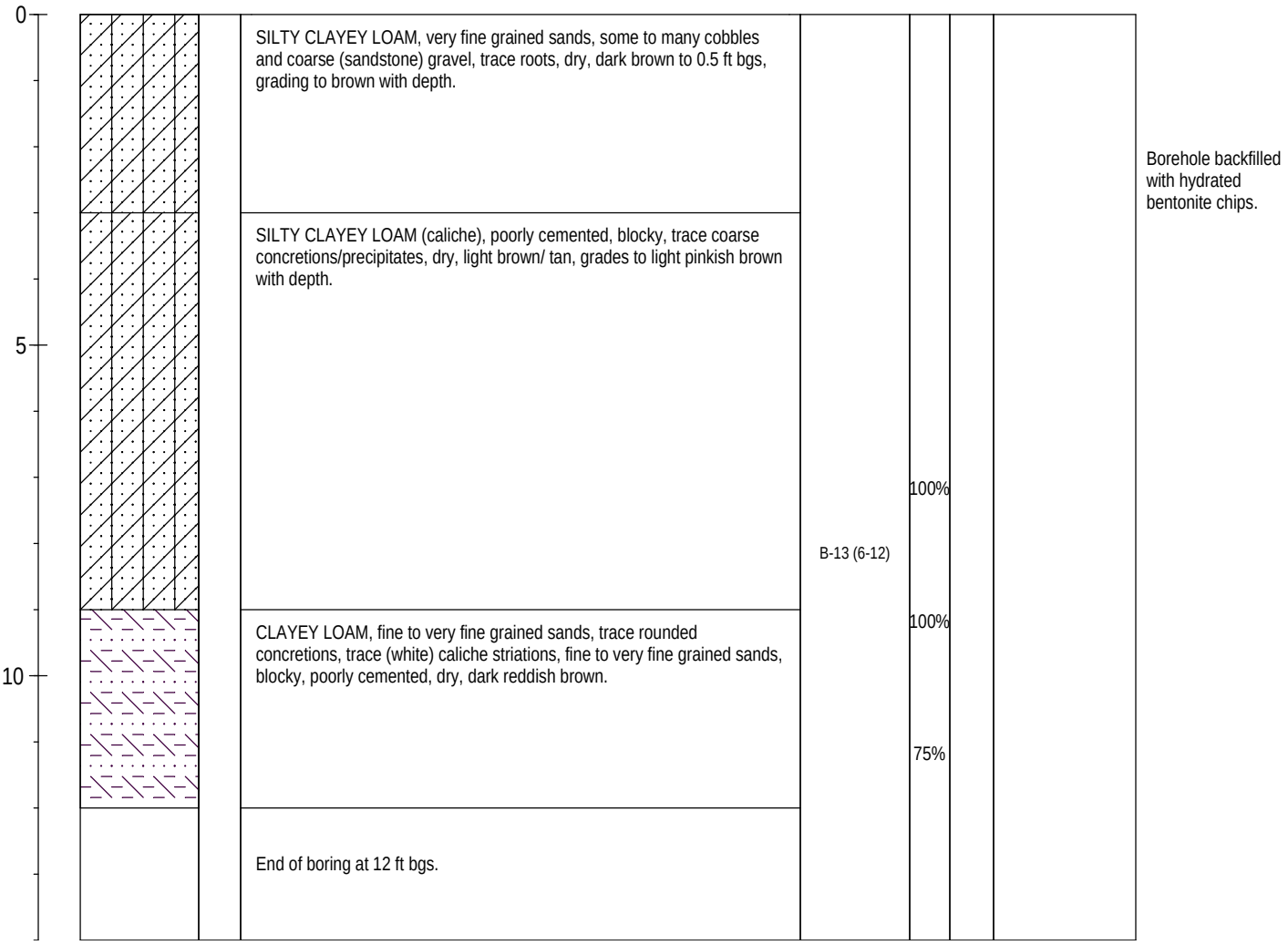
| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **12 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

TOP OF CASING ELEV: NA
GROUND ELEVATION: 2996 ft

| N. LATITUDE | W. LONGITUDE |
|---|---|
| 32° 19.101' | -104° 01.756' |

REMARKS: Hand auger to ~1.0 ft bgs (refusal on cobbles).
Refusal of sampler tool at 11.5 ft bgs.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**




*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

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2600 Dallas Parkway
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# Boring/Well Log



BORING ID: **B-13-2**
WELL ID: **NA**

## PROJECT INFORMATION

| | |
|---|---|
| PROJECT: | **MRO: HF7 Fed Com 001** |
| SITE LOCATION: | **Eddy Co., New Mexico** |
| JOB NUMBER: | **12553.023.001** |
| PROJECT MANAGER: | **Robert Appelt** |
| LOGGED BY: | **C. Spangler** |
| DATE(S) DRILLED: | **5/14/2020** |

## DRILLING INFORMATION

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | **Atkins Engineering Associates** | | |
| DRILLING METHOD: | **Hollow Stem Auger with Split Spoon** | | |
| BORING DEPTH: | **12 ft bgs** | WELL DEPTH: | **NA** |
| BORING DIAMETER: | **8.25-in** | WELL DIAMETER: | **NA** |

| TOP OF CASING ELEV: NA | N. LATITUDE | W. LONGITUDE |
|---|---|---|
| GROUND ELEVATION: 2996 ft | 32.31836° | -104.02926° |

REMARKS: Refusal of split spoon tooling at 2.5 ft bgs.
Refusal of split spoon tooling at 5.5 & 9.5 ft bgs.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

| DEPTH | LITHOLOGY | USCS | DESCRIPTION | SAMPLE ID | REC. % | OVM | WELL COMPLETION | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| 0 | | | SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading lighter to brown with depth. | | | | | |
| | | | SILTY CLAYEY LOAM (caliche), poorly cemented, blocky, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. | | 25% | | | |
| 5 | | | At 5.5-6.0: dense/hard (white) caliche lense. | | 75% | | | |
| | | | CLAYEY LOAM, fine to very fine grained sands, trace rounded concretions, trace (white) caliche striations, fine to very fine grained sands, blocky, poorly cemented, dry, dark reddish brown. | B-13-2 (2-6) | 75% | | | Borehole backfilled with hydrated bentonite chips. |
| 10 | | | | | 100% | | | |
| | | | End of boring at 12 ft bgs. | | | | | |

*bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery*

*These logs should not be used separately from original report*

# ATTACHMENT G

# LABORATORY REPORTS OF ANALYSIS AND CHAIN OF CUSTODY DOCUMENTATION

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

February 05, 2020

Shar Harvester
Wescom Inc
1907 San Jose Blvd
Carlsbad, NM 88220
TEL: (575) 499-6831
FAX

RE: HF 7 FED COM 001 OrderNo.: 2001B64

Dear Shar Harvester:

Hall Environmental Analysis Laboratory received 1 sample(s) on 1/29/2020 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 **2001B64**
Date Reported: **2/5/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Wescom Inc
**Client Sample ID:** N-Tank-E-WS-COMP
**Project:** HF 7 FED COM 001
**Collection Date:** 1/19/2020 6:50:00 PM
**Lab ID:** 2001B64-001 **Matrix:** SOIL
**Received Date:** 1/29/2020 2:00:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.9 | | mg/Kg | 1 | 2/3/2020 9:14:43 AM |
| Motor Oil Range Organics (MRO) | ND | 49 | | mg/Kg | 1 | 2/3/2020 9:14:43 AM |
| Surr: DNOP | 93.8 | 55.1-146 | | %Rec | 1 | 2/3/2020 9:14:43 AM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **RAA** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 1/31/2020 2:34:45 PM |
| Surr: BFB | 82.5 | 66.6-105 | | %Rec | 1 | 1/31/2020 2:34:45 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **RAA** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 1/31/2020 2:34:45 PM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 1/31/2020 2:34:45 PM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 1/31/2020 2:34:45 PM |
| Xylenes, Total | ND | 0.097 | | mg/Kg | 1 | 1/31/2020 2:34:45 PM |
| Surr: 4-Bromofluorobenzene | 95.0 | 80-120 | | %Rec | 1 | 1/31/2020 2:34:45 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 110 | 60 | | mg/Kg | 20 | 2/4/2020 1:30:41 PM |

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

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2001B64**

***05-Feb-20***

**Client:** Wescom Inc

**Project:** HF 7 FED COM 001

| Sample ID: **MB-50242** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **50242** | RunNo: **66289** | | | | | | | |
| Prep Date: **2/4/2020** | Analysis Date: **2/4/2020** | SeqNo: **2277916** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | ND | 1.5 | | | | | | | | |

| Sample ID: **LCS-50242** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **50242** | RunNo: **66289** | | | | | | | |
| Prep Date: **2/4/2020** | Analysis Date: **2/4/2020** | SeqNo: **2277917** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 14 | 1.5 | 15.00 | 0 | 92.9 | 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#: **2001B64**

***05-Feb-20***

**Client:** Wescom Inc

**Project:** HF 7 FED COM 001

| Sample ID: **MB-50189** | SampType: **MBLK** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **50189** | RunNo: **66246** |
| Prep Date: **1/31/2020** | Analysis Date: **2/3/2020** | SeqNo: **2275621** 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 | 9.4 | | 10.00 | | 93.6 | 55.1 | 146 | | | |

| Sample ID: **LCS-50189** | SampType: **LCS** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **50189** | RunNo: **66246** |
| Prep Date: **1/31/2020** | Analysis Date: **2/3/2020** | SeqNo: **2275622** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 52 | 10 | 50.00 | 0 | 104 | 63.9 | 124 | | | |
| Surr: DNOP | 4.5 | | 5.000 | | 89.9 | 55.1 | 146 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2001B64**

***05-Feb-20***

**Client:** Wescom Inc

**Project:** HF 7 FED COM 001

| Sample ID: **lcs-50164** | SampType: **LCS** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **50164** | RunNo: **66228** |
| Prep Date: **1/30/2020** | Analysis Date: **1/31/2020** | SeqNo: **2275525** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 21 | 5.0 | 25.00 | 0 | 84.7 | 80 | 120 | | | |
| Surr: BFB | 900 | | 1000 | | 89.5 | 66.6 | 105 | | | |

| Sample ID: **mb-50164** | SampType: **MBLK** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **50164** | RunNo: **66228** |
| Prep Date: **1/30/2020** | Analysis Date: **1/31/2020** | SeqNo: **2275526** 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 | 770 | | 1000 | | 77.4 | 66.6 | 105 | | | |

| Sample ID: **mb-50219** | SampType: **MBLK** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **50219** | RunNo: **66278** |
| Prep Date: **2/3/2020** | Analysis Date: **2/5/2020** | SeqNo: **2277403** Units: **%Rec** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: BFB | 750 | | 1000 | | 75.4 | 66.6 | 105 | | | |

| Sample ID: **lcs-50219** | SampType: **LCS** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **50219** | RunNo: **66278** |
| Prep Date: **2/3/2020** | Analysis Date: **2/4/2020** | SeqNo: **2277404** Units: **%Rec** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: BFB | 850 | | 1000 | | 85.5 | 66.6 | 105 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2001B64**

***05-Feb-20***

**Client:** Wescom Inc

**Project:** HF 7 FED COM 001

| Sample ID: **LCS-50164** | SampType: **LCS** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **50164** | RunNo: **66228** |
| Prep Date: **1/30/2020** | Analysis Date: **1/31/2020** | SeqNo: **2275580** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.89 | 0.025 | 1.000 | 0 | 88.6 | 80 | 120 | | | |
| Toluene | 0.91 | 0.050 | 1.000 | 0 | 90.6 | 80 | 120 | | | |
| Ethylbenzene | 0.91 | 0.050 | 1.000 | 0 | 91.0 | 80 | 120 | | | |
| Xylenes, Total | 2.8 | 0.10 | 3.000 | 0 | 91.9 | 80 | 120 | | | |
| Surr: 4-Bromofluorobenzene | 0.91 | | 1.000 | | 91.4 | 80 | 120 | | | |

| Sample ID: **mb-50164** | SampType: **MBLK** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **50164** | RunNo: **66228** |
| Prep Date: **1/30/2020** | Analysis Date: **1/31/2020** | SeqNo: **2275581** 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 | | | | | | | | |
| Xylenes, Total | ND | 0.10 | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 0.89 | | 1.000 | | 89.5 | 80 | 120 | | | |

| Sample ID: **mb-50219** | SampType: **MBLK** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **50219** | RunNo: **66278** |
| Prep Date: **2/3/2020** | Analysis Date: **2/5/2020** | SeqNo: **2277435** Units: **%Rec** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 4-Bromofluorobenzene | 0.85 | | 1.000 | | 85.3 | 80 | 120 | | | |

| Sample ID: **lcs-50219** | SampType: **LCS** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **50219** | RunNo: **66278** |
| Prep Date: **2/3/2020** | Analysis Date: **2/4/2020** | SeqNo: **2277436** Units: **%Rec** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 4-Bromofluorobenzene | 0.92 | | 1.000 | | 91.9 | 80 | 120 | | | |

**Qualifiers:**

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

# Sample Log-In Check List

Client Name: **WESCOM INC** Work Order Number: **2001B64** RcptNo: **1**

Received By: **Desiree Dominguez** **1/29/2020 2:00:00 PM**

Completed By: **Yazmine Garduno** **1/30/2020 10:36:38 AM**

Reviewed By: JR 1/30/20

## Chain of Custody

| | | | |
|---|---|---|---|
| 1. Is Chain of Custody sufficiently 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: Y61/30/20

## Special Handling (if applicable)

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

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 4.4 | Good | | | | |

# Chain-of-Custody Record

Client: Weslom, INC.

Mailing Address: 1907 San Jose BLVD
ADT 425, CARLSBAD, NM 88220

Phone #: 575 840 3940

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: HF 7 FED Com 001

Project #:

Project Manager: SHAR HARVESTER

Sampler: SHAR HARVESTER

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.5 - 0.1 = 4.4 (°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 Name | Container Type and # | Preservative Type | HEAL No. 2001814 | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/19 | 18:50 | S | N-TANK-E-WS-COMP | JAR | ICE | -001 | X | X | | | | | X | | | |

| Date: | Time: | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| 1/29 | 14.00 | | | | 1/29/20 | 1400 |
| 1/29/19 | 1900 | | FDX Courier | | 1/30/20 | 9:10 |

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: www.hallenvironmental.com*

February 21, 2020

Shar Harvester
Marathon Oil Company
4111 Tidwell Road
Carlsbad, NM 88220
TEL: (575) 297-0956
FAX

RE: HF 7 Fed Com 1 OrderNo.: 2002627

Dear Shar Harvester:

Hall Environmental Analysis Laboratory received 31 sample(s) on 2/15/2020 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 **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-001 **Matrix:** SOIL

**Client Sample ID:** HF 7-1 SP1-8'
**Collection Date:** 1/18/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.4 | H | mg/Kg | 1 | 2/19/2020 2:11:04 PM |
| Motor Oil Range Organics (MRO) | ND | 47 | H | mg/Kg | 1 | 2/19/2020 2:11:04 PM |
| Surr: DNOP | 94.6 | 55.1-146 | H | %Rec | 1 | 2/19/2020 2:11:04 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.6 | H | mg/Kg | 1 | 2/19/2020 3:35:44 PM |
| Surr: BFB | 86.1 | 66.6-105 | H | %Rec | 1 | 2/19/2020 3:35:44 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.023 | H | mg/Kg | 1 | 2/19/2020 3:35:44 PM |
| Toluene | ND | 0.046 | H | mg/Kg | 1 | 2/19/2020 3:35:44 PM |
| Ethylbenzene | ND | 0.046 | H | mg/Kg | 1 | 2/19/2020 3:35:44 PM |
| Xylenes, Total | ND | 0.092 | H | mg/Kg | 1 | 2/19/2020 3:35:44 PM |
| Surr: 4-Bromofluorobenzene | 95.5 | 80-120 | H | %Rec | 1 | 2/19/2020 3:35:44 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 400 | 60 | H | mg/Kg | 20 | 2/18/2020 6:39:14 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-002 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP2-8'
**Collection Date:** 1/18/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 8.9 | H | mg/Kg | 1 | 2/19/2020 2:38:38 PM |
| Motor Oil Range Organics (MRO) | ND | 45 | H | mg/Kg | 1 | 2/19/2020 2:38:38 PM |
| Surr: DNOP | 94.2 | 55.1-146 | H | %Rec | 1 | 2/19/2020 2:38:38 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.6 | H | mg/Kg | 1 | 2/19/2020 3:59:24 PM |
| Surr: BFB | 81.7 | 66.6-105 | H | %Rec | 1 | 2/19/2020 3:59:24 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.023 | H | mg/Kg | 1 | 2/19/2020 3:59:24 PM |
| Toluene | ND | 0.046 | H | mg/Kg | 1 | 2/19/2020 3:59:24 PM |
| Ethylbenzene | ND | 0.046 | H | mg/Kg | 1 | 2/19/2020 3:59:24 PM |
| Xylenes, Total | ND | 0.093 | H | mg/Kg | 1 | 2/19/2020 3:59:24 PM |
| Surr: 4-Bromofluorobenzene | 90.4 | 80-120 | H | %Rec | 1 | 2/19/2020 3:59:24 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 530 | 60 | H | mg/Kg | 20 | 2/18/2020 7:16:14 PM |

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 **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-003 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP3-8'
**Collection Date:** 1/18/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.6 | H | mg/Kg | 1 | 2/19/2020 2:47:48 PM |
| Motor Oil Range Organics (MRO) | ND | 48 | H | mg/Kg | 1 | 2/19/2020 2:47:48 PM |
| Surr: DNOP | 95.7 | 55.1-146 | H | %Rec | 1 | 2/19/2020 2:47:48 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.6 | H | mg/Kg | 1 | 2/19/2020 4:23:05 PM |
| Surr: BFB | 84.2 | 66.6-105 | H | %Rec | 1 | 2/19/2020 4:23:05 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.023 | H | mg/Kg | 1 | 2/19/2020 4:23:05 PM |
| Toluene | ND | 0.046 | H | mg/Kg | 1 | 2/19/2020 4:23:05 PM |
| Ethylbenzene | ND | 0.046 | H | mg/Kg | 1 | 2/19/2020 4:23:05 PM |
| Xylenes, Total | ND | 0.092 | H | mg/Kg | 1 | 2/19/2020 4:23:05 PM |
| Surr: 4-Bromofluorobenzene | 92.4 | 80-120 | H | %Rec | 1 | 2/19/2020 4:23:05 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 400 | 60 | H | mg/Kg | 20 | 2/18/2020 7:28:35 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-004 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP4-12'
**Collection Date:** 1/18/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.1 | H | mg/Kg | 1 | 2/19/2020 2:57:00 PM |
| Motor Oil Range Organics (MRO) | ND | 46 | H | mg/Kg | 1 | 2/19/2020 2:57:00 PM |
| Surr: DNOP | 95.7 | 55.1-146 | H | %Rec | 1 | 2/19/2020 2:57:00 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.9 | H | mg/Kg | 1 | 2/19/2020 4:46:41 PM |
| Surr: BFB | 82.9 | 66.6-105 | H | %Rec | 1 | 2/19/2020 4:46:41 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 4:46:41 PM |
| Toluene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 4:46:41 PM |
| Ethylbenzene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 4:46:41 PM |
| Xylenes, Total | ND | 0.098 | H | mg/Kg | 1 | 2/19/2020 4:46:41 PM |
| Surr: 4-Bromofluorobenzene | 91.1 | 80-120 | H | %Rec | 1 | 2/19/2020 4:46:41 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 420 | 60 | H | mg/Kg | 20 | 2/18/2020 7:40:56 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-005 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP5-12'
**Collection Date:** 1/18/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.1 | H | mg/Kg | 1 | 2/19/2020 3:06:11 PM |
| Motor Oil Range Organics (MRO) | ND | 45 | H | mg/Kg | 1 | 2/19/2020 3:06:11 PM |
| Surr: DNOP | 125 | 55.1-146 | H | %Rec | 1 | 2/19/2020 3:06:11 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.9 | H | mg/Kg | 1 | 2/19/2020 5:10:03 PM |
| Surr: BFB | 83.3 | 66.6-105 | H | %Rec | 1 | 2/19/2020 5:10:03 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 5:10:03 PM |
| Toluene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 5:10:03 PM |
| Ethylbenzene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 5:10:03 PM |
| Xylenes, Total | ND | 0.098 | H | mg/Kg | 1 | 2/19/2020 5:10:03 PM |
| Surr: 4-Bromofluorobenzene | 92.0 | 80-120 | H | %Rec | 1 | 2/19/2020 5:10:03 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 420 | 60 | H | mg/Kg | 20 | 2/18/2020 7:53:17 PM |

