



**APPROVED**

*By Olivia Yu at 10:52 am, Sep 05, 2018*

August 7, 2018

NMOCD approves  
1RP-5072 for closure.

**Spill Closure Report:** Chili Parlor 17 Federal 2H (Section 8 T22S R 33E)  
API: 30-025-43137

**Prepared For:** **Marathon Oil Permian LLC.**  
5555 San Felipe Street  
Houston, Texas 77056

**NMOCD District 1**  
1625 N. French Drive,  
Hobbs, New Mexico 88240

Ms. Olivia Yu/Ms. Christina Hernandez,

Marathon Oil Permian LLC., retained Vertex Resource Services Inc. (Vertex) to conduct a Spill Assessment for a release that occurred at the Chili Parlor 17 Federal 2H, API 30-025-43137 (hereafter referred to as “site”) production pad. Oil was released from the flare in a light mist and overspray when the oil dump on the heater treater failed, sending fluid down the flare line and out the flare. This letter provides a description of the Spill Assessment and includes a request for Spill Closure.

## Site Information

The site is located approximately 38 miles east of Carlsbad, New Mexico. The legal location for the site is Section 8, Township 22 South and Range 33 East in Eddy County, New Mexico (approximately 32°23'59.208"N 103° 35'13.812"W). The affected property is leased from the Bureau of Land Management (BLM). An aerial photograph and site schematic are included in Attachment 1.

*The Geological Map of New Mexico* (New Mexico Bureau of Geology and Mineral Resources, 2014-2017) indicates the site’s surface geology is comprised primarily of Eolian and piedmont deposits (Holocene to middle Plesitocene) — Interlayered Eolian sands and piedmont-slope deposits. The Natural Resource Conservation Services identifies the local soils as Tonuco loamy fine sand, 0 to 3 percent slopes. These soils are typically sandy Eolian deposits. These descriptions are consistent with observations during the site visit. Site photographs obtained during the Spill Assessment are included in Attachment 2.

## Incident Description

The spill, reported May 6, 2018, involved the release of approximately 8.5 gallons of oil. The release was caused by the oil dump on the heater treater failing closed, sending fluid down the flare line and out the flare. Approximately 8.5 gallons of oil were estimated to have been released; 8.5 gallons were recovered by removing affected soil from the site. The initial C-141 Report is included in Attachment 3.

## Groundwater, Point of Diversion and Site Ranking

The New Mexico State Engineer website (New Mexico Water Rights Reporting System – Water Column Report) indicates that the nearest groundwater data available for S8-T22S-R33E is approximately 18,599 ft. from the site. The groundwater in the area is reported to be at an average depth of 340 feet below ground surface (BGS). The referenced groundwater data are presented in Attachment 4.

Based on the information obtained, the ranking for the site in question is **0** based on the following:

|                                |             |
|--------------------------------|-------------|
| Depth to Groundwater           | > 100 ft.   |
| Wellhead Protection Area       | > 1,000 ft. |
| Distance to Surface Water Body | > 1,000 ft. |

Based on a site ranking of **0**, NMOCD Recommended Remedial Action Levels (RRAL) are 50 mg/kg for BTEX, 10 mg/kg for Benzene, and 5,000 mg/kg for total petroleum hydrocarbons. Based on previous communication with the NMOCD, 600 mg/kg for total chlorides is considered to be an acceptable threshold for remediation.

The New Mexico State Engineer web site (New Mexico Water Rights Reporting System – Active & Inactive Points of Diversion) indicates that there are no diversions within 18599 ft. (Attachment 5).

## Remedial Actions Taken

A site visit was completed on May 24, 2018 aimed to identify evidence of the spill in and around the location specified in the initial C-141 Report and create a delineation plan based on the location. There was no evidence of surface staining or crystallization of salts.

A site visit and delineation was completed on May 29, 2018 aimed to identify evidence of the spill in and around the location specified in the initial C-141. There was no evidence of surface staining or crystallization of salts. The lab results are presented in Table 1 and Attachment 2.