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 **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-006 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP6-12'
**Collection Date:** 1/18/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.3 | H | mg/Kg | 1 | 2/19/2020 3:15:24 PM |
| Motor Oil Range Organics (MRO) | ND | 46 | H | mg/Kg | 1 | 2/19/2020 3:15:24 PM |
| Surr: DNOP | 96.1 | 55.1-146 | H | %Rec | 1 | 2/19/2020 3:15:24 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.8 | H | mg/Kg | 1 | 2/19/2020 7:31:17 PM |
| Surr: BFB | 84.2 | 66.6-105 | H | %Rec | 1 | 2/19/2020 7:31:17 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 7:31:17 PM |
| Toluene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 7:31:17 PM |
| Ethylbenzene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 7:31:17 PM |
| Xylenes, Total | ND | 0.095 | H | mg/Kg | 1 | 2/19/2020 7:31:17 PM |
| Surr: 4-Bromofluorobenzene | 92.4 | 80-120 | H | %Rec | 1 | 2/19/2020 7:31:17 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 430 | 60 | H | mg/Kg | 20 | 2/18/2020 8:05:38 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-007 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP7-12'
**Collection Date:** 1/17/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 8.6 | H | mg/Kg | 1 | 2/19/2020 3:24:37 PM |
| Motor Oil Range Organics (MRO) | ND | 43 | H | mg/Kg | 1 | 2/19/2020 3:24:37 PM |
| Surr: DNOP | 96.4 | 55.1-146 | H | %Rec | 1 | 2/19/2020 3:24:37 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.6 | H | mg/Kg | 1 | 2/19/2020 7:54:51 PM |
| Surr: BFB | 81.6 | 66.6-105 | H | %Rec | 1 | 2/19/2020 7:54:51 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.023 | H | mg/Kg | 1 | 2/19/2020 7:54:51 PM |
| Toluene | ND | 0.046 | H | mg/Kg | 1 | 2/19/2020 7:54:51 PM |
| Ethylbenzene | ND | 0.046 | H | mg/Kg | 1 | 2/19/2020 7:54:51 PM |
| Xylenes, Total | ND | 0.092 | H | mg/Kg | 1 | 2/19/2020 7:54:51 PM |
| Surr: 4-Bromofluorobenzene | 90.4 | 80-120 | H | %Rec | 1 | 2/19/2020 7:54:51 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 330 | 60 | H | mg/Kg | 20 | 2/18/2020 8:17:58 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-008 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP8-12'
**Collection Date:** 1/17/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 8.5 | H | mg/Kg | 1 | 2/19/2020 3:33:51 PM |
| Motor Oil Range Organics (MRO) | ND | 43 | H | mg/Kg | 1 | 2/19/2020 3:33:51 PM |
| Surr: DNOP | 105 | 55.1-146 | H | %Rec | 1 | 2/19/2020 3:33:51 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.8 | H | mg/Kg | 1 | 2/19/2020 8:18:23 PM |
| Surr: BFB | 81.5 | 66.6-105 | H | %Rec | 1 | 2/19/2020 8:18:23 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 8:18:23 PM |
| Toluene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 8:18:23 PM |
| Ethylbenzene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 8:18:23 PM |
| Xylenes, Total | ND | 0.096 | H | mg/Kg | 1 | 2/19/2020 8:18:23 PM |
| Surr: 4-Bromofluorobenzene | 89.7 | 80-120 | H | %Rec | 1 | 2/19/2020 8:18:23 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 440 | 61 | H | mg/Kg | 20 | 2/18/2020 8:30:19 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-009 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP9-14'
**Collection Date:** 1/17/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.1 | H | mg/Kg | 1 | 2/19/2020 3:43:07 PM |
| Motor Oil Range Organics (MRO) | ND | 45 | H | mg/Kg | 1 | 2/19/2020 3:43:07 PM |
| Surr: DNOP | 93.9 | 55.1-146 | H | %Rec | 1 | 2/19/2020 3:43:07 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.8 | H | mg/Kg | 1 | 2/19/2020 8:41:47 PM |
| Surr: BFB | 85.0 | 66.6-105 | H | %Rec | 1 | 2/19/2020 8:41:47 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 8:41:47 PM |
| Toluene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 8:41:47 PM |
| Ethylbenzene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 8:41:47 PM |
| Xylenes, Total | ND | 0.095 | H | mg/Kg | 1 | 2/19/2020 8:41:47 PM |
| Surr: 4-Bromofluorobenzene | 93.7 | 80-120 | H | %Rec | 1 | 2/19/2020 8:41:47 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 420 | 60 | H | mg/Kg | 20 | 2/18/2020 9:07:23 PM |

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 **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-010 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP10-12'
**Collection Date:** 1/17/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.0 | H | mg/Kg | 1 | 2/19/2020 3:52:22 PM |
| Motor Oil Range Organics (MRO) | ND | 45 | H | mg/Kg | 1 | 2/19/2020 3:52:22 PM |
| Surr: DNOP | 77.0 | 55.1-146 | H | %Rec | 1 | 2/19/2020 3:52:22 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.7 | H | mg/Kg | 1 | 2/19/2020 9:05:01 PM |
| Surr: BFB | 83.6 | 66.6-105 | H | %Rec | 1 | 2/19/2020 9:05:01 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 9:05:01 PM |
| Toluene | ND | 0.047 | H | mg/Kg | 1 | 2/19/2020 9:05:01 PM |
| Ethylbenzene | ND | 0.047 | H | mg/Kg | 1 | 2/19/2020 9:05:01 PM |
| Xylenes, Total | ND | 0.094 | H | mg/Kg | 1 | 2/19/2020 9:05:01 PM |
| Surr: 4-Bromofluorobenzene | 92.7 | 80-120 | H | %Rec | 1 | 2/19/2020 9:05:01 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 400 | 60 | H | mg/Kg | 20 | 2/18/2020 9:19:43 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-011 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP11-12'
**Collection Date:** 1/17/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 8.8 | H | mg/Kg | 1 | 2/19/2020 4:01:38 PM |
| Motor Oil Range Organics (MRO) | ND | 44 | H | mg/Kg | 1 | 2/19/2020 4:01:38 PM |
| Surr: DNOP | 77.6 | 55.1-146 | H | %Rec | 1 | 2/19/2020 4:01:38 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.9 | H | mg/Kg | 1 | 2/19/2020 9:28:33 PM |
| Surr: BFB | 82.8 | 66.6-105 | H | %Rec | 1 | 2/19/2020 9:28:33 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 9:28:33 PM |
| Toluene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 9:28:33 PM |
| Ethylbenzene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 9:28:33 PM |
| Xylenes, Total | ND | 0.098 | H | mg/Kg | 1 | 2/19/2020 9:28:33 PM |
| Surr: 4-Bromofluorobenzene | 91.0 | 80-120 | H | %Rec | 1 | 2/19/2020 9:28:33 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 450 | 59 | H | mg/Kg | 20 | 2/18/2020 9:32:04 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-012 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP12-12'
**Collection Date:** 1/16/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 8.9 | H | mg/Kg | 1 | 2/19/2020 4:10:54 PM |
| Motor Oil Range Organics (MRO) | ND | 44 | H | mg/Kg | 1 | 2/19/2020 4:10:54 PM |
| Surr: DNOP | 89.1 | 55.1-146 | H | %Rec | 1 | 2/19/2020 4:10:54 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.9 | H | mg/Kg | 1 | 2/19/2020 9:51:58 PM |
| Surr: BFB | 81.9 | 66.6-105 | H | %Rec | 1 | 2/19/2020 9:51:58 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.025 | H | mg/Kg | 1 | 2/19/2020 9:51:58 PM |
| Toluene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 9:51:58 PM |
| Ethylbenzene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 9:51:58 PM |
| Xylenes, Total | ND | 0.098 | H | mg/Kg | 1 | 2/19/2020 9:51:58 PM |
| Surr: 4-Bromofluorobenzene | 90.7 | 80-120 | H | %Rec | 1 | 2/19/2020 9:51:58 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 460 | 60 | H | mg/Kg | 20 | 2/18/2020 9:44:24 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-013 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP13-12'
**Collection Date:** 1/16/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 10 | H | mg/Kg | 1 | 2/19/2020 4:20:12 PM |
| Motor Oil Range Organics (MRO) | ND | 50 | H | mg/Kg | 1 | 2/19/2020 4:20:12 PM |
| Surr: DNOP | 108 | 55.1-146 | H | %Rec | 1 | 2/19/2020 4:20:12 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.7 | H | mg/Kg | 1 | 2/19/2020 10:15:32 PM |
| Surr: BFB | 82.5 | 66.6-105 | H | %Rec | 1 | 2/19/2020 10:15:32 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 10:15:32 PM |
| Toluene | ND | 0.047 | H | mg/Kg | 1 | 2/19/2020 10:15:32 PM |
| Ethylbenzene | ND | 0.047 | H | mg/Kg | 1 | 2/19/2020 10:15:32 PM |
| Xylenes, Total | ND | 0.094 | H | mg/Kg | 1 | 2/19/2020 10:15:32 PM |
| Surr: 4-Bromofluorobenzene | 91.4 | 80-120 | H | %Rec | 1 | 2/19/2020 10:15:32 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 440 | 60 | H | mg/Kg | 20 | 2/18/2020 9:56:45 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-014 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP14-12'
**Collection Date:** 1/16/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.7 | H | mg/Kg | 1 | 2/19/2020 4:29:30 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | H | mg/Kg | 1 | 2/19/2020 4:29:30 PM |
| Surr: DNOP | 91.3 | 55.1-146 | H | %Rec | 1 | 2/19/2020 4:29:30 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.8 | H | mg/Kg | 1 | 2/19/2020 10:39:10 PM |
| Surr: BFB | 82.5 | 66.6-105 | H | %Rec | 1 | 2/19/2020 10:39:10 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 10:39:10 PM |
| Toluene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 10:39:10 PM |
| Ethylbenzene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 10:39:10 PM |
| Xylenes, Total | ND | 0.095 | H | mg/Kg | 1 | 2/19/2020 10:39:10 PM |
| Surr: 4-Bromofluorobenzene | 90.1 | 80-120 | H | %Rec | 1 | 2/19/2020 10:39:10 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 430 | 60 | H | mg/Kg | 20 | 2/20/2020 10:20:57 AM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-015 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP15-12'
**Collection Date:** 1/16/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.6 | H | mg/Kg | 1 | 2/19/2020 6:20:10 PM |
| Motor Oil Range Organics (MRO) | ND | 48 | H | mg/Kg | 1 | 2/19/2020 6:20:10 PM |
| Surr: DNOP | 97.6 | 55.1-146 | H | %Rec | 1 | 2/19/2020 6:20:10 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.7 | H | mg/Kg | 1 | 2/19/2020 11:02:42 PM |
| Surr: BFB | 84.9 | 66.6-105 | H | %Rec | 1 | 2/19/2020 11:02:42 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.023 | H | mg/Kg | 1 | 2/19/2020 11:02:42 PM |
| Toluene | ND | 0.047 | H | mg/Kg | 1 | 2/19/2020 11:02:42 PM |
| Ethylbenzene | ND | 0.047 | H | mg/Kg | 1 | 2/19/2020 11:02:42 PM |
| Xylenes, Total | ND | 0.093 | H | mg/Kg | 1 | 2/19/2020 11:02:42 PM |
| Surr: 4-Bromofluorobenzene | 93.1 | 80-120 | H | %Rec | 1 | 2/19/2020 11:02:42 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 350 | 60 | H | mg/Kg | 20 | 2/20/2020 10:58:11 AM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-016 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP16-12'
**Collection Date:** 1/16/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.6 | H | mg/Kg | 1 | 2/19/2020 6:47:37 PM |
| Motor Oil Range Organics (MRO) | ND | 48 | H | mg/Kg | 1 | 2/19/2020 6:47:37 PM |
| Surr: DNOP | 97.8 | 55.1-146 | H | %Rec | 1 | 2/19/2020 6:47:37 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 430 | 60 | H | mg/Kg | 20 | 2/20/2020 11:35:25 AM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 4:02:46 PM |
| Toluene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 4:02:46 PM |
| Ethylbenzene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 4:02:46 PM |
| Xylenes, Total | ND | 0.096 | H | mg/Kg | 1 | 2/19/2020 4:02:46 PM |
| Surr: 1,2-Dichloroethane-d4 | 93.1 | 70-130 | H | %Rec | 1 | 2/19/2020 4:02:46 PM |
| Surr: 4-Bromofluorobenzene | 95.1 | 70-130 | H | %Rec | 1 | 2/19/2020 4:02:46 PM |
| Surr: Dibromofluoromethane | 93.4 | 70-130 | H | %Rec | 1 | 2/19/2020 4:02:46 PM |
| Surr: Toluene-d8 | 100 | 70-130 | H | %Rec | 1 | 2/19/2020 4:02:46 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.8 | H | mg/Kg | 1 | 2/19/2020 4:02:46 PM |
| Surr: BFB | 92.1 | 70-130 | H | %Rec | 1 | 2/19/2020 4:02:46 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-017 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP17-10'
**Collection Date:** 1/16/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.4 | H | mg/Kg | 1 | 2/19/2020 6:56:46 PM |
| Motor Oil Range Organics (MRO) | ND | 47 | H | mg/Kg | 1 | 2/19/2020 6:56:46 PM |
| Surr: DNOP | 99.9 | 55.1-146 | H | %Rec | 1 | 2/19/2020 6:56:46 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 400 | 60 | H | mg/Kg | 20 | 2/20/2020 11:47:49 AM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 5:28:24 PM |
| Toluene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 5:28:24 PM |
| Ethylbenzene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 5:28:24 PM |
| Xylenes, Total | ND | 0.098 | H | mg/Kg | 1 | 2/19/2020 5:28:24 PM |
| Surr: 1,2-Dichloroethane-d4 | 98.7 | 70-130 | H | %Rec | 1 | 2/19/2020 5:28:24 PM |
| Surr: 4-Bromofluorobenzene | 93.3 | 70-130 | H | %Rec | 1 | 2/19/2020 5:28:24 PM |
| Surr: Dibromofluoromethane | 96.6 | 70-130 | H | %Rec | 1 | 2/19/2020 5:28:24 PM |
| Surr: Toluene-d8 | 98.1 | 70-130 | H | %Rec | 1 | 2/19/2020 5:28:24 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.9 | H | mg/Kg | 1 | 2/19/2020 5:28:24 PM |
| Surr: BFB | 91.8 | 70-130 | H | %Rec | 1 | 2/19/2020 5:28:24 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-018 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP18-10'
**Collection Date:** 1/16/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.7 | H | mg/Kg | 1 | 2/19/2020 7:05:53 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | H | mg/Kg | 1 | 2/19/2020 7:05:53 PM |
| Surr: DNOP | 89.3 | 55.1-146 | H | %Rec | 1 | 2/19/2020 7:05:53 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 450 | 60 | H | mg/Kg | 20 | 2/20/2020 12:25:04 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.025 | H | mg/Kg | 1 | 2/19/2020 6:54:01 PM |
| Toluene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 6:54:01 PM |
| Ethylbenzene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 6:54:01 PM |
| Xylenes, Total | ND | 0.098 | H | mg/Kg | 1 | 2/19/2020 6:54:01 PM |
| Surr: 1,2-Dichloroethane-d4 | 89.8 | 70-130 | H | %Rec | 1 | 2/19/2020 6:54:01 PM |
| Surr: 4-Bromofluorobenzene | 96.3 | 70-130 | H | %Rec | 1 | 2/19/2020 6:54:01 PM |
| Surr: Dibromofluoromethane | 91.6 | 70-130 | H | %Rec | 1 | 2/19/2020 6:54:01 PM |
| Surr: Toluene-d8 | 99.3 | 70-130 | H | %Rec | 1 | 2/19/2020 6:54:01 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.9 | H | mg/Kg | 1 | 2/19/2020 6:54:01 PM |
| Surr: BFB | 93.2 | 70-130 | H | %Rec | 1 | 2/19/2020 6:54:01 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-019 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP19-8'
**Collection Date:** 1/18/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.8 | H | mg/Kg | 1 | 2/19/2020 7:14:59 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | H | mg/Kg | 1 | 2/19/2020 7:14:59 PM |
| Surr: DNOP | 90.7 | 55.1-146 | H | %Rec | 1 | 2/19/2020 7:14:59 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 480 | 60 | H | mg/Kg | 20 | 2/20/2020 12:37:29 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.025 | H | mg/Kg | 1 | 2/19/2020 7:22:28 PM |
| Toluene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 7:22:28 PM |
| Ethylbenzene | ND | 0.049 | H | mg/Kg | 1 | 2/19/2020 7:22:28 PM |
| Xylenes, Total | ND | 0.098 | H | mg/Kg | 1 | 2/19/2020 7:22:28 PM |
| Surr: 1,2-Dichloroethane-d4 | 93.2 | 70-130 | H | %Rec | 1 | 2/19/2020 7:22:28 PM |
| Surr: 4-Bromofluorobenzene | 97.7 | 70-130 | H | %Rec | 1 | 2/19/2020 7:22:28 PM |
| Surr: Dibromofluoromethane | 96.3 | 70-130 | H | %Rec | 1 | 2/19/2020 7:22:28 PM |
| Surr: Toluene-d8 | 101 | 70-130 | H | %Rec | 1 | 2/19/2020 7:22:28 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.9 | H | mg/Kg | 1 | 2/19/2020 7:22:28 PM |
| Surr: BFB | 95.0 | 70-130 | H | %Rec | 1 | 2/19/2020 7:22:28 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-020 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP20-6'
**Collection Date:** 1/18/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.6 | H | mg/Kg | 1 | 2/19/2020 7:24:06 PM |
| Motor Oil Range Organics (MRO) | ND | 48 | H | mg/Kg | 1 | 2/19/2020 7:24:06 PM |
| Surr: DNOP | 91.1 | 55.1-146 | H | %Rec | 1 | 2/19/2020 7:24:06 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 510 | 60 | H | mg/Kg | 20 | 2/20/2020 12:49:54 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.025 | H | mg/Kg | 1 | 2/19/2020 7:50:58 PM |
| Toluene | ND | 0.050 | H | mg/Kg | 1 | 2/19/2020 7:50:58 PM |
| Ethylbenzene | ND | 0.050 | H | mg/Kg | 1 | 2/19/2020 7:50:58 PM |
| Xylenes, Total | ND | 0.099 | H | mg/Kg | 1 | 2/19/2020 7:50:58 PM |
| Surr: 1,2-Dichloroethane-d4 | 91.9 | 70-130 | H | %Rec | 1 | 2/19/2020 7:50:58 PM |
| Surr: 4-Bromofluorobenzene | 97.8 | 70-130 | H | %Rec | 1 | 2/19/2020 7:50:58 PM |
| Surr: Dibromofluoromethane | 94.8 | 70-130 | H | %Rec | 1 | 2/19/2020 7:50:58 PM |
| Surr: Toluene-d8 | 98.0 | 70-130 | H | %Rec | 1 | 2/19/2020 7:50:58 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 5.0 | H | mg/Kg | 1 | 2/19/2020 7:50:58 PM |
| Surr: BFB | 93.7 | 70-130 | H | %Rec | 1 | 2/19/2020 7:50:58 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-021 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP21-6'
**Collection Date:** 1/18/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** |
| Diesel Range Organics (DRO) | ND | 9.6 | H | mg/Kg | 1 | 2/20/2020 10:34:10 AM |
| Motor Oil Range Organics (MRO) | ND | 48 | H | mg/Kg | 1 | 2/20/2020 10:34:10 AM |
| Surr: DNOP | 59.3 | 55.1-146 | H | %Rec | 1 | 2/20/2020 10:34:10 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 740 | 60 | H | mg/Kg | 20 | 2/20/2020 1:02:19 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 8:19:34 PM |
| Toluene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 8:19:34 PM |
| Ethylbenzene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 8:19:34 PM |
| Xylenes, Total | ND | 0.096 | H | mg/Kg | 1 | 2/19/2020 8:19:34 PM |
| Surr: 1,2-Dichloroethane-d4 | 92.6 | 70-130 | H | %Rec | 1 | 2/19/2020 8:19:34 PM |
| Surr: 4-Bromofluorobenzene | 94.1 | 70-130 | H | %Rec | 1 | 2/19/2020 8:19:34 PM |
| Surr: Dibromofluoromethane | 93.2 | 70-130 | H | %Rec | 1 | 2/19/2020 8:19:34 PM |
| Surr: Toluene-d8 | 97.4 | 70-130 | H | %Rec | 1 | 2/19/2020 8:19:34 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.8 | H | mg/Kg | 1 | 2/19/2020 8:19:34 PM |
| Surr: BFB | 92.9 | 70-130 | H | %Rec | 1 | 2/19/2020 8:19:34 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** HF7-1 SP22 Wall
**Project:** HF 7 Fed Com 1
**Collection Date:** 1/18/2020
**Lab ID:** 2002627-022 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.7 | H | mg/Kg | 1 | 2/19/2020 7:42:18 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | H | mg/Kg | 1 | 2/19/2020 7:42:18 PM |
| Surr: DNOP | 68.2 | 55.1-146 | H | %Rec | 1 | 2/19/2020 7:42:18 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 270 | 60 | H | mg/Kg | 20 | 2/20/2020 1:14:43 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.025 | H | mg/Kg | 1 | 2/19/2020 8:48:07 PM |
| Toluene | ND | 0.050 | H | mg/Kg | 1 | 2/19/2020 8:48:07 PM |
| Ethylbenzene | ND | 0.050 | H | mg/Kg | 1 | 2/19/2020 8:48:07 PM |
| Xylenes, Total | ND | 0.10 | H | mg/Kg | 1 | 2/19/2020 8:48:07 PM |
| Surr: 1,2-Dichloroethane-d4 | 88.8 | 70-130 | H | %Rec | 1 | 2/19/2020 8:48:07 PM |
| Surr: 4-Bromofluorobenzene | 95.8 | 70-130 | H | %Rec | 1 | 2/19/2020 8:48:07 PM |
| Surr: Dibromofluoromethane | 93.7 | 70-130 | H | %Rec | 1 | 2/19/2020 8:48:07 PM |
| Surr: Toluene-d8 | 99.3 | 70-130 | H | %Rec | 1 | 2/19/2020 8:48:07 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 5.0 | H | mg/Kg | 1 | 2/19/2020 8:48:07 PM |
| Surr: BFB | 94.0 | 70-130 | H | %Rec | 1 | 2/19/2020 8:48:07 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-023 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP23 Wall
**Collection Date:** 1/19/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.5 | H | mg/Kg | 1 | 2/19/2020 7:51:24 PM |
| Motor Oil Range Organics (MRO) | ND | 48 | H | mg/Kg | 1 | 2/19/2020 7:51:24 PM |
| Surr: DNOP | 117 | 55.1-146 | H | %Rec | 1 | 2/19/2020 7:51:24 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | ND | 60 | H | mg/Kg | 20 | 2/20/2020 1:27:07 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 9:16:37 PM |
| Toluene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 9:16:37 PM |
| Ethylbenzene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 9:16:37 PM |
| Xylenes, Total | ND | 0.095 | H | mg/Kg | 1 | 2/19/2020 9:16:37 PM |
| Surr: 1,2-Dichloroethane-d4 | 89.7 | 70-130 | H | %Rec | 1 | 2/19/2020 9:16:37 PM |
| Surr: 4-Bromofluorobenzene | 94.7 | 70-130 | H | %Rec | 1 | 2/19/2020 9:16:37 PM |
| Surr: Dibromofluoromethane | 95.2 | 70-130 | H | %Rec | 1 | 2/19/2020 9:16:37 PM |
| Surr: Toluene-d8 | 99.5 | 70-130 | H | %Rec | 1 | 2/19/2020 9:16:37 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.8 | H | mg/Kg | 1 | 2/19/2020 9:16:37 PM |
| Surr: BFB | 91.5 | 70-130 | H | %Rec | 1 | 2/19/2020 9:16:37 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-024 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP24 Wall
**Collection Date:** 1/19/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.7 | H | mg/Kg | 1 | 2/19/2020 8:00:28 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | H | mg/Kg | 1 | 2/19/2020 8:00:28 PM |
| Surr: DNOP | 86.5 | 55.1-146 | H | %Rec | 1 | 2/19/2020 8:00:28 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 240 | 60 | H | mg/Kg | 20 | 2/20/2020 1:39:32 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 9:45:00 PM |
| Toluene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 9:45:00 PM |
| Ethylbenzene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 9:45:00 PM |
| Xylenes, Total | ND | 0.096 | H | mg/Kg | 1 | 2/19/2020 9:45:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 90.4 | 70-130 | H | %Rec | 1 | 2/19/2020 9:45:00 PM |
| Surr: 4-Bromofluorobenzene | 94.5 | 70-130 | H | %Rec | 1 | 2/19/2020 9:45:00 PM |
| Surr: Dibromofluoromethane | 93.2 | 70-130 | H | %Rec | 1 | 2/19/2020 9:45:00 PM |
| Surr: Toluene-d8 | 100 | 70-130 | H | %Rec | 1 | 2/19/2020 9:45:00 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.8 | H | mg/Kg | 1 | 2/19/2020 9:45:00 PM |
| Surr: BFB | 92.0 | 70-130 | H | %Rec | 1 | 2/19/2020 9:45:00 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-025 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP25 Wall
**Collection Date:** 1/19/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.9 | H | mg/Kg | 1 | 2/19/2020 8:09:33 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | H | mg/Kg | 1 | 2/19/2020 8:09:33 PM |
| Surr: DNOP | 82.3 | 55.1-146 | H | %Rec | 1 | 2/19/2020 8:09:33 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | ND | 60 | H | mg/Kg | 20 | 2/20/2020 1:51:56 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 10:13:35 PM |
| Toluene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 10:13:35 PM |
| Ethylbenzene | ND | 0.048 | H | mg/Kg | 1 | 2/19/2020 10:13:35 PM |
| Xylenes, Total | ND | 0.097 | H | mg/Kg | 1 | 2/19/2020 10:13:35 PM |
| Surr: 1,2-Dichloroethane-d4 | 90.3 | 70-130 | H | %Rec | 1 | 2/19/2020 10:13:35 PM |
| Surr: 4-Bromofluorobenzene | 96.8 | 70-130 | H | %Rec | 1 | 2/19/2020 10:13:35 PM |
| Surr: Dibromofluoromethane | 92.2 | 70-130 | H | %Rec | 1 | 2/19/2020 10:13:35 PM |
| Surr: Toluene-d8 | 103 | 70-130 | H | %Rec | 1 | 2/19/2020 10:13:35 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.8 | H | mg/Kg | 1 | 2/19/2020 10:13:35 PM |
| Surr: BFB | 94.8 | 70-130 | H | %Rec | 1 | 2/19/2020 10:13:35 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF 7 Fed Com 1
**Lab ID:** 2002627-026 **Matrix:** SOIL

**Client Sample ID:** HF7-1 SP26 Wall
**Collection Date:** 1/19/2020
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** |
| Diesel Range Organics (DRO) | ND | 8.8 | H | mg/Kg | 1 | 2/20/2020 10:57:42 AM |
| Motor Oil Range Organics (MRO) | ND | 44 | H | mg/Kg | 1 | 2/20/2020 10:57:42 AM |
| Surr: DNOP | 69.2 | 55.1-146 | H | %Rec | 1 | 2/20/2020 10:57:42 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 720 | 60 | H | mg/Kg | 20 | 2/20/2020 2:04:21 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.023 | H | mg/Kg | 1 | 2/19/2020 10:42:10 PM |
| Toluene | ND | 0.046 | H | mg/Kg | 1 | 2/19/2020 10:42:10 PM |
| Ethylbenzene | ND | 0.046 | H | mg/Kg | 1 | 2/19/2020 10:42:10 PM |
| Xylenes, Total | ND | 0.092 | H | mg/Kg | 1 | 2/19/2020 10:42:10 PM |
| Surr: 1,2-Dichloroethane-d4 | 86.1 | 70-130 | H | %Rec | 1 | 2/19/2020 10:42:10 PM |
| Surr: 4-Bromofluorobenzene | 94.6 | 70-130 | H | %Rec | 1 | 2/19/2020 10:42:10 PM |
| Surr: Dibromofluoromethane | 94.7 | 70-130 | H | %Rec | 1 | 2/19/2020 10:42:10 PM |
| Surr: Toluene-d8 | 100 | 70-130 | H | %Rec | 1 | 2/19/2020 10:42:10 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.6 | H | mg/Kg | 1 | 2/19/2020 10:42:10 PM |
| Surr: BFB | 92.0 | 70-130 | H | %Rec | 1 | 2/19/2020 10:42:10 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** HF7-1 SP27 Wall
**Project:** HF 7 Fed Com 1
**Collection Date:** 1/19/2020
**Lab ID:** 2002627-027 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** |
| Diesel Range Organics (DRO) | ND | 9.3 | H | mg/Kg | 1 | 2/20/2020 11:21:23 AM |
| Motor Oil Range Organics (MRO) | ND | 46 | H | mg/Kg | 1 | 2/20/2020 11:21:23 AM |
| Surr: DNOP | 69.3 | 55.1-146 | H | %Rec | 1 | 2/20/2020 11:21:23 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 750 | 60 | H | mg/Kg | 20 | 2/20/2020 2:16:45 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/19/2020 11:10:45 PM |
| Toluene | ND | 0.047 | H | mg/Kg | 1 | 2/19/2020 11:10:45 PM |
| Ethylbenzene | ND | 0.047 | H | mg/Kg | 1 | 2/19/2020 11:10:45 PM |
| Xylenes, Total | ND | 0.094 | H | mg/Kg | 1 | 2/19/2020 11:10:45 PM |
| Surr: 1,2-Dichloroethane-d4 | 89.9 | 70-130 | H | %Rec | 1 | 2/19/2020 11:10:45 PM |
| Surr: 4-Bromofluorobenzene | 92.9 | 70-130 | H | %Rec | 1 | 2/19/2020 11:10:45 PM |
| Surr: Dibromofluoromethane | 95.0 | 70-130 | H | %Rec | 1 | 2/19/2020 11:10:45 PM |
| Surr: Toluene-d8 | 98.5 | 70-130 | H | %Rec | 1 | 2/19/2020 11:10:45 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.7 | H | mg/Kg | 1 | 2/19/2020 11:10:45 PM |
| Surr: BFB | 92.2 | 70-130 | H | %Rec | 1 | 2/19/2020 11:10:45 PM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** HF7-1 SP28 Wall
**Project:** HF 7 Fed Com 1
**Collection Date:** 1/19/2020
**Lab ID:** 2002627-028 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** |
| Diesel Range Organics (DRO) | ND | 9.6 | H | mg/Kg | 1 | 2/20/2020 11:44:55 AM |
| Motor Oil Range Organics (MRO) | ND | 48 | H | mg/Kg | 1 | 2/20/2020 11:44:55 AM |
| Surr: DNOP | 81.7 | 55.1-146 | H | %Rec | 1 | 2/20/2020 11:44:55 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 730 | 60 | H | mg/Kg | 20 | 2/20/2020 2:53:58 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.023 | H | mg/Kg | 1 | 2/20/2020 2:52:10 PM |
| Toluene | ND | 0.047 | H | mg/Kg | 1 | 2/20/2020 2:52:10 PM |
| Ethylbenzene | ND | 0.047 | H | mg/Kg | 1 | 2/20/2020 2:52:10 PM |
| Xylenes, Total | ND | 0.093 | H | mg/Kg | 1 | 2/20/2020 2:52:10 PM |
| Surr: 1,2-Dichloroethane-d4 | 88.8 | 70-130 | H | %Rec | 1 | 2/20/2020 2:52:10 PM |
| Surr: 4-Bromofluorobenzene | 94.3 | 70-130 | H | %Rec | 1 | 2/20/2020 2:52:10 PM |
| Surr: Dibromofluoromethane | 91.9 | 70-130 | H | %Rec | 1 | 2/20/2020 2:52:10 PM |
| Surr: Toluene-d8 | 99.3 | 70-130 | H | %Rec | 1 | 2/20/2020 2:52:10 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.7 | H | mg/Kg | 1 | 2/20/2020 2:01:54 AM |
| Surr: BFB | 93.5 | 70-130 | H | %Rec | 1 | 2/20/2020 2:01:54 AM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** HF7-1 SP29 Wall
**Project:** HF 7 Fed Com 1
**Collection Date:** 1/19/2020
**Lab ID:** 2002627-029 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** |
| Diesel Range Organics (DRO) | ND | 9.7 | H | mg/Kg | 1 | 2/20/2020 12:08:27 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | H | mg/Kg | 1 | 2/20/2020 12:08:27 PM |
| Surr: DNOP | 74.1 | 55.1-146 | H | %Rec | 1 | 2/20/2020 12:08:27 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 670 | 60 | H | mg/Kg | 20 | 2/20/2020 3:06:23 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | H | mg/Kg | 1 | 2/20/2020 3:20:41 PM |
| Toluene | ND | 0.049 | H | mg/Kg | 1 | 2/20/2020 3:20:41 PM |
| Ethylbenzene | ND | 0.049 | H | mg/Kg | 1 | 2/20/2020 3:20:41 PM |
| Xylenes, Total | ND | 0.097 | H | mg/Kg | 1 | 2/20/2020 3:20:41 PM |
| Surr: 1,2-Dichloroethane-d4 | 91.8 | 70-130 | H | %Rec | 1 | 2/20/2020 3:20:41 PM |
| Surr: 4-Bromofluorobenzene | 96.1 | 70-130 | H | %Rec | 1 | 2/20/2020 3:20:41 PM |
| Surr: Dibromofluoromethane | 96.1 | 70-130 | H | %Rec | 1 | 2/20/2020 3:20:41 PM |
| Surr: Toluene-d8 | 98.7 | 70-130 | H | %Rec | 1 | 2/20/2020 3:20:41 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.9 | H | mg/Kg | 1 | 2/20/2020 2:30:20 AM |
| Surr: BFB | 96.8 | 70-130 | H | %Rec | 1 | 2/20/2020 2:30:20 AM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** HF7-1 SP30 Wall
**Project:** HF 7 Fed Com 1
**Collection Date:** 1/19/2020
**Lab ID:** 2002627-030 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** |
| Diesel Range Organics (DRO) | ND | 10 | H | mg/Kg | 1 | 2/20/2020 12:32:04 PM |
| Motor Oil Range Organics (MRO) | ND | 50 | H | mg/Kg | 1 | 2/20/2020 12:32:04 PM |
| Surr: DNOP | 83.6 | 55.1-146 | H | %Rec | 1 | 2/20/2020 12:32:04 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 830 | 60 | H | mg/Kg | 20 | 2/20/2020 3:18:47 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.023 | H | mg/Kg | 1 | 2/20/2020 3:49:19 PM |
| Toluene | ND | 0.047 | H | mg/Kg | 1 | 2/20/2020 3:49:19 PM |
| Ethylbenzene | ND | 0.047 | H | mg/Kg | 1 | 2/20/2020 3:49:19 PM |
| Xylenes, Total | ND | 0.094 | H | mg/Kg | 1 | 2/20/2020 3:49:19 PM |
| Surr: 1,2-Dichloroethane-d4 | 87.4 | 70-130 | H | %Rec | 1 | 2/20/2020 3:49:19 PM |
| Surr: 4-Bromofluorobenzene | 91.9 | 70-130 | H | %Rec | 1 | 2/20/2020 3:49:19 PM |
| Surr: Dibromofluoromethane | 95.4 | 70-130 | H | %Rec | 1 | 2/20/2020 3:49:19 PM |
| Surr: Toluene-d8 | 100 | 70-130 | H | %Rec | 1 | 2/20/2020 3:49:19 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.7 | H | mg/Kg | 1 | 2/20/2020 2:58:49 AM |
| Surr: BFB | 93.2 | 70-130 | H | %Rec | 1 | 2/20/2020 2:58:49 AM |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002627**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** HF7-1 SP31 Wall
**Project:** HF 7 Fed Com 1
**Collection Date:** 1/19/2020
**Lab ID:** 2002627-031 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** |
| Diesel Range Organics (DRO) | ND | 9.8 | H | mg/Kg | 1 | 2/20/2020 12:55:37 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | H | mg/Kg | 1 | 2/20/2020 12:55:37 PM |
| Surr: DNOP | 68.7 | 55.1-146 | H | %Rec | 1 | 2/20/2020 12:55:37 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** |
| Chloride | 730 | 60 | H | mg/Kg | 20 | 2/20/2020 3:31:12 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.025 | H | mg/Kg | 1 | 2/20/2020 4:17:41 PM |
| Toluene | ND | 0.049 | H | mg/Kg | 1 | 2/20/2020 4:17:41 PM |
| Ethylbenzene | ND | 0.049 | H | mg/Kg | 1 | 2/20/2020 4:17:41 PM |
| Xylenes, Total | ND | 0.098 | H | mg/Kg | 1 | 2/20/2020 4:17:41 PM |
| Surr: 1,2-Dichloroethane-d4 | 93.5 | 70-130 | H | %Rec | 1 | 2/20/2020 4:17:41 PM |
| Surr: 4-Bromofluorobenzene | 96.2 | 70-130 | H | %Rec | 1 | 2/20/2020 4:17:41 PM |
| Surr: Dibromofluoromethane | 94.1 | 70-130 | H | %Rec | 1 | 2/20/2020 4:17:41 PM |
| Surr: Toluene-d8 | 101 | 70-130 | H | %Rec | 1 | 2/20/2020 4:17:41 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.9 | H | mg/Kg | 1 | 2/20/2020 3:27:14 AM |
| Surr: BFB | 91.9 | 70-130 | H | %Rec | 1 | 2/20/2020 3:27:14 AM |

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

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2002627**

***21-Feb-20***

**Client:** Marathon Oil Company
**Project:** HF 7 Fed Com 1

| Sample ID: **MB-50516** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **50516** | RunNo: **66623** | | | | | | | |
| Prep Date: **2/18/2020** | Analysis Date: **2/18/2020** | SeqNo: **2289871** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | ND | 1.5 | | | | | | | | |

| Sample ID: **LCS-50516** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **50516** | RunNo: **66623** | | | | | | | |
| Prep Date: **2/18/2020** | Analysis Date: **2/18/2020** | SeqNo: **2289872** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 14 | 1.5 | 15.00 | 0 | 92.5 | 90 | 110 | | | |

| Sample ID: **LCS-50552** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **50552** | RunNo: **66700** | | | | | | | |
| Prep Date: **2/20/2020** | Analysis Date: **2/20/2020** | SeqNo: **2292980** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 14 | 1.5 | 15.00 | 0 | 92.7 | 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#: **2002627**

***21-Feb-20***

**Client:** Marathon Oil Company
**Project:** HF 7 Fed Com 1

| Sample ID: **MB-50531** | SampType: **MBLK** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **50531** | RunNo: **66632** | | | | | | | |
| Prep Date: **2/19/2020** | Analysis Date: **2/19/2020** | SeqNo: **2289788** | Units: **%Rec** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: DNOP | 8.8 | | 10.00 | | 88.0 | 55.1 | 146 | | | |

| Sample ID: **LCS-50531** | SampType: **LCS** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **50531** | RunNo: **66632** | | | | | | | |
| Prep Date: **2/19/2020** | Analysis Date: **2/19/2020** | SeqNo: **2289789** | Units: **%Rec** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: DNOP | 4.4 | | 5.000 | | 88.9 | 55.1 | 146 | | | |

| Sample ID: **MB-50497** | SampType: **MBLK** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **50497** | RunNo: **66632** | | | | | | | |
| Prep Date: **2/18/2020** | Analysis Date: **2/19/2020** | SeqNo: **2290342** | 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 | | 116 | 55.1 | 146 | | | |

| Sample ID: **LCS-50497** | SampType: **LCS** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **50497** | RunNo: **66632** | | | | | | | |
| Prep Date: **2/18/2020** | Analysis Date: **2/19/2020** | SeqNo: **2290343** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO) | 54 | 10 | 50.00 | 0 | 109 | 70 | 130 | | | |
| Surr: DNOP | 5.0 | | 5.000 | | 99.6 | 55.1 | 146 | | | |

| Sample ID: **2002627-001AMS** | SampType: **MS** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **HF 7-1 SP1-8'** | Batch ID: **50497** | RunNo: **66632** | | | | | | | |
| Prep Date: **2/18/2020** | Analysis Date: **2/19/2020** | SeqNo: **2290402** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO) | 54 | 9.8 | 49.16 | 0 | 109 | 47.4 | 136 | | | H |
| Surr: DNOP | 4.8 | | 4.916 | | 97.5 | 55.1 | 146 | | | H |

| Sample ID: **2002627-001AMSD** | SampType: **MSD** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **HF 7-1 SP1-8'** | Batch ID: **50497** | RunNo: **66632** | | | | | | | |
| Prep Date: **2/18/2020** | Analysis Date: **2/19/2020** | SeqNo: **2290403** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO) | 52 | 9.2 | 46.00 | 0 | 113 | 47.4 | 136 | 3.87 | 43.4 | H |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting 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#: **2002627**