Secondary sampling and removal of surface soil occurred on July 12, 2018. There was no evidence of surface staining or crystallization of salts. The lab results are presented in Table 2.

| Table 1. Soil Characterization Results – May 29, 2018 |             |            |                            |                           |                        |              |             |         |
|-------------------------------------------------------|-------------|------------|----------------------------|---------------------------|------------------------|--------------|-------------|---------|
| Sample Description                                    |             |            | Field Screening            |                           | Petroleum Hydrocarbons |              | Inorganic   |         |
| Sample ID                                             | Depth (ft.) | Date       | Volatile Organic Compounds | Quantab Result (High/Low) | Volatile               |              | Extractable |         |
|                                                       |             |            |                            |                           | Benzene                | BTEX (Total) | TPH         |         |
|                                                       |             |            | (ppm)                      | (+/-)                     | (mg/kg)                | (mg/kg)      | (mg/kg)     | (mg/kg) |
| BH18-01                                               | 0           | 2018-05-29 | -                          | -                         | -                      | 0.00597      | 85          | 183.0   |
| BH18-01                                               | 2           | 2018-05-29 | -                          | -                         | -                      | ND           | ND          | 9.6     |
| BH18-01                                               | 4           | 2018-05-29 | -                          | -                         | -                      | -            | -           | ND      |
| BH18-01                                               | 6           | 2018-05-29 | -                          | -                         | -                      | -            | -           | 6.8     |
| BH18-02                                               | 0           | 2018-05-29 | -                          | -                         | -                      | 0.00977      | 17          | 8.9     |
| BH18-02                                               | 2           | 2018-05-29 | -                          | -                         | -                      | ND           | ND          | 78.0    |
| BH18-02                                               | 4           | 2018-05-29 | -                          | -                         | -                      | -            | -           | 15.3    |
| BH18-02                                               | 6           | 2018-05-29 | -                          | -                         | -                      | -            | -           | 11.1    |
| BH18-03                                               | 0           | 2018-05-29 | -                          | -                         | -                      | 0.00712      | 37.5        | 140.0   |
| BH18-03                                               | 2           | 2018-05-29 | -                          | -                         | -                      | ND           | ND          | ND      |
| BH18-03                                               | 4           | 2018-05-29 | -                          | -                         | -                      | -            | -           | ND      |
| BH18-03                                               | 6           | 2018-05-29 | -                          | -                         | -                      | -            | -           | ND      |
| BH18-04                                               | 0           | 2018-05-29 | -                          | -                         | -                      | ND           | 419         | 231.0   |
| BH18-04                                               | 2           | 2018-05-29 | -                          | -                         | -                      | ND           | 18.7        | 36.2    |
| BH18-04                                               | 4           | 2018-05-29 | -                          | -                         | -                      | -            | -           | ND      |
| BH18-04                                               | 6           | 2018-05-29 | -                          | -                         | -                      | -            | -           | ND      |
| BH18-05                                               | 0           | 2018-05-29 | -                          | -                         | -                      | ND           | 18          | ND      |
| BH18-05                                               | 2           | 2018-05-29 | -                          | -                         | -                      | ND           | ND          | ND      |
| BH18-05                                               | 4           | 2018-05-29 | -                          | -                         | -                      | -            | -           | ND      |
| BH18-05                                               | 6           | 2018-05-29 | -                          | -                         | -                      | -            | -           | ND      |
| BH18-06                                               | 0           | 2018-05-29 | -                          | -                         | -                      | ND           | ND          | 7.3     |
| BH18-06                                               | 2           | 2018-05-29 | -                          | -                         | -                      | ND           | ND          | 7.1     |
| BH18-06                                               | 4           | 2018-05-29 | -                          | -                         | -                      | -            | -           | ND      |
| BH18-06                                               | 6           | 2018-05-29 | -                          | -                         | -                      | -            | -           | ND      |

| Table 2. Soil Characterization Results – July 12, 2018 |             |            |                            |                           |                        |              |             |         |
|--------------------------------------------------------|-------------|------------|----------------------------|---------------------------|------------------------|--------------|-------------|---------|
| Sample Description                                     |             |            | Field Screening            |                           | Petroleum Hydrocarbons |              | Inorganic   |         |
| Sample ID                                              | Depth (ft.) | Date       | Volatile Organic Compounds | Quantab Result (High/Low) | Volatile               |              | Extractable |         |
|                                                        |             |            |                            |                           | Benzene                | BTEX (Total) | TPH         |         |
|                                                        |             |            | (ppm)                      | (+/-)                     | (mg/kg)                | (mg/kg)      | (mg/kg)     | (mg/kg) |
| BH18-04                                                | 0           | 2018-07-12 | -                          | -                         | -                      | 0.00597      | 85          | 183.0   |

## Closure Request

Initial response addressed concerns that were readily accessible around existing infrastructure on the operating site. The spill occurred on the well pad and slightly off site. No visible impacts were noted where during the site visit on May 24, 29 and July 12, 2018. Final laboratory analysis of sample locations delineating the spill, both vertically and horizontally, showed all results to be below the recommended remediation action levels for hydrocarbons and below 600 ppm for chlorides. Complete laboratory results are included in Attachment 6.