***21-Feb-20***

**Client:** Marathon Oil Company
**Project:** HF 7 Fed Com 1

Sample ID: **2002627-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **HF 7-1 SP1-8'** Batch ID: **50497** RunNo: **66632**
Prep Date: **2/18/2020** Analysis Date: **2/19/2020** SeqNo: **2290403** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: DNOP | 4.6 | | 4.600 | | 99.0 | 55.1 | 146 | 0 | 0 | H |

Sample ID: **2002627-015AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **HF7-1 SP15-12'** Batch ID: **50509** RunNo: **66632**
Prep Date: **2/18/2020** Analysis Date: **2/19/2020** SeqNo: **2290852** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 50 | 9.6 | 47.94 | 0 | 105 | 47.4 | 136 | | | H |
| Surr: DNOP | 4.4 | | 4.794 | | 92.4 | 55.1 | 146 | | | H |

Sample ID: **2002627-015AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **HF7-1 SP15-12'** Batch ID: **50509** RunNo: **66632**
Prep Date: **2/18/2020** Analysis Date: **2/19/2020** SeqNo: **2290853** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 52 | 9.9 | 49.26 | 0 | 105 | 47.4 | 136 | 3.11 | 43.4 | H |
| Surr: DNOP | 4.5 | | 4.926 | | 90.7 | 55.1 | 146 | 0 | 0 | H |

Sample ID: **MB-50509** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **50509** RunNo: **66632**
Prep Date: **2/18/2020** Analysis Date: **2/19/2020** SeqNo: **2290854** 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 | | 120 | 55.1 | 146 | | | |

Sample ID: **LCS-50509** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **50509** RunNo: **66632**
Prep Date: **2/18/2020** Analysis Date: **2/19/2020** SeqNo: **2290855** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 57 | 10 | 50.00 | 0 | 113 | 70 | 130 | | | |
| Surr: DNOP | 5.0 | | 5.000 | | 99.8 | 55.1 | 146 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2002627**

***21-Feb-20***

**Client:** Marathon Oil Company
**Project:** HF 7 Fed Com 1

| Sample ID: **mb1** | SampType: **MBLK** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **G66649** | RunNo: **66649** |
| Prep Date: | Analysis Date: **2/19/2020** | SeqNo: **2290656** Units: **%Rec** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: BFB | 780 | | 1000 | | 77.9 | 66.6 | 105 | | | |

| Sample ID: **2.5ug gro lcs** | SampType: **LCS** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **G66649** | RunNo: **66649** |
| Prep Date: | Analysis Date: **2/19/2020** | SeqNo: **2290657** Units: **%Rec** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: BFB | 930 | | 1000 | | 93.3 | 66.6 | 105 | | | |

| Sample ID: **mb-50488** | SampType: **MBLK** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **50488** | RunNo: **66649** |
| Prep Date: **2/17/2020** | Analysis Date: **2/19/2020** | SeqNo: **2290660** 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 | 810 | | 1000 | | 81.4 | 66.6 | 105 | | | |

| Sample ID: **lcs-50488** | SampType: **LCS** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **50488** | RunNo: **66649** |
| Prep Date: **2/17/2020** | Analysis Date: **2/19/2020** | SeqNo: **2290661** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 25 | 5.0 | 25.00 | 0 | 99.1 | 80 | 120 | | | |
| Surr: BFB | 930 | | 1000 | | 93.1 | 66.6 | 105 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2002627**

***21-Feb-20***

**Client:** Marathon Oil Company
**Project:** HF 7 Fed Com 1

| Sample ID: **mb1** | SampType: **MBLK** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **B66649** | RunNo: **66649** |
| Prep Date: | Analysis Date: **2/19/2020** | SeqNo: **2290689** Units: **%Rec** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 4-Bromofluorobenzene | 0.86 | | 1.000 | | 85.6 | 80 | 120 | | | |

| Sample ID: **100ng btex lcs** | SampType: **LCS** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **B66649** | RunNo: **66649** |
| Prep Date: | Analysis Date: **2/19/2020** | SeqNo: **2290690** Units: **%Rec** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 4-Bromofluorobenzene | 0.92 | | 1.000 | | 92.4 | 80 | 120 | | | |

| Sample ID: **mb-50488** | SampType: **MBLK** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **50488** | RunNo: **66649** |
| Prep Date: **2/17/2020** | Analysis Date: **2/19/2020** | SeqNo: **2290693** 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 | | | | | | | | |
| Xylenes, Total | ND | 0.10 | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 0.90 | | 1.000 | | 89.9 | 80 | 120 | | | |

| Sample ID: **LCS-50488** | SampType: **LCS** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **50488** | RunNo: **66649** |
| Prep Date: **2/17/2020** | Analysis Date: **2/19/2020** | SeqNo: **2290694** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.95 | 0.025 | 1.000 | 0 | 95.1 | 80 | 120 | | | |
| Toluene | 0.99 | 0.050 | 1.000 | 0 | 98.7 | 80 | 120 | | | |
| Ethylbenzene | 1.0 | 0.050 | 1.000 | 0 | 99.8 | 80 | 120 | | | |
| Xylenes, Total | 3.0 | 0.10 | 3.000 | 0 | 101 | 80 | 120 | | | |
| Surr: 4-Bromofluorobenzene | 0.97 | | 1.000 | | 96.7 | 80 | 120 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2002627**

***21-Feb-20***

**Client:** Marathon Oil Company
**Project:** HF 7 Fed Com 1

Sample ID: **2002627-017ams** SampType: **MS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **HF7-1 SP17-10'** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290897** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.99 | 0.025 | 0.9823 | 0 | 101 | 70 | 130 | | | H |
| Toluene | 0.96 | 0.049 | 0.9823 | 0 | 98.0 | 70 | 130 | | | H |
| Ethylbenzene | 0.98 | 0.049 | 0.9823 | 0 | 99.9 | 70 | 130 | | | H |
| Xylenes, Total | 2.9 | 0.098 | 2.947 | 0 | 99.7 | 70 | 130 | | | H |
| Surr: 1,2-Dichloroethane-d4 | 0.48 | | 0.4912 | | 97.4 | 70 | 130 | | | H |
| Surr: 4-Bromofluorobenzene | 0.47 | | 0.4912 | | 95.7 | 70 | 130 | | | H |
| Surr: Dibromofluoromethane | 0.46 | | 0.4912 | | 93.1 | 70 | 130 | | | H |
| Surr: Toluene-d8 | 0.48 | | 0.4912 | | 98.2 | 70 | 130 | | | H |

Sample ID: **2002627-017amsd** SampType: **MSD** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **HF7-1 SP17-10'** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290898** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.94 | 0.023 | 0.9381 | 0 | 99.7 | 70 | 130 | 5.63 | 20 | H |
| Toluene | 0.93 | 0.047 | 0.9381 | 0 | 98.9 | 70 | 130 | 3.74 | 20 | H |
| Ethylbenzene | 0.94 | 0.047 | 0.9381 | 0 | 100 | 70 | 130 | 4.19 | 0 | H |
| Xylenes, Total | 2.8 | 0.094 | 2.814 | 0 | 100 | 70 | 130 | 4.12 | 0 | H |
| Surr: 1,2-Dichloroethane-d4 | 0.45 | | 0.4690 | | 95.9 | 70 | 130 | 0 | 0 | H |
| Surr: 4-Bromofluorobenzene | 0.45 | | 0.4690 | | 96.7 | 70 | 130 | 0 | 0 | H |
| Surr: Dibromofluoromethane | 0.44 | | 0.4690 | | 94.2 | 70 | 130 | 0 | 0 | H |
| Surr: Toluene-d8 | 0.46 | | 0.4690 | | 99.1 | 70 | 130 | 0 | 0 | H |

Sample ID: **lcs-50494** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290917** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 1.0 | 0.025 | 1.000 | 0 | 100 | 70 | 130 | | | |
| Toluene | 0.98 | 0.050 | 1.000 | 0 | 98.5 | 70 | 130 | | | |
| Ethylbenzene | 0.99 | 0.050 | 1.000 | 0 | 98.7 | 70 | 130 | | | |
| Xylenes, Total | 2.9 | 0.10 | 3.000 | 0 | 97.2 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 0.46 | | 0.5000 | | 92.8 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.48 | | 0.5000 | | 96.4 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.46 | | 0.5000 | | 92.2 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.5000 | | 99.9 | 70 | 130 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2002627**

***21-Feb-20***

**Client:** Marathon Oil Company
**Project:** HF 7 Fed Com 1

Sample ID: **mb-50494** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290918** 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 | | | | | | | | |
| Xylenes, Total | ND | 0.10 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 0.47 | | 0.5000 | | 94.9 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.50 | | 0.5000 | | 99.2 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.48 | | 0.5000 | | 96.2 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.5000 | | 101 | 70 | 130 | | | |

Sample ID: **lcs-50546** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292072** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 1,2-Dichloroethane-d4 | 0.46 | | 0.5000 | | 92.0 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.46 | | 0.5000 | | 92.7 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.47 | | 0.5000 | | 94.7 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.5000 | | 99.6 | 70 | 130 | | | |

Sample ID: **mb-50546** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292073** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 1,2-Dichloroethane-d4 | 0.48 | | 0.5000 | | 95.4 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.47 | | 0.5000 | | 94.5 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.47 | | 0.5000 | | 94.2 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.5000 | | 99.9 | 70 | 130 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2002627**

***21-Feb-20***

**Client:** Marathon Oil Company
**Project:** HF 7 Fed Com 1

Sample ID: **2002627-016ams** SampType: **MS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **HF7-1 SP16-12'** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290925** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 22 | 4.9 | 24.68 | 0 | 90.3 | 70 | 130 | | | H |
| Surr: BFB | 450 | | 493.6 | | 90.7 | 70 | 130 | | | H |

Sample ID: **2002627-016amsd** SampType: **MSD** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **HF7-1 SP16-12'** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290926** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 22 | 4.9 | 24.73 | 0 | 88.6 | 70 | 130 | 1.68 | 20 | H |
| Surr: BFB | 470 | | 494.6 | | 94.3 | 70 | 130 | 0 | 0 | H |

Sample ID: **lcs-50494** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290946** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 23 | 5.0 | 25.00 | 0 | 90.2 | 70 | 130 | | | |
| Surr: BFB | 460 | | 500.0 | | 91.3 | 70 | 130 | | | |

Sample ID: **mb-50494** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290947** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | ND | 5.0 | | | | | | | | |
| Surr: BFB | 480 | | 500.0 | | 95.5 | 70 | 130 | | | |

Sample ID: **lcs-50546** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292078** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: BFB | 470 | | 500.0 | | 94.4 | 70 | 130 | | | |

Sample ID: **mb-50546** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292079** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: BFB | 460 | | 500.0 | | 92.5 | 70 | 130 | | | |

**Qualifiers:**

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

# Sample Log-In Check List

Client Name: **MARATHON OIL COMPA** Work Order Number: **2002627** RcptNo: **1**

Received By: **Erin Melendrez** **2/15/2020 12:35:00 PM**

Completed By: **Erin Melendrez** **2/15/2020 2:56:45 PM**

Reviewed By: ENM 2/17/20

## Chain of Custody

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

## Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: JR 2/17/20

## 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 | | | | |

# Chain-of-Custody Record

Client: Marathon (Wescom)

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: HF 7 Fed Com 1

Project #:

Project Manager: Shar Harveston

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.9 +0.2(CF) = 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 Name | Container Type and # | Preservative Type | HEAL No. 2002627 | 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 | F, Br, $NO_3$, $NO_2$, $PO_4$, $SO_4$ | 8260 (VOA) | 8270 (Semi-VOA) | Total Coliform (Present/Absent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/18/20 | | soil | HF7-1 SP-1 8' | | | -001 | X | X | | | | | X | | | |
| | | | SP-2 8' | | | -002 | | | | | | | | | | |
| | | | SP-3 8' | | | -003 | | | | | | | | | | |
| | | | SP4-12' | | | -004 | | | | | | | | | | |
| | | | SP5-12' | | | -005 | | | | | | | | | | |
| ↓ | | | SP6-12' | | | -006 | | | | | | | | | | |
| 1/17/20 | | | SP7-12' | | | -007 | | | | | | | | | | |
| | | | SP8-12' | | | -008 | | | | | | | | | | |
| | | | SP9-14' | | | -009 | | | | | | | | | | |
| | | | SP10-12' | | | -010 | | | | | | | | | | |
| ENM 2/7/20 | | | SP11-12' | | | -011 | | | | | | | | | | |
| ~~ENM 2/6/20~~ | | ↓ 1/16/20 | SP12-12' | | | -012 | | | | | | | ↓ | | | |

| Date: | Time: | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| 2/14/20 | 1630 | Shelly Tucker | | | 2/14/20 | 1630 |
| 2/14/20 | 1900 | | | Courier | 2/15/20 | 1235 |

Remarks:
Run out of hold samples
Per Shelly Tucker

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.

# Chain-of-Custody Record

Client: Marathon (Wescom)

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: HF7 Fed Com 1

Project #:

Project Manager: Shai Hanvestan

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.9+0.2(CF)=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 Name | Container Type and # | Preservative Type | HEAL No. 2007627 | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/16/20 | | soil | HF7-1 SP13-12' | 4oz 1 | ice | -013 | X | X | | | | | | | | |
| | | | SP14-12' | | | -014 | | | | | | | | | | |
| | | | SP15-12' | | | -015 | | | | | | | | | | |
| | | | SP16-12' | | | -016 | | | | | | | | | | |
| | | | SP17-10' | | | -017 | | | | | | | | | | |
| | | | SP 18-10' | | | -018 | | | | | | | | | | |
| 1/18/20 | | | SP 19-8' | | | -019 | | | | | | | | | | |
| | | | SP 20-6' | | | -020 | | | | | | | | | | |
| | | | SP 21-6' | | | -021 | | | | | | | | | | |
| | | | SP 22 wall | | | -022 | | | | | | | | | | |
| 1/19/20 | | | SP 23 wall | | | -023 | | | | | | | | | | |
| | | | SP 24 wall | | | -024 | | | | | | | | | | |

| Date | Time | Relinquished by | Received by | Via | Date | Time |
|---|---|---|---|---|---|---|
| 2/14/20 | 1630 | Shelly Tucker | | | 2/14/20 | 1630 |
| 2/14/20 | 1900 | | | Courier | 2/15/20 | 1235 |

Remarks:
run out of hold samples
Per Shelly Tucker

# Chain-of-Custody Record

Client: Marathon (Wescom)

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: HF7-Fed 1

Project #:

Project Manager: Shar Harvester

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.9+0.2(CF)=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 Name | Container Type and # | Preservative Type | HEAL No. 2002627 | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/9/20 | | soil | HF7-1 SP25 wall | 4oz gl | ice | -025 | X | X | | | | | X | | | |
| | | | SP26 wall | | | -026 | | | | | | | | | | |
| | | | SP27 wall | | | -027 | | | | | | | | | | |
| | | | SP28 wall | | | -028 | | | | | | | | | | |
| | | | SP29 wall | | | -029 | | | | | | | | | | |
| | | | SP30 wall | | | -030 | | | | | | | | | | |
| | | | SP31 wall | | | -031 | | | | | | | | | | |

| Date: | Time: | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| | | Shelly Tucker | | | | |
| Date: | Time: | Relinquished by: | Received by: | Via: Courier | Date 2/15/20 | Time 1235 |

Remarks: run out of hold samples per Shelly Tucker

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: www.hallenvironmental.com*

February 21, 2020

Shar Harvester
Marathon Oil Company
4111 Tidwell Road
Carlsbad, NM 88220
TEL: (575) 297-0956
FAX

RE: HF7 Fed Com 1 OrderNo.: 2002628

Dear Shar Harvester:

Hall Environmental Analysis Laboratory received 14 sample(s) on 2/15/2020 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 **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** E-WS-Comp
**Project:** HF7 Fed Com 1
**Collection Date:** 1/17/2020 3:00:00 PM
**Lab ID:** 2002628-001 **Matrix:** SOIL
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | 2900 | 100 | H | mg/Kg-dr | 10 | 2/20/2020 10:20:30 AM |
| Motor Oil Range Organics (MRO) | 1200 | 520 | H | mg/Kg-dr | 10 | 2/20/2020 10:20:30 AM |
| Surr: DNOP | 0 | 55.1-146 | SH | %Rec | 10 | 2/20/2020 10:20:30 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 1200 | 67 | H | mg/Kg-dr | 20 | 2/19/2020 3:07:05 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.13 | HD | mg/Kg-dr | 5 | 2/20/2020 1:55:16 PM |
| Toluene | ND | 0.26 | HD | mg/Kg-dr | 5 | 2/20/2020 1:55:16 PM |
| Ethylbenzene | ND | 0.26 | HD | mg/Kg-dr | 5 | 2/20/2020 1:55:16 PM |
| Xylenes, Total | ND | 0.53 | HD | mg/Kg-dr | 5 | 2/20/2020 1:55:16 PM |
| Surr: 1,2-Dichloroethane-d4 | 97.0 | 70-130 | HD | %Rec | 5 | 2/20/2020 1:55:16 PM |
| Surr: 4-Bromofluorobenzene | 54.7 | 70-130 | SHD | %Rec | 5 | 2/20/2020 1:55:16 PM |
| Surr: Dibromofluoromethane | 95.5 | 70-130 | HD | %Rec | 5 | 2/20/2020 1:55:16 PM |
| Surr: Toluene-d8 | 100 | 70-130 | HD | %Rec | 5 | 2/20/2020 1:55:16 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | 150 | 5.3 | H | mg/Kg-dr | 1 | 2/20/2020 3:55:37 AM |
| Surr: BFB | 99.0 | 70-130 | H | %Rec | 1 | 2/20/2020 3:55:37 AM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 11 | 1.0 | H | wt% | 1 | 2/19/2020 |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** FS-Comp-4/5'
**Project:** HF7 Fed Com 1
**Collection Date:** 1/18/2020 3:15:00 PM
**Lab ID:** 2002628-002 **Matrix:** SOIL
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 10 | H | mg/Kg-dr | 1 | 2/20/2020 10:29:35 AM |
| Motor Oil Range Organics (MRO) | ND | 51 | H | mg/Kg-dr | 1 | 2/20/2020 10:29:35 AM |
| Surr: DNOP | 85.2 | 55.1-146 | H | %Rec | 1 | 2/20/2020 10:29:35 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 460 | 69 | H | mg/Kg-dr | 20 | 2/19/2020 3:44:08 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.027 | H | mg/Kg-dr | 1 | 2/20/2020 4:46:12 PM |
| Toluene | ND | 0.054 | H | mg/Kg-dr | 1 | 2/20/2020 4:46:12 PM |
| Ethylbenzene | ND | 0.054 | H | mg/Kg-dr | 1 | 2/20/2020 4:46:12 PM |
| Xylenes, Total | ND | 0.11 | H | mg/Kg-dr | 1 | 2/20/2020 4:46:12 PM |
| Surr: 1,2-Dichloroethane-d4 | 96.3 | 70-130 | H | %Rec | 1 | 2/20/2020 4:46:12 PM |
| Surr: 4-Bromofluorobenzene | 96.7 | 70-130 | H | %Rec | 1 | 2/20/2020 4:46:12 PM |
| Surr: Dibromofluoromethane | 96.3 | 70-130 | H | %Rec | 1 | 2/20/2020 4:46:12 PM |
| Surr: Toluene-d8 | 97.7 | 70-130 | H | %Rec | 1 | 2/20/2020 4:46:12 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 5.4 | H | mg/Kg-dr | 1 | 2/20/2020 4:23:59 AM |
| Surr: BFB | 93.5 | 70-130 | H | %Rec | 1 | 2/20/2020 4:23:59 AM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 13 | 1.0 | H | wt% | 1 | 2/19/2020 |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** S-WS-Comp
**Project:** HF7 Fed Com 1
**Collection Date:** 1/17/2020 6:00:00 PM
**Lab ID:** 2002628-003 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 11 | H | mg/Kg-dr | 1 | 2/20/2020 10:38:39 AM |
| Motor Oil Range Organics (MRO) | ND | 55 | H | mg/Kg-dr | 1 | 2/20/2020 10:38:39 AM |
| Surr: DNOP | 85.8 | 55.1-146 | H | %Rec | 1 | 2/20/2020 10:38:39 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 400 | 73 | H | mg/Kg-dr | 20 | 2/19/2020 4:21:11 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.030 | H | mg/Kg-dr | 1 | 2/20/2020 5:14:43 PM |
| Toluene | ND | 0.060 | H | mg/Kg-dr | 1 | 2/20/2020 5:14:43 PM |
| Ethylbenzene | ND | 0.060 | H | mg/Kg-dr | 1 | 2/20/2020 5:14:43 PM |
| Xylenes, Total | ND | 0.12 | H | mg/Kg-dr | 1 | 2/20/2020 5:14:43 PM |
| Surr: 1,2-Dichloroethane-d4 | 86.8 | 70-130 | H | %Rec | 1 | 2/20/2020 5:14:43 PM |
| Surr: 4-Bromofluorobenzene | 95.6 | 70-130 | H | %Rec | 1 | 2/20/2020 5:14:43 PM |
| Surr: Dibromofluoromethane | 92.6 | 70-130 | H | %Rec | 1 | 2/20/2020 5:14:43 PM |
| Surr: Toluene-d8 | 100 | 70-130 | H | %Rec | 1 | 2/20/2020 5:14:43 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 6.0 | H | mg/Kg-dr | 1 | 2/20/2020 4:52:25 AM |
| Surr: BFB | 91.9 | 70-130 | H | %Rec | 1 | 2/20/2020 4:52:25 AM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 17 | 1.0 | H | wt% | 1 | 2/19/2020 |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** FS-Comp-4'
**Project:** HF7 Fed Com 1
**Collection Date:** 1/18/2020 6:00:00 PM
**Lab ID:** 2002628-004 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.9 | H | mg/Kg-dr | 1 | 2/20/2020 10:47:47 AM |
| Motor Oil Range Organics (MRO) | ND | 50 | H | mg/Kg-dr | 1 | 2/20/2020 10:47:47 AM |
| Surr: DNOP | 91.2 | 55.1-146 | H | %Rec | 1 | 2/20/2020 10:47:47 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 210 | 79 | H | mg/Kg-dr | 20 | 2/19/2020 4:33:31 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.031 | H | mg/Kg-dr | 1 | 2/20/2020 5:43:20 PM |
| Toluene | ND | 0.061 | H | mg/Kg-dr | 1 | 2/20/2020 5:43:20 PM |
| Ethylbenzene | ND | 0.061 | H | mg/Kg-dr | 1 | 2/20/2020 5:43:20 PM |
| Xylenes, Total | ND | 0.12 | H | mg/Kg-dr | 1 | 2/20/2020 5:43:20 PM |
| Surr: 1,2-Dichloroethane-d4 | 90.2 | 70-130 | H | %Rec | 1 | 2/20/2020 5:43:20 PM |
| Surr: 4-Bromofluorobenzene | 93.7 | 70-130 | H | %Rec | 1 | 2/20/2020 5:43:20 PM |
| Surr: Dibromofluoromethane | 95.6 | 70-130 | H | %Rec | 1 | 2/20/2020 5:43:20 PM |
| Surr: Toluene-d8 | 100 | 70-130 | H | %Rec | 1 | 2/20/2020 5:43:20 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 6.1 | H | mg/Kg-dr | 1 | 2/20/2020 5:20:48 AM |
| Surr: BFB | 91.4 | 70-130 | H | %Rec | 1 | 2/20/2020 5:20:48 AM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 24 | 1.0 | H | wt% | 1 | 2/19/2020 |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** W-WS-Comp
**Project:** HF7 Fed Com 1
**Collection Date:** 1/18/2020 4:30:00 PM
**Lab ID:** 2002628-005 **Matrix:** SOIL
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | 39 | 10 | H | mg/Kg-dr | 1 | 2/20/2020 10:56:53 AM |
| Motor Oil Range Organics (MRO) | ND | 50 | H | mg/Kg-dr | 1 | 2/20/2020 10:56:53 AM |
| Surr: DNOP | 107 | 55.1-146 | H | %Rec | 1 | 2/20/2020 10:56:53 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 1200 | 67 | H | mg/Kg-dr | 20 | 2/19/2020 4:45:52 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.026 | H | mg/Kg-dr | 1 | 2/20/2020 7:36:55 PM |
| Toluene | ND | 0.052 | H | mg/Kg-dr | 1 | 2/20/2020 7:36:55 PM |
| Ethylbenzene | ND | 0.052 | H | mg/Kg-dr | 1 | 2/20/2020 7:36:55 PM |
| Xylenes, Total | ND | 0.10 | H | mg/Kg-dr | 1 | 2/20/2020 7:36:55 PM |
| Surr: 1,2-Dichloroethane-d4 | 89.2 | 70-130 | H | %Rec | 1 | 2/20/2020 7:36:55 PM |
| Surr: 4-Bromofluorobenzene | 93.0 | 70-130 | H | %Rec | 1 | 2/20/2020 7:36:55 PM |
| Surr: Dibromofluoromethane | 96.8 | 70-130 | H | %Rec | 1 | 2/20/2020 7:36:55 PM |
| Surr: Toluene-d8 | 99.7 | 70-130 | H | %Rec | 1 | 2/20/2020 7:36:55 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 5.2 | H | mg/Kg-dr | 1 | 2/20/2020 7:36:55 PM |
| Surr: BFB | 93.5 | 70-130 | H | %Rec | 1 | 2/20/2020 7:36:55 PM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 10 | 1.0 | H | wt% | 1 | 2/19/2020 |

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 **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** W-WS-Comp
**Project:** HF7 Fed Com 1
**Collection Date:** 1/18/2020 4:00:00 PM
**Lab ID:** 2002628-006 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 11 | H | mg/Kg-dr | 1 | 2/20/2020 11:05:58 AM |
| Motor Oil Range Organics (MRO) | ND | 53 | H | mg/Kg-dr | 1 | 2/20/2020 11:05:58 AM |
| Surr: DNOP | 87.7 | 55.1-146 | H | %Rec | 1 | 2/20/2020 11:05:58 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 270 | 76 | H | mg/Kg-dr | 20 | 2/19/2020 4:58:12 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.032 | H | mg/Kg-dr | 1 | 2/20/2020 9:02:19 PM |
| Toluene | ND | 0.063 | H | mg/Kg-dr | 1 | 2/20/2020 9:02:19 PM |
| Ethylbenzene | ND | 0.063 | H | mg/Kg-dr | 1 | 2/20/2020 9:02:19 PM |
| Xylenes, Total | ND | 0.13 | H | mg/Kg-dr | 1 | 2/20/2020 9:02:19 PM |
| Surr: 1,2-Dichloroethane-d4 | 90.3 | 70-130 | H | %Rec | 1 | 2/20/2020 9:02:19 PM |
| Surr: 4-Bromofluorobenzene | 94.6 | 70-130 | H | %Rec | 1 | 2/20/2020 9:02:19 PM |
| Surr: Dibromofluoromethane | 96.4 | 70-130 | H | %Rec | 1 | 2/20/2020 9:02:19 PM |
| Surr: Toluene-d8 | 101 | 70-130 | H | %Rec | 1 | 2/20/2020 9:02:19 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 6.3 | H | mg/Kg-dr | 1 | 2/20/2020 9:02:19 PM |
| Surr: BFB | 93.6 | 70-130 | H | %Rec | 1 | 2/20/2020 9:02:19 PM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 21 | 1.0 | H | wt% | 1 | 2/19/2020 |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** S-WS-Comp
**Project:** HF7 Fed Com 1
**Collection Date:** 1/18/2020 6:30:00 PM
**Lab ID:** 2002628-007 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 12 | H | mg/Kg-dr | 1 | 2/20/2020 12:06:49 PM |
| Motor Oil Range Organics (MRO) | ND | 60 | H | mg/Kg-dr | 1 | 2/20/2020 12:06:49 PM |
| Surr: DNOP | 89.9 | 55.1-146 | H | %Rec | 1 | 2/20/2020 12:06:49 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 2100 | 77 | H | mg/Kg-dr | 20 | 2/19/2020 5:10:33 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.030 | H | mg/Kg-dr | 1 | 2/20/2020 9:30:43 PM |
| Toluene | ND | 0.060 | H | mg/Kg-dr | 1 | 2/20/2020 9:30:43 PM |
| Ethylbenzene | ND | 0.060 | H | mg/Kg-dr | 1 | 2/20/2020 9:30:43 PM |
| Xylenes, Total | ND | 0.12 | H | mg/Kg-dr | 1 | 2/20/2020 9:30:43 PM |
| Surr: 1,2-Dichloroethane-d4 | 90.6 | 70-130 | H | %Rec | 1 | 2/20/2020 9:30:43 PM |
| Surr: 4-Bromofluorobenzene | 97.6 | 70-130 | H | %Rec | 1 | 2/20/2020 9:30:43 PM |
| Surr: Dibromofluoromethane | 94.0 | 70-130 | H | %Rec | 1 | 2/20/2020 9:30:43 PM |
| Surr: Toluene-d8 | 101 | 70-130 | H | %Rec | 1 | 2/20/2020 9:30:43 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 6.0 | H | mg/Kg-dr | 1 | 2/20/2020 9:30:43 PM |
| Surr: BFB | 93.9 | 70-130 | H | %Rec | 1 | 2/20/2020 9:30:43 PM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 22 | 1.0 | H | wt% | 1 | 2/19/2020 |

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 **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** N-WS-Comp
**Project:** HF7 Fed Com 1
**Collection Date:** 1/19/2020 3:30:00 PM
**Lab ID:** 2002628-008 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 10 | H | mg/Kg-dr | 1 | 2/20/2020 12:15:48 PM |
| Motor Oil Range Organics (MRO) | ND | 50 | H | mg/Kg-dr | 1 | 2/20/2020 12:15:48 PM |
| Surr: DNOP | 73.3 | 55.1-146 | H | %Rec | 1 | 2/20/2020 12:15:48 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 500 | 76 | H | mg/Kg-dr | 20 | 2/19/2020 5:22:54 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.031 | H | mg/Kg-dr | 1 | 2/21/2020 12:20:46 AM |
| Toluene | ND | 0.062 | H | mg/Kg-dr | 1 | 2/21/2020 12:20:46 AM |
| Ethylbenzene | ND | 0.062 | H | mg/Kg-dr | 1 | 2/21/2020 12:20:46 AM |
| Xylenes, Total | ND | 0.12 | H | mg/Kg-dr | 1 | 2/21/2020 12:20:46 AM |
| Surr: 1,2-Dichloroethane-d4 | 88.8 | 70-130 | H | %Rec | 1 | 2/21/2020 12:20:46 AM |
| Surr: 4-Bromofluorobenzene | 94.9 | 70-130 | H | %Rec | 1 | 2/21/2020 12:20:46 AM |
| Surr: Dibromofluoromethane | 95.0 | 70-130 | H | %Rec | 1 | 2/21/2020 12:20:46 AM |
| Surr: Toluene-d8 | 101 | 70-130 | H | %Rec | 1 | 2/21/2020 12:20:46 AM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 6.2 | H | mg/Kg-dr | 1 | 2/21/2020 12:20:46 AM |
| Surr: BFB | 92.8 | 70-130 | H | %Rec | 1 | 2/21/2020 12:20:46 AM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 21 | 1.0 | H | wt% | 1 | 2/19/2020 |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** FS-Comp-17'
**Project:** HF7 Fed Com 1
**Collection Date:** 1/19/2020 6:00:00 PM
**Lab ID:** 2002628-009 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 11 | H | mg/Kg-dr | 1 | 2/20/2020 12:24:50 PM |
| Motor Oil Range Organics (MRO) | ND | 54 | H | mg/Kg-dr | 1 | 2/20/2020 12:24:50 PM |
| Surr: DNOP | 90.1 | 55.1-146 | H | %Rec | 1 | 2/20/2020 12:24:50 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 830 | 67 | H | mg/Kg-dr | 20 | 2/19/2020 5:35:14 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.028 | H | mg/Kg-dr | 1 | 2/21/2020 12:49:02 AM |
| Toluene | ND | 0.056 | H | mg/Kg-dr | 1 | 2/21/2020 12:49:02 AM |
| Ethylbenzene | ND | 0.056 | H | mg/Kg-dr | 1 | 2/21/2020 12:49:02 AM |
| Xylenes, Total | ND | 0.11 | H | mg/Kg-dr | 1 | 2/21/2020 12:49:02 AM |
| Surr: 1,2-Dichloroethane-d4 | 91.4 | 70-130 | H | %Rec | 1 | 2/21/2020 12:49:02 AM |
| Surr: 4-Bromofluorobenzene | 96.9 | 70-130 | H | %Rec | 1 | 2/21/2020 12:49:02 AM |
| Surr: Dibromofluoromethane | 92.7 | 70-130 | H | %Rec | 1 | 2/21/2020 12:49:02 AM |
| Surr: Toluene-d8 | 100 | 70-130 | H | %Rec | 1 | 2/21/2020 12:49:02 AM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 5.6 | H | mg/Kg-dr | 1 | 2/21/2020 12:49:02 AM |
| Surr: BFB | 93.5 | 70-130 | H | %Rec | 1 | 2/21/2020 12:49:02 AM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 11 | 1.0 | H | wt% | 1 | 2/19/2020 |

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 **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** W-WS-Comp
**Project:** HF7 Fed Com 1
**Collection Date:** 1/19/2020 6:30:00 PM
**Lab ID:** 2002628-010 **Matrix:** SOIL
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.4 | H | mg/Kg-dr | 1 | 2/20/2020 12:33:53 PM |
| Motor Oil Range Organics (MRO) | ND | 47 | H | mg/Kg-dr | 1 | 2/20/2020 12:33:53 PM |
| Surr: DNOP | 114 | 55.1-146 | H | %Rec | 1 | 2/20/2020 12:33:53 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 400 | 65 | H | mg/Kg-dr | 20 | 2/19/2020 5:47:35 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.027 | H | mg/Kg-dr | 1 | 2/21/2020 1:17:18 AM |
| Toluene | ND | 0.054 | H | mg/Kg-dr | 1 | 2/21/2020 1:17:18 AM |
| Ethylbenzene | ND | 0.054 | H | mg/Kg-dr | 1 | 2/21/2020 1:17:18 AM |
| Xylenes, Total | ND | 0.11 | H | mg/Kg-dr | 1 | 2/21/2020 1:17:18 AM |
| Surr: 1,2-Dichloroethane-d4 | 91.2 | 70-130 | H | %Rec | 1 | 2/21/2020 1:17:18 AM |
| Surr: 4-Bromofluorobenzene | 95.2 | 70-130 | H | %Rec | 1 | 2/21/2020 1:17:18 AM |
| Surr: Dibromofluoromethane | 93.7 | 70-130 | H | %Rec | 1 | 2/21/2020 1:17:18 AM |
| Surr: Toluene-d8 | 99.7 | 70-130 | H | %Rec | 1 | 2/21/2020 1:17:18 AM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 5.4 | H | mg/Kg-dr | 1 | 2/21/2020 1:17:18 AM |
| Surr: BFB | 90.0 | 70-130 | H | %Rec | 1 | 2/21/2020 1:17:18 AM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 7.6 | 1.0 | H | wt% | 1 | 2/19/2020 |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** E-WS-Comp
**Project:** HF7 Fed Com 1
**Collection Date:** 1/19/2020 6:35:00 PM
**Lab ID:** 2002628-011 **Matrix:** SOIL
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | 18 | 13 | H | mg/Kg-dr | 1 | 2/20/2020 12:42:58 PM |
| Motor Oil Range Organics (MRO) | ND | 63 | H | mg/Kg-dr | 1 | 2/20/2020 12:42:58 PM |
| Surr: DNOP | 80.8 | 55.1-146 | H | %Rec | 1 | 2/20/2020 12:42:58 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 540 | 80 | H | mg/Kg-dr | 20 | 2/19/2020 5:59:55 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.032 | H | mg/Kg-dr | 1 | 2/21/2020 1:45:33 AM |
| Toluene | ND | 0.065 | H | mg/Kg-dr | 1 | 2/21/2020 1:45:33 AM |
| Ethylbenzene | ND | 0.065 | H | mg/Kg-dr | 1 | 2/21/2020 1:45:33 AM |
| Xylenes, Total | ND | 0.13 | H | mg/Kg-dr | 1 | 2/21/2020 1:45:33 AM |
| Surr: 1,2-Dichloroethane-d4 | 92.5 | 70-130 | H | %Rec | 1 | 2/21/2020 1:45:33 AM |
| Surr: 4-Bromofluorobenzene | 92.8 | 70-130 | H | %Rec | 1 | 2/21/2020 1:45:33 AM |
| Surr: Dibromofluoromethane | 93.8 | 70-130 | H | %Rec | 1 | 2/21/2020 1:45:33 AM |
| Surr: Toluene-d8 | 97.7 | 70-130 | H | %Rec | 1 | 2/21/2020 1:45:33 AM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 6.5 | H | mg/Kg-dr | 1 | 2/21/2020 1:45:33 AM |
| Surr: BFB | 88.4 | 70-130 | H | %Rec | 1 | 2/21/2020 1:45:33 AM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 24 | 1.0 | H | wt% | 1 | 2/19/2020 |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** NE-WS-Comp
**Project:** HF7 Fed Com 1
**Collection Date:** 1/19/2020 6:40:00 PM
**Lab ID:** 2002628-012 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 9.2 | H | mg/Kg-dr | 1 | 2/20/2020 12:52:04 PM |
| Motor Oil Range Organics (MRO) | ND | 46 | H | mg/Kg-dr | 1 | 2/20/2020 12:52:04 PM |
| Surr: DNOP | 86.0 | 55.1-146 | H | %Rec | 1 | 2/20/2020 12:52:04 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 310 | 74 | H | mg/Kg-dr | 20 | 2/19/2020 6:12:16 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.029 | H | mg/Kg-dr | 1 | 2/21/2020 2:13:48 AM |
| Toluene | ND | 0.057 | H | mg/Kg-dr | 1 | 2/21/2020 2:13:48 AM |
| Ethylbenzene | ND | 0.057 | H | mg/Kg-dr | 1 | 2/21/2020 2:13:48 AM |
| Xylenes, Total | ND | 0.11 | H | mg/Kg-dr | 1 | 2/21/2020 2:13:48 AM |
| Surr: 1,2-Dichloroethane-d4 | 90.0 | 70-130 | H | %Rec | 1 | 2/21/2020 2:13:48 AM |
| Surr: 4-Bromofluorobenzene | 96.2 | 70-130 | H | %Rec | 1 | 2/21/2020 2:13:48 AM |
| Surr: Dibromofluoromethane | 92.5 | 70-130 | H | %Rec | 1 | 2/21/2020 2:13:48 AM |
| Surr: Toluene-d8 | 99.4 | 70-130 | H | %Rec | 1 | 2/21/2020 2:13:48 AM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 5.7 | H | mg/Kg-dr | 1 | 2/21/2020 2:13:48 AM |
| Surr: BFB | 91.2 | 70-130 | H | %Rec | 1 | 2/21/2020 2:13:48 AM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 19 | 1.0 | H | wt% | 1 | 2/19/2020 |

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 **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Project:** HF7 Fed Com 1
**Lab ID:** 2002628-013 **Matrix:** SOIL

**Client Sample ID:** NE-FS-Comp-7'
**Collection Date:** 1/19/2020 6:40:00 PM
**Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 11 | H | mg/Kg-dr | 1 | 2/20/2020 1:01:10 PM |
| Motor Oil Range Organics (MRO) | ND | 53 | H | mg/Kg-dr | 1 | 2/20/2020 1:01:10 PM |
| Surr: DNOP | 85.9 | 55.1-146 | H | %Rec | 1 | 2/20/2020 1:01:10 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 750 | 66 | H | mg/Kg-dr | 20 | 2/19/2020 6:49:20 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.027 | H | mg/Kg-dr | 1 | 2/21/2020 2:42:05 AM |
| Toluene | ND | 0.054 | H | mg/Kg-dr | 1 | 2/21/2020 2:42:05 AM |
| Ethylbenzene | ND | 0.054 | H | mg/Kg-dr | 1 | 2/21/2020 2:42:05 AM |
| Xylenes, Total | ND | 0.11 | H | mg/Kg-dr | 1 | 2/21/2020 2:42:05 AM |
| Surr: 1,2-Dichloroethane-d4 | 89.7 | 70-130 | H | %Rec | 1 | 2/21/2020 2:42:05 AM |
| Surr: 4-Bromofluorobenzene | 95.0 | 70-130 | H | %Rec | 1 | 2/21/2020 2:42:05 AM |
| Surr: Dibromofluoromethane | 92.4 | 70-130 | H | %Rec | 1 | 2/21/2020 2:42:05 AM |
| Surr: Toluene-d8 | 98.5 | 70-130 | H | %Rec | 1 | 2/21/2020 2:42:05 AM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 5.4 | H | mg/Kg-dr | 1 | 2/21/2020 2:42:05 AM |
| Surr: BFB | 90.7 | 70-130 | H | %Rec | 1 | 2/21/2020 2:42:05 AM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 8.4 | 1.0 | H | wt% | 1 | 2/19/2020 |