According to NMOCD guidelines for remediation, the RRALs suggested for this site are at the highest acceptable threshold based on depth to groundwater, wellhead protection area and distance to the nearest surface water diversion. Based on the current operational activity on the site, delineation and remediation efforts were completed. Given that the impact associated to this spill has been remediated both on and off site, Marathon Oil Permian LLC requests that this spill be closed.

Should you have any questions or concerns, please do not hesitate to contact the undersigned at 832.588.0674 or dhanton@vertex.ca.

Sincerely,



Dhugal Hanton  
VICE PRESIDENT – US OPERATIONS

## Attachments

- Attachment 1. Figures
- Attachment 2. Site Photographs
- Attachment 3. Initial C-141 Report
- Attachment 4. Groundwater Information
- Attachment 5. Diversion Information
- Attachment 6. Laboratory Results

## References

- New Mexico Oil Conservation Division. (1993). *Guidelines for Remediation of Leaks, Spills and Releases*. Santa Fe, New Mexico.
- New Mexico Water Rights Reporting System. (2010). *Water Column/Average Depth to Water Report*. Retrieved from <http://nmwrrs.ose.state.nm.us/index.html>
- New Mexico Water Rights Reporting System. (2010). *Point of Diversion Location Report*. Retrieved from <http://nmwrrs.ose.state.nm.us/index.html>
- New Mexico Bureau of Geology and Mineral Resources. (2014-2017). *Interactive Geologic Map*. Retrieved from <http://geoinfo.nmt.edu>
- USDA Natural Resources Conservation Service. (2017) *Web Soil Survey*. Retrieved from <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

## **Limitations**

This report has been prepared for the sole benefit of Marathon Oil Permian LLC. This document may not be used by any other person or entity, with the exception of the New Mexico Oil Conservation Division, without the express written consent of Vertex Resource Services Inc. (Vertex) and Marathon Oil Permian LLC. Any use of this report by a third party, or any reliance on decisions made based on it, or damages suffered as a result of the use of this report are the sole responsibility of the user.

The information and conclusions contained in this report are based upon work undertaken by trained professional and technical staff in accordance with generally accepted scientific practices current at the time the work was performed. The conclusions and recommendations presented represent the best judgement of Vertex based on the data collected during the assessment. Due to the nature of the assessment and the data available, Vertex cannot warrant against undiscovered environmental liabilities. Conclusions and recommendations presented in this report should not be considered legal advice.