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

**Qualifiers:**

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

**Analytical Report**
Lab Order **2002628**
Date Reported: **2/21/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Marathon Oil Company
**Client Sample ID:** NW-FS-Comp-7'
**Project:** HF7 Fed Com 1
**Collection Date:** 1/19/2020 6:45:00 PM
**Lab ID:** 2002628-014 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **CLP** |
| Diesel Range Organics (DRO) | ND | 10 | H | mg/Kg-dr | 1 | 2/20/2020 1:10:18 PM |
| Motor Oil Range Organics (MRO) | ND | 52 | H | mg/Kg-dr | 1 | 2/20/2020 1:10:18 PM |
| Surr: DNOP | 70.3 | 55.1-146 | H | %Rec | 1 | 2/20/2020 1:10:18 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** |
| Chloride | 830 | 67 | H | mg/Kg-dr | 20 | 2/19/2020 7:01:42 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.027 | H | mg/Kg-dr | 1 | 2/21/2020 3:10:17 AM |
| Toluene | ND | 0.054 | H | mg/Kg-dr | 1 | 2/21/2020 3:10:17 AM |
| Ethylbenzene | ND | 0.054 | H | mg/Kg-dr | 1 | 2/21/2020 3:10:17 AM |
| Xylenes, Total | ND | 0.11 | H | mg/Kg-dr | 1 | 2/21/2020 3:10:17 AM |
| Surr: 1,2-Dichloroethane-d4 | 86.6 | 70-130 | H | %Rec | 1 | 2/21/2020 3:10:17 AM |
| Surr: 4-Bromofluorobenzene | 94.3 | 70-130 | H | %Rec | 1 | 2/21/2020 3:10:17 AM |
| Surr: Dibromofluoromethane | 93.0 | 70-130 | H | %Rec | 1 | 2/21/2020 3:10:17 AM |
| Surr: Toluene-d8 | 98.1 | 70-130 | H | %Rec | 1 | 2/21/2020 3:10:17 AM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 5.4 | H | mg/Kg-dr | 1 | 2/21/2020 3:10:17 AM |
| Surr: BFB | 88.4 | 70-130 | H | %Rec | 1 | 2/21/2020 3:10:17 AM |
| **PERCENT MOISTURE** | | | | | | Analyst: **JMR** |
| Percent Moisture | 9.9 | 1.0 | H | wt% | 1 | 2/19/2020 |

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#: **2002628**

***21-Feb-20***

**Client:** Marathon Oil Company

**Project:** HF7 Fed Com 1

| Sample ID: **MB-50543** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **50543** | RunNo: **66643** | | | | | | | |
| Prep Date: **2/19/2020** | Analysis Date: **2/19/2020** | SeqNo: **2291802** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | ND | 1.5 | | | | | | | | |

| Sample ID: **LCS-50543** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **50543** | RunNo: **66643** | | | | | | | |
| Prep Date: **2/19/2020** | Analysis Date: **2/19/2020** | SeqNo: **2291803** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 14 | 1.5 | 15.00 | 0 | 92.6 | 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#: **2002628**

***21-Feb-20***

**Client:** Marathon Oil Company

**Project:** HF7 Fed Com 1

| Sample ID: **MB-50539** | SampType: **MBLK** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **50539** | RunNo: **66668** |
| Prep Date: **2/19/2020** | Analysis Date: **2/20/2020** | SeqNo: **2291592** 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 | 14 | | 10.00 | | 139 | 55.1 | 146 | | | |

| Sample ID: **LCS-50539** | SampType: **LCS** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **50539** | RunNo: **66668** |
| Prep Date: **2/19/2020** | Analysis Date: **2/20/2020** | SeqNo: **2291593** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 63 | 10 | 50.00 | 0 | 125 | 70 | 130 | | | |
| Surr: DNOP | 5.8 | | 5.000 | | 115 | 55.1 | 146 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2002628**

***21-Feb-20***

**Client:** Marathon Oil Company
**Project:** HF7 Fed Com 1

| Sample ID: **lcs-50494** | SampType: **LCS** | TestCode: **EPA Method 8260B: Volatiles Short List** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **50494** | RunNo: **66663** |
| Prep Date: **2/17/2020** | Analysis Date: **2/19/2020** | SeqNo: **2290917** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 1.0 | 0.025 | 1.000 | 0 | 100 | 70 | 130 | | | |
| Toluene | 0.98 | 0.050 | 1.000 | 0 | 98.5 | 70 | 130 | | | |
| Ethylbenzene | 0.99 | 0.050 | 1.000 | 0 | 98.7 | 70 | 130 | | | |
| Xylenes, Total | 2.9 | 0.10 | 3.000 | 0 | 97.2 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 0.46 | | 0.5000 | | 92.8 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.48 | | 0.5000 | | 96.4 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.46 | | 0.5000 | | 92.2 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.5000 | | 99.9 | 70 | 130 | | | |

| Sample ID: **mb-50494** | SampType: **MBLK** | TestCode: **EPA Method 8260B: Volatiles Short List** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **50494** | RunNo: **66663** |
| Prep Date: **2/17/2020** | Analysis Date: **2/19/2020** | SeqNo: **2290918** 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 | | | | | | | | |
| Xylenes, Total | ND | 0.10 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 0.47 | | 0.5000 | | 94.9 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.50 | | 0.5000 | | 99.2 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.48 | | 0.5000 | | 96.2 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.5000 | | 101 | 70 | 130 | | | |

| Sample ID: **lcs-50546** | SampType: **LCS** | TestCode: **EPA Method 8260B: Volatiles Short List** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **50546** | RunNo: **66683** |
| Prep Date: **2/19/2020** | Analysis Date: **2/20/2020** | SeqNo: **2292072** Units: **%Rec** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 1,2-Dichloroethane-d4 | 0.46 | | 0.5000 | | 92.0 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.46 | | 0.5000 | | 92.7 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.47 | | 0.5000 | | 94.7 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.5000 | | 99.6 | 70 | 130 | | | |

| Sample ID: **mb-50546** | SampType: **MBLK** | TestCode: **EPA Method 8260B: Volatiles Short List** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **50546** | RunNo: **66683** |
| Prep Date: **2/19/2020** | Analysis Date: **2/20/2020** | SeqNo: **2292073** Units: **%Rec** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 1,2-Dichloroethane-d4 | 0.48 | | 0.5000 | | 95.4 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.47 | | 0.5000 | | 94.5 | 70 | 130 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2002628**

***21-Feb-20***

**Client:** Marathon Oil Company
**Project:** HF7 Fed Com 1

Sample ID: **mb-50546** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292073** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: Dibromofluoromethane | 0.47 | | 0.5000 | | 94.2 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.5000 | | 99.9 | 70 | 130 | | | |

Sample ID: **lcs-50537** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS** Batch ID: **50537** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292744** 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 | 109 | 70 | 130 | | | |
| Toluene | 1.0 | 0.050 | 1.000 | 0 | 103 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 0.45 | | 0.5000 | | 90.4 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.45 | | 0.5000 | | 90.2 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.48 | | 0.5000 | | 96.9 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.5000 | | 101 | 70 | 130 | | | |

Sample ID: **mb-50537** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **50537** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292745** 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 | | | | | | | | |
| Xylenes, Total | ND | 0.10 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 0.46 | | 0.5000 | | 91.1 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.47 | | 0.5000 | | 94.2 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.47 | | 0.5000 | | 94.5 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.49 | | 0.5000 | | 98.9 | 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#: **2002628**

***21-Feb-20***

**Client:** Marathon Oil Company
**Project:** HF7 Fed Com 1

Sample ID: **lcs-50494** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290946** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 23 | 5.0 | 25.00 | 0 | 90.2 | 70 | 130 | | | |
| Surr: BFB | 460 | | 500.0 | | 91.3 | 70 | 130 | | | |

Sample ID: **mb-50494** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290947** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | ND | 5.0 | | | | | | | | |
| Surr: BFB | 480 | | 500.0 | | 95.5 | 70 | 130 | | | |

Sample ID: **lcs-50546** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292078** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: BFB | 470 | | 500.0 | | 94.4 | 70 | 130 | | | |

Sample ID: **mb-50546** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292079** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: BFB | 460 | | 500.0 | | 92.5 | 70 | 130 | | | |

Sample ID: **2002628-005ams** SampType: **MS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **W-WS-Comp** Batch ID: **50537** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292833** Units: **mg/Kg-dry**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 25 | 5.4 | 26.97 | 0 | 92.6 | 70 | 130 | | | H |
| Surr: BFB | 500 | | 539.4 | | 93.0 | 70 | 130 | | | H |

Sample ID: **2002628-005amsd** SampType: **MSD** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **W-WS-Comp** Batch ID: **50537** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292834** Units: **mg/Kg-dry**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 25 | 5.1 | 25.53 | 0 | 96.0 | 70 | 130 | 1.83 | 20 | H |
| Surr: BFB | 460 | | 510.7 | | 89.8 | 70 | 130 | 0 | 0 | H |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2002628**

***21-Feb-20***

**Client:** Marathon Oil Company

**Project:** HF7 Fed Com 1

| Sample ID: **lcs-50537** | SampType: **LCS** | TestCode: **EPA Method 8015D Mod: Gasoline Range** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **50537** | RunNo: **66683** |
| Prep Date: **2/19/2020** | Analysis Date: **2/20/2020** | SeqNo: **2292850** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 23 | 5.0 | 25.00 | 0 | 91.2 | 70 | 130 | | | |
| Surr: BFB | 470 | | 500.0 | | 93.3 | 70 | 130 | | | |

| Sample ID: **mb-50537** | SampType: **MBLK** | TestCode: **EPA Method 8015D Mod: Gasoline Range** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **50537** | RunNo: **66683** |
| Prep Date: **2/19/2020** | Analysis Date: **2/20/2020** | SeqNo: **2292851** 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 | 450 | | 500.0 | | 89.8 | 70 | 130 | | | |

**Qualifiers:**

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

# Sample Log-In Check List

Client Name: **MARATHON OIL COMPA** Work Order Number: **2002628** RcptNo: **1**

Received By: **Erin Melendrez** **2/15/2020 12:35:00 PM**

Completed By: **Erin Melendrez** **2/15/2020 3:28:51 PM**

Reviewed By: ENM 2/17/20

## Chain of Custody

1. Is Chain of Custody sufficiently 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: SR 2/17/20

## 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 | | | | |

# Chain-of-Custody Record

Client: Marathon (Wescom)

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: AF7 Fed Com 1

Project #:

Project Manager: Shar Harvester

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.3+0.2(CF)=4.5(°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 Name | Container Type and # | Preservative Type | HEAL No. 2002628 | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/17/20 | 1500 | soil | E-WS-Comp | 4oz g | ice | -001 | X | X | | | | | X | | | |
| 1/18/20 | 1515 | | FS-comp-4' | | | -002 | | | | | | | | | | |
| 1/17/20 | 1800 | | S-WS-comp | | | -003 | | | | | | | | | | |
| 1/18/20 | 1800 | | FS-COMP-4' | | | -004 | | | | | | | | | | |
| " | 1630 | | W-WS-Comp | | | -005 | | | | | | | | | | |
| " | 1600 | | W-WS-comp | | | -006 | | | | | | | | | | |
| " | 1830 | | S-WS-comp | | | -007 | | | | | | | | | | |
| 1/19/20 | 1530 | | N-WS-comp | | | -008 | | | | | | | | | | |
| | 1800 | | FS-Comp-17' | | | -009 | | | | | | | | | | |
| | 1830 | | W-WS-comp | | | -010 | | | | | | | | | | |
| | 1835 | | E-WS-comp | | | -011 | | | | | | | | | | |
| ↓ | 1840 | ↓ | N2-WS-comp | ↓ | ↓ | -012 | ↓ | ↓ | | | | | ↓ | | | |

| Date: | Time: | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| 2/14/20 | 1630 | | | | 2/14/20 | 1630 |
| 2/14/20 | 1900 | | | Courier | 2/15/20 | 1235 |

Remarks:
Run out of hold samples
For TPH, BTEX, Chloride
Per Shelly Tucker 2/14/20 @ 1613

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.

# Chain-of-Custody Record

Client: Marathon (Wescom)

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: HF 7 Fed Com 1

Project #:

Project Manager: Shai Hamester

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.3+0.2(CF)=4.5 (°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 Name | Container Type and # | Preservative Type | HEAL No. 2002628 | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/19/20 | 1840 | soil | NE-FS-comp-7' | 4oz g | ice | -013 | X | X | | | | | X | | | |
| 1/19/20 | 1845 | " | NW-FS-comp-7' | " | " | -014 | X | X | | | | | X | | | |

Date: 2/14/20 Time: 1630 Relinquished by:

Received by: Via: Date Time 2/14/20 1630

Date: 2/14/20 Time: 1900 Relinquished by:

Received by: Via: Courier Date Time 1235 2/15/20

Remarks: Run out of hold samples per Shelly Tucker

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.

# Certificate of Analysis Summary 658990

## Weston Solutions, Frisco, TX

### Project Name: NF 7 #001

**Project Id:**
**Contact:** Robert Appelt
**Project Location:** Carlsbad, NM

**Date Received in Lab:** Wed 04.15.2020 16:35
**Report Date:** 04.20.2020 12:55
**Project Manager:** Jessica Kramer

| *Analysis Requested* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 658990-001 | | 658990-002 | | 658990-003 | | 658990-004 | | 658990-005 | | 658990-006 | |
| | ***Field Id:*** | BKGD (5-7) | | BKGD (12-14) | | B-D1 (6.5-7.5) | | B-04 (4-5) | | B-05 (4-5) | | B-13 (6-12) | |
| | ***Depth:*** | 5-7 ft | | 12-14 ft | | 6.5-7.5 ft | | 4-5 ft | | 4-5 ft | | 6-12 ft | |
| | ***Matrix:*** | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | ***Sampled:*** | 04.14.2020 10:25 | | 04.14.2020 10:45 | | 04.14.2020 12:10 | | 04.14.2020 13:00 | | 04.14.2020 13:45 | | 04.14.2020 14:30 | |
| **Chloride by EPA 300** | ***Extracted:*** | 04.16.2020 12:36 | | 04.16.2020 12:36 | | 04.16.2020 12:36 | | 04.16.2020 12:36 | | 04.16.2020 12:36 | | 04.16.2020 12:36 | |
| | ***Analyzed:*** | ** ** ** ** | | 04.16.2020 12:45 | | 04.16.2020 12:50 | | 04.16.2020 12:55 | | 04.16.2020 13:01 | | 04.16.2020 13:17 | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| Chloride | | 360 | 9.96 | 445 | 10.1 | 489 | 9.98 | 134 | 9.94 | 985 | 10.0 | 646 | 9.92 |



Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer
Project Manager

# Certificate of Analysis Summary 658990

## Weston Solutions, Frisco, TX

### Project Name: NF 7 #001

**Project Id:**
**Contact:** Robert Appelt
**Project Location:** Carlsbad, NM

**Date Received in Lab:** Wed 04.15.2020 16:35
**Report Date:** 04.20.2020 12:55
**Project Manager:** Jessica Kramer

| *Analysis Requested* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 658990-007 | | 658990-008 | | 658990-009 | | 658990-010 | | 658990-011 | | 658990-012 | |
| | ***Field Id:*** | B-02 (6.5-7.5) | | B-06 (3-4) | | B-12 (6-12) | | B-03 (16.5-17.5) | | B-08 (6-12) | | B-07 (5.5-6.5) | |
| | ***Depth:*** | 6.5-7.5 ft | | 3-4 ft | | 6-12 ft | | 16.5-17.5 ft | | 6-12 ft | | 5.5-6.5 ft | |
| | ***Matrix:*** | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | ***Sampled:*** | 04.14.2020 16:20 | | 04.14.2020 16:50 | | 04.14.2020 15:35 | | 04.14.2020 09:50 | | 04.15.2020 10:55 | | 04.15.2020 11:20 | |
| **Chloride by EPA 300** | ***Extracted:*** | 04.16.2020 12:36 | | 04.16.2020 12:36 | | 04.16.2020 12:36 | | 04.16.2020 12:36 | | 04.16.2020 12:36 | | 04.16.2020 12:36 | |
| | ***Analyzed:*** | 04.16.2020 13:23 | | 04.16.2020 13:28 | | 04.16.2020 13:34 | | 04.16.2020 13:39 | | 04.16.2020 13:45 | | 04.16.2020 14:02 | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| Chloride | | 75.5 | 10.0 | 977 | 9.90 | 9.85 J | 9.90 | 1350 | 100 | 334 | 9.98 | 386 | 10.1 |
| **TPH By SW8015 Mod** | ***Extracted:*** | | | 04.16.2020 12:00 | | | | | | | | | |
| | ***Analyzed:*** | | | 04.16.2020 13:07 | | | | | | | | | |
| | ***Units/RL:*** | | | mg/kg | RL | | | | | | | | |
| Gasoline Range Hydrocarbons (GRO) | | | | <14.0 | 50.3 | | | | | | | | |
| Diesel Range Organics (DRO) | | | | <11.5 | 50.3 | | | | | | | | |
| Motor Oil Range Hydrocarbons (MRO) | | | | <11.5 | 50.3 | | | | | | | | |
| Total TPH | | | | <11.5 | 50.3 | | | | | | | | |





Jessica Kramer
Project Manager

# Certificate of Analysis Summary 658990

## Weston Solutions, Frisco, TX

### Project Name: NF 7 #001

**Project Id:**
**Contact:** Robert Appelt
**Project Location:** Carlsbad, NM

**Date Received in Lab:** Wed 04.15.2020 16:35
**Report Date:** 04.20.2020 12:55
**Project Manager:** Jessica Kramer

| *Analysis Requested* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 658990-013 | | 658990-014 | | 658990-015 | | | | | |
| | ***Field Id:*** | B-09 (6-12) | | B-10 (6-12) | | B-11 (6-12) | | | | | |
| | ***Depth:*** | 6-12 ft | | 6-12 ft | | 6-12 ft | | | | | |
| | ***Matrix:*** | SOIL | | SOIL | | SOIL | | | | | |
| | ***Sampled:*** | 04.15.2020 12:00 | | 04.15.2020 12:45 | | 04.15.2020 13:30 | | | | | |
| **Chloride by EPA 300** | ***Extracted:*** | 04.16.2020 12:36 | | 04.16.2020 12:36 | | 04.16.2020 12:36 | | | | | |
| | ***Analyzed:*** | 04.16.2020 14:08 | | 04.16.2020 14:26 | | 04.16.2020 14:32 | | | | | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | | | | |
| Chloride | | 355 | 10.0 | 281 | 10.1 | 905 | 9.92 | | | | |



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Jessica Kramer
Project Manager

# Analytical Report 658990

## for

## Weston Solutions

**Project Manager: Robert Appelt**

**NF 7 #001**

**04.20.2020**

Collected By: Crystal Spangler

**1089 N Canal Street**
**Carlsbad, NM 88220**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

04.20.2020

Project Manager: **Robert Appelt**
**Weston Solutions**
2600 Dallas Parkway, Suite 280
Frisco, TX 75034

Reference: XENCO Report No(s): **658990**
**NF 7 #001**
Project Address: Carlsbad, NM

**Robert Appelt**:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 658990. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 658990 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

**Jessica Kramer**
Project Manager

*A Small Business and Minority Company*

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

# Sample Cross Reference 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| BKGD (5-7) | S | 04.14.2020 10:25 | 5 - 7 ft | 658990-001 |
| BKGD (12-14) | S | 04.14.2020 10:45 | 12 - 14 ft | 658990-002 |
| B-D1 (6.5-7.5) | S | 04.14.2020 12:10 | 6.5 - 7.5 ft | 658990-003 |
| B-04 (4-5) | S | 04.14.2020 13:00 | 4 - 5 ft | 658990-004 |
| B-05 (4-5) | S | 04.14.2020 13:45 | 4 - 5 ft | 658990-005 |
| B-13 (6-12) | S | 04.14.2020 14:30 | 6 - 12 ft | 658990-006 |
| B-02 (6.5-7.5) | S | 04.14.2020 16:20 | 6.5 - 7.5 ft | 658990-007 |
| B-06 (3-4) | S | 04.14.2020 16:50 | 3 - 4 ft | 658990-008 |
| B-12 (6-12) | S | 04.14.2020 15:35 | 6 - 12 ft | 658990-009 |
| B-03 (16.5-17.5) | S | 04.14.2020 09:50 | 16.5 - 17.5 ft | 658990-010 |
| B-08 (6-12) | S | 04.15.2020 10:55 | 6 - 12 ft | 658990-011 |
| B-07 (5.5-6.5) | S | 04.15.2020 11:20 | 5.5 - 6.5 ft | 658990-012 |
| B-09 (6-12) | S | 04.15.2020 12:00 | 6 - 12 ft | 658990-013 |
| B-10 (6-12) | S | 04.15.2020 12:45 | 6 - 12 ft | 658990-014 |
| B-11 (6-12) | S | 04.15.2020 13:30 | 6 - 12 ft | 658990-015 |

# CASE NARRATIVE



***Client Name: Weston Solutions***

***Project Name: NF 7 #001***

Project ID:
Work Order Number(s): *658990*

Report Date: *04.20.2020*
Date Received: *04.15.2020*

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

**Sample receipt non conformances and comments:**

**Sample receipt non conformances and comments per sample:**

None

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **BKGD (5-7)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-001 | Date Collected: | 04.14.2020 10:25 | Sample Depth: | 5 - 7 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **360** | 9.96 | 0.353 | mg/kg | 04.16.2020 12:28 | | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **BKGD (12-14)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-002 | Date Collected: | 04.14.2020 10:45 | Sample Depth: | 12 - 14 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **445** | 10.1 | 0.357 | mg/kg | 04.16.2020 12:45 | | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-D1 (6.5-7.5)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-003 | Date Collected: | 04.14.2020 12:10 | Sample Depth: | 6.5 - 7.5 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **489** | 9.98 | 0.353 | mg/kg | 04.16.2020 12:50 | | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-04 (4-5)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-004 | Date Collected: | 04.14.2020 13:00 | Sample Depth: | 4 - 5 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **134** | 9.94 | 0.352 | mg/kg | 04.16.2020 12:55 | | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-05 (4-5)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-005 | Date Collected: | 04.14.2020 13:45 | Sample Depth: | 4 - 5 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **985** | 10.0 | 0.355 | mg/kg | 04.16.2020 13:01 | | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-13 (6-12)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-006 | Date Collected: | 04.14.2020 14:30 | Sample Depth: | 6 - 12 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **646** | 9.92 | 0.351 | mg/kg | 04.16.2020 13:17 | | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-02 (6.5-7.5)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-007 | Date Collected: | 04.14.2020 16:20 | Sample Depth: | 6.5 - 7.5 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **75.5** | 10.0 | 0.354 | mg/kg | 04.16.2020 13:23 | | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-06 (3-4)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-008 | Date Collected: | 04.14.2020 16:50 | Sample Depth: | 3 - 4 ft |

| | | | | | |
|---|---|---|---|---|---|
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **977** | 9.90 | 0.350 | mg/kg | 04.16.2020 13:28 | | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Analytical Method: | TPH By SW8015 Mod | | | Prep Method: | SW8015P |
| Tech: | DTH | | | % Moisture: | |
| Analyst: | DTH | Date Prep: | 04.16.2020 12:00 | Basis: | Wet Weight |
| Seq Number: | 3123293 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Hydrocarbons (GRO) | PHC610 | <14.0 | 50.3 | 14.0 | mg/kg | 04.16.2020 13:07 | U | 1 |
| Diesel Range Organics (DRO) | C10C28DRO | <11.5 | 50.3 | 11.5 | mg/kg | 04.16.2020 13:07 | U | 1 |
| Motor Oil Range Hydrocarbons (MRO) | PHCG2835 | <11.5 | 50.3 | 11.5 | mg/kg | 04.16.2020 13:07 | U | 1 |
| Total TPH | PHC635 | <11.5 | 50.3 | 11.5 | mg/kg | 04.16.2020 13:07 | U | 1 |

| Surrogate | Cas Number | % Recovery | Units | Limits | Analysis Date | Flag |
|---|---|---|---|---|---|---|
| 1-Chlorooctane | 111-85-3 | 99 | % | 70-135 | 04.16.2020 13:07 | |
| o-Terphenyl | 84-15-1 | 105 | % | 70-135 | 04.16.2020 13:07 | |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-12 (6-12)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-009 | Date Collected: | 04.14.2020 15:35 | Sample Depth: | 6 - 12 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **9.85** | 9.90 | 0.350 | mg/kg | 04.16.2020 13:34 | J | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-03 (16.5-17.5)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-010 | Date Collected: | 04.14.2020 09:50 | Sample Depth: | 16.5 - 17.5 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **1350** | 100 | 3.55 | mg/kg | 04.16.2020 13:39 | | 10 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-08 (6-12)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-011 | Date Collected: | 04.15.2020 10:55 | Sample Depth: | 6 - 12 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **334** | 9.98 | 0.353 | mg/kg | 04.16.2020 13:45 | | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-07 (5.5-6.5)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-012 | Date Collected: | 04.15.2020 11:20 | Sample Depth: | 5.5 - 6.5 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **386** | 10.1 | 0.358 | mg/kg | 04.16.2020 14:02 | | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-09 (6-12)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-013 | Date Collected: | 04.15.2020 12:00 | Sample Depth: | 6 - 12 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **355** | 10.0 | 0.355 | mg/kg | 04.16.2020 14:08 | | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-10 (6-12)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-014 | Date Collected: | 04.15.2020 12:45 | Sample Depth: | 6 - 12 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **281** | 10.1 | 0.357 | mg/kg | 04.16.2020 14:26 | | 1 |

# Certificate of Analytical Results 658990

## Weston Solutions, Frisco, TX

NF 7 #001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-11 (6-12)** | Matrix: | Soil | Date Received: | 04.15.2020 16:35 |
| Lab Sample Id: | 658990-015 | Date Collected: | 04.15.2020 13:30 | Sample Depth: | 6 - 12 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 04.16.2020 12:36 | Basis: | Wet Weight |
| Seq Number: | 3123310 | | | | |

| Parameter | Cas Number | Result | RL | MDL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **905** | 9.92 | 0.351 | mg/kg | 04.16.2020 14:32 | | 1 |

# Flagging Criteria

**X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

**B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

**D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

**E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

**F** RPD exceeded lab control limits.

**J** The target analyte was positively identified below the quantitation limit and above the detection limit.

**U** Analyte was not detected.

**L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

**H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

**K** Sample analyzed outside of recommended hold time.

**JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

**BRL** Below Reporting Limit. **ND** Not Detected.

**RL** Reporting Limit

**MDL** Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

**PQL** Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

**DL** Method Detection Limit

**NC** Non-Calculable

**SMP** Client Sample **BLK** Method Blank

**BKS/LCS** Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

**MD/SD** Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

# QC Summary 658990



## Weston Solutions

NF 7 #001

**Analytical Method:** Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3123310 — Matrix: Solid — Date Prep: 04.16.2020
MB Sample Id: 7701398-1-BLK — LCS Sample Id: 7701398-1-BKS — LCSD Sample Id: 7701398-1-BSD

| Parameter | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | <0.354 | 250 | 259 | 104 | 261 | 104 | 90-110 | 1 | 20 | mg/kg | 04.16.2020 12:17 | |

**Analytical Method:** Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3123310 — Matrix: Soil — Date Prep: 04.16.2020
Parent Sample Id: 658990-001 — MS Sample Id: 658990-001 S — MSD Sample Id: 658990-001 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 360 | 200 | 562 | 101 | 569 | 105 | 90-110 | 1 | 20 | mg/kg | 04.16.2020 12:34 | |

**Analytical Method:** Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3123310 — Matrix: Soil — Date Prep: 04.16.2020
Parent Sample Id: 658990-011 — MS Sample Id: 658990-011 S — MSD Sample Id: 658990-011 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 334 | 200 | 552 | 109 | 548 | 107 | 90-110 | 1 | 20 | mg/kg | 04.16.2020 13:51 | |

**Analytical Method:** TPH By SW8015 Mod — Prep Method: SW8015P
Seq Number: 3123293 — Matrix: Solid — Date Prep: 04.16.2020
MB Sample Id: 7701402-1-BLK — LCS Sample Id: 7701402-1-BKS — LCSD Sample Id: 7701402-1-BSD

| Parameter | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Hydrocarbons (GRO) | <13.9 | 1000 | 974 | 97 | 940 | 94 | 70-135 | 4 | 35 | mg/kg | 04.16.2020 12:05 | |
| Diesel Range Organics (DRO) | <11.5 | 1000 | 1110 | 111 | 1060 | 106 | 70-135 | 5 | 35 | mg/kg | 04.16.2020 12:05 | |

| Surrogate | MB %Rec | MB Flag | LCS %Rec | LCS Flag | LCSD %Rec | LCSD Flag | Limits | Units | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|
| 1-Chlorooctane | 91 | | 108 | | 107 | | 70-135 | % | 04.16.2020 12:05 |
| o-Terphenyl | 96 | | 108 | | 120 | | 70-135 | % | 04.16.2020 12:05 |

**Analytical Method:** TPH By SW8015 Mod — Prep Method: SW8015P
Seq Number: 3123293 — Matrix: Solid — Date Prep: 04.16.2020
MB Sample Id: 7701402-1-BLK

| Parameter | MB Result | Units | Analysis Date | Flag |
|---|---|---|---|---|
| Motor Oil Range Hydrocarbons (MRO) | <11.5 | mg/kg | 04.16.2020 11:45 | |

MS/MSD Percent Recovery — [D] = 100*(C-A) / B — LCS = Laboratory Control Sample — MS = Matrix Spike
Relative Percent Difference — RPD = 200* | (C-E) / (C+E) | — A = Parent Result — B = Spike Added
LCS/LCSD Recovery — [D] = 100 * (C) / [B] — C = MS/LCS Result — D = MSD/LCSD % Rec
Log Difference — Log Diff. = Log(Sample Duplicate) - Log(Original Sample) — E = MSD/LCSD Result

# QC Summary 658990



## Weston Solutions

NF 7 #001

**Analytical Method:** **TPH By SW8015 Mod** Prep Method: SW8015P

Seq Number: 3123293 Matrix: Soil Date Prep: 04.16.2020

Parent Sample Id: 658990-008 MS Sample Id: 658990-008 S MSD Sample Id: 658990-008 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Hydrocarbons (GRO) | <13.9 | 1000 | 973 | 97 | 1040 | 104 | 70-135 | 7 | 35 | mg/kg | 04.16.2020 13:28 | |
| Diesel Range Organics (DRO) | <11.5 | 1000 | 1130 | 113 | 1130 | 113 | 70-135 | 0 | 35 | mg/kg | 04.16.2020 13:28 | |

| Surrogate | MS %Rec | MS Flag | MSD %Rec | MSD Flag | Limits | Units | Analysis Date |
|---|---|---|---|---|---|---|---|
| 1-Chlorooctane | 115 | | 119 | | 70-135 | % | 04.16.2020 13:28 |
| o-Terphenyl | 112 | | 118 | | 70-135 | % | 04.16.2020 13:28 |

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

# Chain of Custody

XENCO LABORATORIES
Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432) 704-5440 EL Paso,TX (915) 585-3443 Lubbock,TX (806) 794-1296 Crasibad, NM (432) 704-5440
Phoenix,AZ (480) 355-0900 Atlanta,GA (770) 449-8800 Tampa,FL (813) 620-2000 West Palm Beach, FL (561) 689-6701 www.xenco.com

Work Order No: 658990



| | | | |
|---|---|---|---|
| Project Manager: | Robert Appelt | Bill to: (if different) | MRO – Melodie Sanjari |
| Company Name: | Weston Solutions | Company Name: | Marathon Oil |
| Address: | 2600 Dallas Prkwy ste 380 | Address: | |
| City, State ZIP: | Frisco, TX 75034 | City, State ZIP: | Carlsbad, NM |
| Phone: | 214.205.4145 | Email: | |

**Work Order Comments**

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

| | | | |
|---|---|---|---|
| Project Name: | HF 7 Fed Com #001 | Turn Around | |
| Project Number: | | Routine ☐ | |
| Project Location | Carlsbad, NM | Rush: 7DAY | |
| Sampler's Name: | Crystal Spangler | Due Date: | |
| PO #: | | Quote #: | |

| SAMPLE RECEIPT | | | |
|---|---|---|---|
| Temp Blank: | (Yes) No | Wet Ice: | (Yes) No |
| Temperature (°C): | 1.4 | Thermometer ID | THM007 |
| Received Intact: | (Yes) No | | |
| Cooler Custody Seals: | Yes (No) N/A | Correction Factor: | -0.2 |
| Sample Custody Seals: | Yes (No) N/A | Total Containers: | 15 |

| Lab ID | Sample Identification | Matrix | Date Sampled | Time Sampled | Depth | Number of Containers | Pres. Code | NA | NA | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Chlorides 300.0 | TPH 8015M | | | | | | | | | | | | |
| 1 | BKGD (5-7) | S | 4/14/2020 | 1025 | 5-7' | 1 | | X | | | | | | | | | | | | | |
| 2 | BKGD (12-14) | | | 1045 | 12-14' | | | X | | | | | | | | | | | | | |
| 3 | B-01 (6.5-7.5) | | | 1210 | 6.5-7.5' | | | X | | | | | | | | | | | | | |
| 4 | B-04 (4-5) | | | 1300 | 4-5' | | | X | | | | | | | | | | | | | |
| 5 | B-05 (4-5) | | | 1335 | 4-5' | | | X | | | | | | | | | | | | | |
| 6 | B-13 (6-12) | | | 1430 | 6-12' | | | X | | | | | | | | | | | | | |
| 7 | B-02 (6.5-7.5) | | | 1620 | 6.5-7.5' | | | X | | | | | | | | | | | | | |
| 8 | B-06 (3-4) | | | 1650 | 3-4' | | | X | X | | | | | | | | | | | | |
| 9 | B-12 (6-12) | | " | 1535 | 6-12' | | | X | | | | | | | | | | | | | |
| 10 | B-03 (16.5-17.5) | ↓ | 4/15/2020 | 0950 | 16.5-17.5 | ↓ | | X | | | | | | | | | | | | | |

**Preservative Codes**

MeOH: Me
None: NO
HNO3: HN
H2S04: H2
HCL: HL
NaOH: Na
Zn Acetate+ NaOH: Zn

TAT starts the day recevied by the lab, if received by 4:00pm

**Sample Comments**

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U 1631 / 245.1 / 7470 / 7471 : Hg



| Relinquished by: (Signature) | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Received by: (Signature) | Date/Time |
|---|---|---|---|---|---|
| 1 | | 4/15/2020 1035 | 2 | | |
| 3 | | | 4 | | |
| 5 | | | 6 | | |

# Chain of Custody

XENCO LABORATORIES

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432) 704-5440 EL Paso,TX (915) 585-3443 Lubbock,TX (806) 794-1296 Crasibad, NM (432) 704-5440
Phoenix,AZ (480) 355-0900 Atlanta,GA (770) 449-8800 Tampa,FL (813) 620-2000 West Palm Beach, FL (561) 689-6701

Work Order No: 458990

www.xenco.com Page 2 of 2

| | | | |
|---|---|---|---|
| Project Manager: | Robert Appelt | Bill to: (if different) | Melodie Sanjari |
| Company Name: | Weston Solutions | Company Name: | Marathon Oil |
| Address: | 2600 Dallas Parkway, Ste 280 | Address: | |
| City, State ZIP: | Frisco, TX 75034 | City, State ZIP: | Carlsbad, NM |
| Phone: | 214.205.4145 | Email: | |

**Work Order Comments**

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

| | | | |
|---|---|---|---|
| Project Name: | HF 7 Fed Com #001 | Turn Around | |
| Project Number: | | Routine ☐ | |
| Project Location | Carlsbad NM | Rush: 7 DAY | |
| Sampler's Name: | Crystal Spangler | Due Date: | |
| PO #: | | Quote #: | |

| SAMPLE RECEIPT | | | | |
|---|---|---|---|---|
| Temp Blank: | Yes No | Wet Ice: | Yes ~~No~~ | |
| Temperature (°C): | | Thermometer ID | | |
| Received Intact: | Yes No | | | |
| Cooler Custody Seals: | Yes No N/A | Correction Factor: | | |
| Sample Custody Seals: | Yes No N/A | Total Containers: | | |

| Lab ID | Sample Identification | Matrix | Date Sampled | Time Sampled | Depth | Number of Containers | Pres. Code | ANALYSIS REQUEST: Chlorides 300.0 | ANALYSIS REQUEST: TPH 8015M | Sample Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 11 | B-08 (6-12) | S | 4/15/2020 | 1055 | 6-12' | 1 | | X | | |
| 12 | B-07 (5.5-6.5) | | | 1120 | 5.5-6.5' | | | X | | |
| 13 | B-09 (6-12) | | | 1200 | 6-12' | | | X | | |
| 14 | B-10 (6-12) | | | 1245 | 6-12' | | | X | | |
| 15 | B-11 (6-12) | | | 1330 | 6-12' | 1 | | X | | |

**Preservative Codes**

MeOH: Me
None: NO
HNO3: HN
H2S04: H2
HCL: HL
NaOH: Na
Zn Acetate+ NaOH: Zn

TAT starts the day recevied by the lab, if received by 4:00pm

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

*Circle Method(s) and Metal(s) to be analyzed*

TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U

1631 / 245.1 / 7470 / 7471 : Hg



| Relinquished by: (Signature) | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Received by: (Signature) | Date/Time |
|---|---|---|---|---|---|
| | | 4/15/2020 1035 | 2 | | |
| | | | 4 | | |
| | | | 6 | | |

Revised Date 022619 Rev. 2019.1

# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In

**Client:** Weston Solutions

**Date/ Time Received:** 04.15.2020 04.35.00 PM

**Work Order #:** 658990

**Acceptable Temperature Range: 0 - 6 degC**
**Air and Metal samples Acceptable Range: Ambient**

**Temperature Measuring device used : T-NM-007**

| Sample Receipt Checklist | Comments |
|---|---|
| #1 *Temperature of cooler(s)? | 1.4 |
| #2 *Shipping container in good condition? | **Yes** |
| #3 *Samples received on ice? | **Yes** |
| #4 *Custody Seals intact on shipping container/ cooler? | **Yes** |
| #5 Custody Seals intact on sample bottles? | **Yes** |
| #6*Custody Seals Signed and dated? | **Yes** |
| #7 *Chain of Custody present? | **Yes** |
| #8 Any missing/extra samples? | **No** |
| #9 Chain of Custody signed when relinquished/ received? | **Yes** |
| #10 Chain of Custody agrees with sample labels/matrix? | **Yes** |
| #11 Container label(s) legible and intact? | **Yes** |
| #12 Samples in proper container/ bottle? | **Yes** |
| #13 Samples properly preserved? | **Yes** |
| #14 Sample container(s) intact? | **Yes** |
| #15 Sufficient sample amount for indicated test(s)? | **Yes** |
| #16 All samples received within hold time? | **Yes** |
| #17 Subcontract of sample(s)? | **No** |
| #18 Water VOC samples have zero headspace? | **N/A** |

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

**Checklist completed by:** Elizabeth McClellan Date: 04.16.2020

**Checklist reviewed by:** Jessica Kramer Date: 04.16.2020

Jessica Kramer

# Certificate of Analysis Summary 661758

## Weston Solutions, Frisco, TX

### Project Name: HF7 Fed Com#001

**Project Id:**
**Contact:** Robert Appelt
**Project Location:** Carlsbad NM

**Date Received in Lab:** Fri 05.15.2020 11:07
**Report Date:** 05.19.2020 09:40
**Project Manager:** Jessica Kramer

| *Analysis Requested* | *Lab Id:* | 661758-001 | | 661758-002 | | 661758-003 | | 661758-004 | | 661758-005 | | 661758-006 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Field Id:* | B-03-2-1 (6.5-7.5) | | B-03-2-2 (20-21) | | B-11-2-1 (1-5.5 | | B-06-3 (1-5) | | B-09-2-1 (1-5.5) | | B-10-2-1 (1-5.5) | |
| | *Depth:* | 6.5-7.5 ft | | 20-21 ft | | 1-5.5 ft | | 1-5 ft | | 1-5.5 ft | | 1-5.5 ft | |
| | *Matrix:* | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | *Sampled:* | 05.14.2020 09:40 | | 05.14.2020 11:15 | | 05.14.2020 11:30 | | 05.14.2020 12:00 | | 05.14.2020 12:20 | | 05.14.2020 12:30 | |
| **Chloride by EPA 300** | *Extracted:* | 05.15.2020 17:15 | | 05.15.2020 17:15 | | 05.15.2020 17:15 | | 05.15.2020 17:15 | | 05.15.2020 17:15 | | 05.15.2020 17:17 | |
| | *Analyzed:* | 05.15.2020 21:37 | | 05.15.2020 21:43 | | 05.15.2020 21:48 | | 05.15.2020 21:54 | | 05.15.2020 22:00 | | 05.15.2020 22:35 | |
| | *Units/RL:* | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| Chloride | | 492 | 9.98 | 757 | 9.98 | 205 | 9.94 | 548 | 9.98 | 222 | 10.1 | 749 | 9.90 |





Jessica Kramer
Project Manager

# Certificate of Analysis Summary 661758

## Weston Solutions, Frisco, TX

### Project Name: HF7 Fed Com#001

**Project Id:**
**Contact:** Robert Appelt
**Project Location:** Carlsbad NM

**Date Received in Lab:** Fri 05.15.2020 11:07
**Report Date:** 05.19.2020 09:40
**Project Manager:** Jessica Kramer

| *Analysis Requested* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 661758-007 | | 661758-008 | | 661758-009 | | 661758-010 | | | | | |
| | ***Field Id:*** | B-05-2 (1-4) | | B-13-2-1 (2-6) | | B-12-2-1 (0-4) | | Dup -01 | | | | | |
| | ***Depth:*** | 1-4 ft | | 2-6 ft | | 0-4 ft | | | | | | | |
| | ***Matrix:*** | SOIL | | SOIL | | SOIL | | SOIL | | | | | |
| | ***Sampled:*** | 05.14.2020 13:30 | | 05.14.2020 13:55 | | 05.14.2020 14:30 | | 05.14.2020 00:00 | | | | | |
| **Chloride by EPA 300** | ***Extracted:*** | 05.15.2020 17:17 | | 05.15.2020 17:17 | | 05.15.2020 17:17 | | 05.18.2020 12:00 | | | | | |
| | ***Analyzed:*** | 05.15.2020 22:53 | | 05.15.2020 22:59 | | 05.15.2020 23:05 | | 05.18.2020 15:40 | | | | | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | | | | |
| Chloride | | 119 | 9.92 | 244 | 9.92 | 58.0 | 9.96 | 216 | 10.0 | | | | |



Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer
Project Manager

# Analytical Report 661758

## for

## Weston Solutions

**Project Manager: Robert Appelt**

**HF7 Fed Com#001**

**05.19.2020**

Collected By: Client

**1089 N Canal Street**
**Carlsbad, NM 88220**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-32), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-23), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-22)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

05.19.2020

Project Manager: **Robert Appelt**
**Weston Solutions**
2600 Dallas Parkway, Suite 280
Frisco, TX 75034

Reference: XENCO Report No(s): **661758**
**HF7 Fed Com#001**
Project Address: Carlsbad NM

**Robert Appelt**:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 661758. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 661758 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

**Jessica Kramer**
Project Manager

*A Small Business and Minority Company*

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

# Sample Cross Reference 661758

## Weston Solutions, Frisco, TX

HF7 Fed Com#001

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| B-03-2-1 (6.5-7.5) | S | 05.14.2020 09:40 | 6.5 - 7.5 ft | 661758-001 |
| B-03-2-2 (20-21) | S | 05.14.2020 11:15 | 20 - 21 ft | 661758-002 |
| B-11-2-1 (1-5.5 | S | 05.14.2020 11:30 | 1 - 5.5 ft | 661758-003 |
| B-06-3 (1-5) | S | 05.14.2020 12:00 | 1 - 5 ft | 661758-004 |
| B-09-2-1 (1-5.5) | S | 05.14.2020 12:20 | 1 - 5.5 ft | 661758-005 |
| B-10-2-1 (1-5.5) | S | 05.14.2020 12:30 | 1 - 5.5 ft | 661758-006 |
| B-05-2 (1-4) | S | 05.14.2020 13:30 | 1 - 4 ft | 661758-007 |
| B-13-2-1 (2-6) | S | 05.14.2020 13:55 | 2 - 6 ft | 661758-008 |
| B-12-2-1 (0-4) | S | 05.14.2020 14:30 | 0 - 4 ft | 661758-009 |
| Dup -01 | S | 05.14.2020 00:00 | ft | 661758-010 |

# CASE NARRATIVE

***Client Name: Weston Solutions***

***Project Name: HF7 Fed Com#001***

Project ID:
Work Order Number(s): *661758*

Report Date: *05.19.2020*
Date Received: *05.15.2020*

**Sample receipt non conformances and comments:**

**Sample receipt non conformances and comments per sample:**

None

# Certificate of Analytical Results 661758

## Weston Solutions, Frisco, TX

HF7 Fed Com#001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-03-2-1 (6.5-7.5)** | Matrix: | Soil | Date Received: | 05.15.2020 11:07 |
| Lab Sample Id: | 661758-001 | Date Collected: | 05.14.2020 09:40 | Sample Depth: | 6.5 - 7.5 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 05.15.2020 17:15 | Basis: | Wet Weight |
| Seq Number: | 3126178 | | | | |

| Parameter | Cas Number | Result | RL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **492** | 9.98 | mg/kg | 05.15.2020 21:37 | | 1 |

# Certificate of Analytical Results 661758

## Weston Solutions, Frisco, TX

HF7 Fed Com#001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-03-2-2 (20-21)** | Matrix: | Soil | Date Received: | 05.15.2020 11:07 |
| Lab Sample Id: | 661758-002 | Date Collected: | 05.14.2020 11:15 | Sample Depth: | 20 - 21 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 05.15.2020 17:15 | Basis: | Wet Weight |
| Seq Number: | 3126178 | | | | |

| Parameter | Cas Number | Result | RL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **757** | 9.98 | mg/kg | 05.15.2020 21:43 | | 1 |

# Certificate of Analytical Results 661758

## Weston Solutions, Frisco, TX

HF7 Fed Com#001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-11-2-1 (1-5.5** | Matrix: | Soil | Date Received: | 05.15.2020 11:07 |
| Lab Sample Id: | 661758-003 | Date Collected: | 05.14.2020 11:30 | Sample Depth: | 1 - 5.5 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 05.15.2020 17:15 | Basis: | Wet Weight |
| Seq Number: | 3126178 | | | | |

| Parameter | Cas Number | Result | RL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **205** | 9.94 | mg/kg | 05.15.2020 21:48 | | 1 |

# Certificate of Analytical Results 661758

## Weston Solutions, Frisco, TX

HF7 Fed Com#001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-06-3 (1-5)** | Matrix: | Soil | Date Received: | 05.15.2020 11:07 |
| Lab Sample Id: | 661758-004 | Date Collected: | 05.14.2020 12:00 | Sample Depth: | 1 - 5 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 05.15.2020 17:15 | Basis: | Wet Weight |
| Seq Number: | 3126178 | | | | |

| Parameter | Cas Number | Result | RL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **548** | 9.98 | mg/kg | 05.15.2020 21:54 | | 1 |

# Certificate of Analytical Results 661758

## Weston Solutions, Frisco, TX

HF7 Fed Com#001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-09-2-1 (1-5.5)** | Matrix: | Soil | Date Received: | 05.15.2020 11:07 |
| Lab Sample Id: | 661758-005 | Date Collected: | 05.14.2020 12:20 | Sample Depth: | 1 - 5.5 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 05.15.2020 17:15 | Basis: | Wet Weight |
| Seq Number: | 3126178 | | | | |

| Parameter | Cas Number | Result | RL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **222** | 10.1 | mg/kg | 05.15.2020 22:00 | | 1 |

# Certificate of Analytical Results 661758

## Weston Solutions, Frisco, TX

HF7 Fed Com#001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-10-2-1 (1-5.5)** | Matrix: | Soil | Date Received: | 05.15.2020 11:07 |
| Lab Sample Id: | 661758-006 | Date Collected: | 05.14.2020 12:30 | Sample Depth: | 1 - 5.5 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 05.15.2020 17:17 | Basis: | Wet Weight |
| Seq Number: | 3126180 | | | | |

| Parameter | Cas Number | Result | RL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **749** | 9.90 | mg/kg | 05.15.2020 22:35 | | 1 |

# Certificate of Analytical Results 661758

## Weston Solutions, Frisco, TX

HF7 Fed Com#001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-05-2 (1-4)** | Matrix: | Soil | Date Received: | 05.15.2020 11:07 |
| Lab Sample Id: | 661758-007 | Date Collected: | 05.14.2020 13:30 | Sample Depth: | 1 - 4 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 05.15.2020 17:17 | Basis: | Wet Weight |
| Seq Number: | 3126180 | | | | |

| Parameter | Cas Number | Result | RL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **119** | 9.92 | mg/kg | 05.15.2020 22:53 | | 1 |

# Certificate of Analytical Results 661758

## Weston Solutions, Frisco, TX

HF7 Fed Com#001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-13-2-1 (2-6)** | Matrix: | Soil | Date Received: | 05.15.2020 11:07 |
| Lab Sample Id: | 661758-008 | Date Collected: | 05.14.2020 13:55 | Sample Depth: | 2 - 6 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 05.15.2020 17:17 | Basis: | Wet Weight |
| Seq Number: | 3126180 | | | | |

| Parameter | Cas Number | Result | RL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **244** | 9.92 | mg/kg | 05.15.2020 22:59 | | 1 |

# Certificate of Analytical Results 661758

## Weston Solutions, Frisco, TX

HF7 Fed Com#001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **B-12-2-1 (0-4)** | Matrix: | Soil | Date Received: | 05.15.2020 11:07 |
| Lab Sample Id: | 661758-009 | Date Collected: | 05.14.2020 14:30 | Sample Depth: | 0 - 4 ft |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 05.15.2020 17:17 | Basis: | Wet Weight |
| Seq Number: | 3126180 | | | | |

| Parameter | Cas Number | Result | RL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **58.0** | 9.96 | mg/kg | 05.15.2020 23:05 | | 1 |

# Certificate of Analytical Results 661758

## Weston Solutions, Frisco, TX

HF7 Fed Com#001

| | | | | | |
|---|---|---|---|---|---|
| Sample Id: | **Dup -01** | Matrix: | Soil | Date Received: | 05.15.2020 11:07 |
| Lab Sample Id: | 661758-010 | Date Collected: | 05.14.2020 00:00 | | |
| Analytical Method: | Chloride by EPA 300 | | | Prep Method: | E300P |
| Tech: | MAB | | | % Moisture: | |
| Analyst: | MAB | Date Prep: | 05.18.2020 12:00 | Basis: | Wet Weight |
| Seq Number: | 3126302 | | | | |

| Parameter | Cas Number | Result | RL | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|---|
| **Chloride** | 16887-00-6 | **216** | 10.0 | mg/kg | 05.18.2020 15:40 | | 1 |

# Flagging Criteria

**X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

**B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

**D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

**E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

**F** RPD exceeded lab control limits.

**J** The target analyte was positively identified below the quantitation limit and above the detection limit.

**U** Analyte was not detected.

**L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

**H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

**K** Sample analyzed outside of recommended hold time.

**JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

**BRL** Below Reporting Limit. **ND** Not Detected.

**RL** Reporting Limit

**MDL** Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

**PQL** Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

**DL** Method Detection Limit

**NC** Non-Calculable

**SMP** Client Sample **BLK** Method Blank

**BKS/LCS** Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

**MD/SD** Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

# QC Summary 661758

## Weston Solutions

HF7 Fed Com#001

**Analytical Method:** Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126178 — Matrix: Solid — Date Prep: 05.15.2020
MB Sample Id: 7703456-1-BLK — LCS Sample Id: 7703456-1-BKS — LCSD Sample Id: 7703456-1-BSD

| Parameter | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | <10.0 | 250 | 248 | 99 | 247 | 99 | 90-110 | 0 | 20 | mg/kg | 05.15.2020 19:16 | |

**Analytical Method:** Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126180 — Matrix: Solid — Date Prep: 05.15.2020
MB Sample Id: 7703457-1-BLK — LCS Sample Id: 7703457-1-BKS — LCSD Sample Id: 7703457-1-BSD

| Parameter | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | <10.0 | 250 | 249 | 100 | 247 | 99 | 90-110 | 1 | 20 | mg/kg | 05.15.2020 22:24 | |

**Analytical Method:** Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126302 — Matrix: Solid — Date Prep: 05.18.2020
MB Sample Id: 7703548-1-BLK — LCS Sample Id: 7703548-1-BKS — LCSD Sample Id: 7703548-1-BSD

| Parameter | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | <10.0 | 250 | 250 | 100 | 248 | 99 | 90-110 | 1 | 20 | mg/kg | 05.18.2020 12:55 | |

**Analytical Method:** Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126178 — Matrix: Soil — Date Prep: 05.15.2020
Parent Sample Id: 661755-004 — MS Sample Id: 661755-004 S — MSD Sample Id: 661755-004 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 72.7 | 200 | 261 | 94 | 262 | 95 | 90-110 | 0 | 20 | mg/kg | 05.15.2020 19:33 | |

**Analytical Method:** Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126178 — Matrix: Soil — Date Prep: 05.15.2020
Parent Sample Id: 661755-014 — MS Sample Id: 661755-014 S — MSD Sample Id: 661755-014 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 87.3 | 202 | 294 | 102 | 289 | 101 | 90-110 | 2 | 20 | mg/kg | 05.15.2020 20:56 | |

**Analytical Method:** Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126180 — Matrix: Soil — Date Prep: 05.15.2020
Parent Sample Id: 661758-006 — MS Sample Id: 661758-006 S — MSD Sample Id: 661758-006 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 749 | 198 | 945 | 99 | 947 | 99 | 90-110 | 0 | 20 | mg/kg | 05.15.2020 22:41 | |

MS/MSD Percent Recovery — [D] = 100*(C-A) / B — LCS = Laboratory Control Sample — MS = Matrix Spike
Relative Percent Difference — RPD = 200* | (C-E) / (C+E) | — A = Parent Result — B = Spike Added
LCS/LCSD Recovery — [D] = 100 * (C) / [B] — C = MS/LCS Result — D = MSD/LCSD % Rec
Log Difference — Log Diff. = Log(Sample Duplicate) - Log(Original Sample) — E = MSD/LCSD Result

# QC Summary 661758



## Weston Solutions

HF7 Fed Com#001

**Analytical Method:** **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3126302 Matrix: Soil Date Prep: 05.18.2020
Parent Sample Id: 661821-001 MS Sample Id: 661821-001 S MSD Sample Id: 661821-001 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4380 | 198 | 4570 | 96 | 4570 | 96 | 90-110 | 0 | 20 | mg/kg | 05.18.2020 18:34 | |

**Analytical Method:** **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3126302 Matrix: Soil Date Prep: 05.18.2020
Parent Sample Id: 661821-011 MS Sample Id: 661821-011 S MSD Sample Id: 661821-011 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 12000 | 200 | 12200 | 100 | 12200 | 99 | 90-110 | 0 | 20 | mg/kg | 05.18.2020 18:51 | |

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

# Chain of Custody

XENCO LABORATORIES

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432) 704-5440 EL Paso,TX (915) 585-3443 Lubbock,TX (806) 794-1296 Crasbad, NM (432) 704-5440
Phoenix,AZ (480) 355-0900 Atlanta,GA (770) 449-8800 Tampa,FL (813) 620-2000 West Palm Beach, FL (561) 689-6701 www.xenco.com

Work Order No: 441758

Page 1 of 1

| | | | |
|---|---|---|---|
| Project Manager: | Robert Appelt | Bill to: (if different) | MRO - Melodie Sanjari |
| Company Name: | Weston Solutions | Company Name: | Marathon Oil |
| Address: | 2600 Dallas Prkwy Ste 280 | Address: | |
| City, State ZIP: | Frisco, Tx 75034 | City, State ZIP: | Carlsbad, NM |
| Phone: | 214.205.4145 | Email: | |

**Work Order Comments**

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

| | | | |
|---|---|---|---|
| Project Name: | HF 7 Fed Com #001 | Turn Around | |
| Project Number: | | Routine ☐ | |
| Project Location | Carlsbad, NM | Rush: 7 DAY | |
| Sampler's Name: | Crystal Spangler | Due Date: | |
| PO #: | | Quote #: | |

| SAMPLE RECEIPT | | | |
|---|---|---|---|
| Temperature (°C): | 1.4 | Temp Blank: | (Yes) No |
| Received Intact: | (Yes) No | Wet Ice: | (Yes) No |
| Cooler Custody Seals: | Yes (No) N/A | Thermometer ID | T-NM-007 |
| Sample Custody Seals: | Yes (No) N/A | Correction Factor: | -0.2 |
| | | Total Containers: | 12 |

ANALYSIS REQUEST

Preservative Codes: MeOH: Me; None: NO; HNO3: HN; H2S04: H2; HCL: HL; NaOH: Na; Zn Acetate+ NaOH: Zn

TAT starts the day recevied by the lab, if received by 4:00pm

| Lab ID | Sample Identification | Matrix | Date Sampled | Time Sampled | Depth | Number of Containers | No Chlorides (300.0) | Sample Comments |
|---|---|---|---|---|---|---|---|---|
| 1 | B-03-2-1 (6.5-7.5) | S | 5/14/2020 | 0940 | 6.5-7.5 | 1 | X | |
| 2 | B-03-2-2 (20-21) | | | 1115 | 20-21 | | | |
| 3 | B-11-2-1 (1-5.5) | | | 1130 | 1-5.5 | | | |
| 4 | B-06-3 (1-5) | | | 1200 | 1-5 | | | |
| 5 | B-09-2-1 (1-5.5) | | | 1220 | 1-5.5 | | | |
| 6 | B-10-2-1 (1-5.5) | | | 1230 | 1-5.5 | 3 | | MS/MSD |
| 7 | B-05-2 (1-4) | | | 1330 | 1-4 | 1 | | |
| 8 | B-13-2-1 (2-6) | | | 1355 | 2-6 | | | |
| 9 | B-12-2-1 (0-4) | | | 1430 | 0-4 | | | |
| 10 | Dup-01 | | | 0000 | | | X | |

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed

TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U

1631 / 245.1 / 7470 / 7471 : Hg

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of $75.00 will be applied to each project and a charge of $5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

| Relinquished by: (Signature) | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Received by: (Signature) | Date/Time |
|---|---|---|---|---|---|
| 1 | 5/15/20 11:07 | | 2 | | |
| 3 | | | 4 | | |
| 5 | | | 6 | | |

Revised Date 022619 Rev: 2019.1

# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In

**Client:** Weston Solutions

**Date/ Time Received:** 05.15.2020 11.07.00 AM

**Work Order #:** 661758

**Acceptable Temperature Range: 0 - 6 degC**
**Air and Metal samples Acceptable Range: Ambient**

**Temperature Measuring device used : T-NM-007**

| Sample Receipt Checklist | | Comments |
|---|---|---|
| #1 *Temperature of cooler(s)? | 1.4 | |
| #2 *Shipping container in good condition? | **Yes** | |
| #3 *Samples received on ice? | **Yes** | |
| #4 *Custody Seals intact on shipping container/ cooler? | **Yes** | |
| #5 Custody Seals intact on sample bottles? | **Yes** | |
| #6*Custody Seals Signed and dated? | **Yes** | |
| #7 *Chain of Custody present? | **Yes** | |
| #8 Any missing/extra samples? | **No** | |
| #9 Chain of Custody signed when relinquished/ received? | **Yes** | |
| #10 Chain of Custody agrees with sample labels/matrix? | **Yes** | |
| #11 Container label(s) legible and intact? | **Yes** | |
| #12 Samples in proper container/ bottle? | **Yes** | Samples recieved in bulk containers |
| #13 Samples properly preserved? | **Yes** | |
| #14 Sample container(s) intact? | **Yes** | |
| #15 Sufficient sample amount for indicated test(s)? | **Yes** | |
| #16 All samples received within hold time? | **Yes** | |
| #17 Subcontract of sample(s)? | **No** | |
| #18 Water VOC samples have zero headspace? | **N/A** | |

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

**Checklist completed by:** Elizabeth McClellan Date: 05.15.2020

**Checklist reviewed by:** Jessica Kramer Date: 05.18.2020

Jessica Kramer