## **ATTACHMENT 1**



### Legend

- Borehole
- Produced Water Spill

0 37.5 75 150 ft

SCALE 1:1,200

Notes: Aerial Image from Google Earth; \*=Total

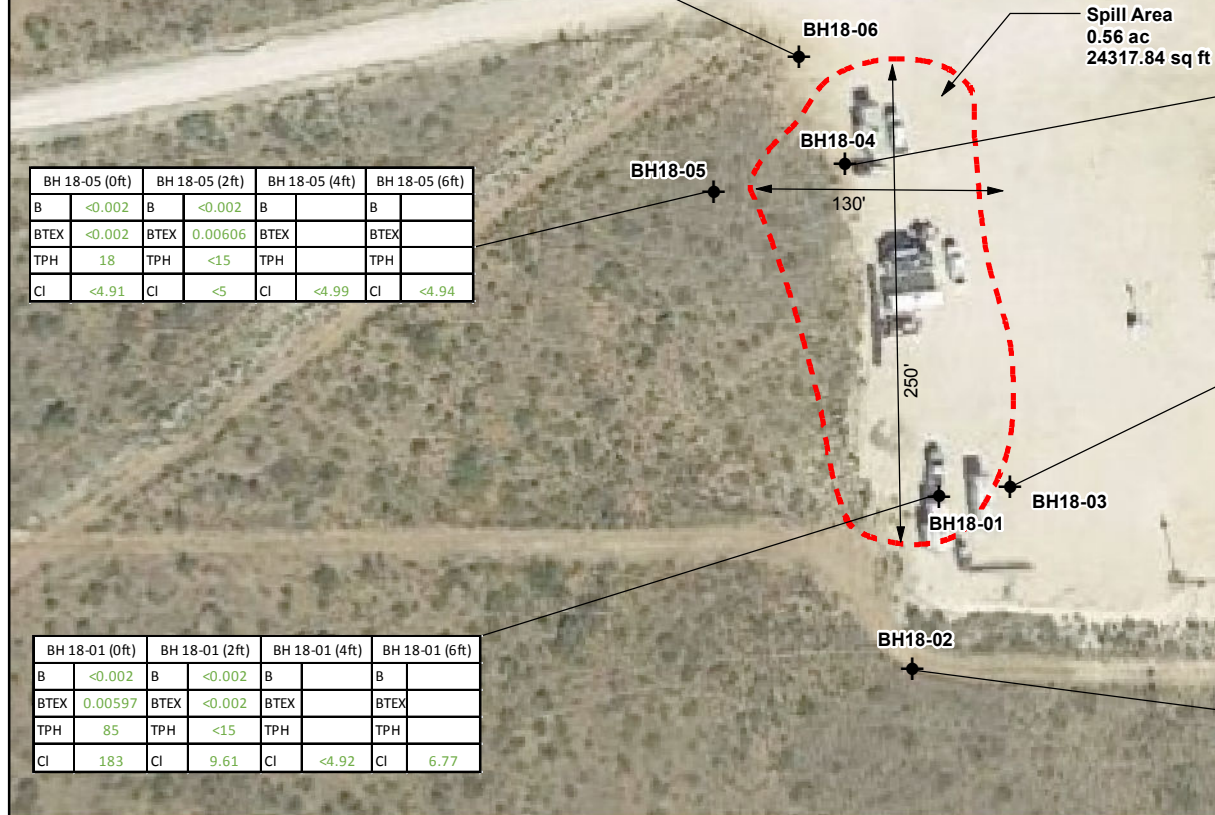


**Site Schematic**  
**Chili Parlor 17 Fed 2H**



|                 |                     |
|-----------------|---------------------|
| DRAWN: JG       | FIGURE:<br><b>1</b> |
| APPROVED: RF    |                     |
| DATE: JUL 24/18 |                     |

**VERSATILITY. EXPERTISE.**



| BH 18-01 (0ft) |         | BH 18-01 (2ft) |        | BH 18-01 (4ft) |       | BH 18-01 (6ft) |      |
|----------------|---------|----------------|--------|----------------|-------|----------------|------|
| B              | <0.002  | B              | <0.002 | B              |       | B              |      |
| BTEX           | 0.00597 | BTEX           | <0.002 | BTEX           |       | BTEX           |      |
| TPH            | 85      | TPH            | <15    | TPH            |       | TPH            |      |
| Cl             | 183     | Cl             | 9.61   | Cl             | <4.92 | Cl             | 6.77 |

| BH 18-04 (0ft) |        | BH 18-04 (2ft) |        | BH 18-04 (4ft) |      | BH 18-04 (6ft) |       |
|----------------|--------|----------------|--------|----------------|------|----------------|-------|
| B              | <0.002 | B              | <0.002 | B              |      | B              |       |
| BTEX           | <0.002 | BTEX           | <0.002 | BTEX           |      | BTEX           |       |
| TPH            | 419    | TPH            | 18.7   | TPH            |      | TPH            |       |
| Cl             | 231    | Cl             | 36.2   | Cl             | 34.3 | Cl             | <4.93 |

| BH 18-03 (0ft) |         | BH 18-03 (2ft) |        | BH 18-03 (4ft) |       | BH 18-03 (6ft) |       |
|----------------|---------|----------------|--------|----------------|-------|----------------|-------|
| B              | <0.002  | B              | <0.002 | B              |       | B              |       |
| BTEX           | 0.00712 | BTEX           | <0.002 | BTEX           |       | BTEX           |       |
| TPH            | 37.5    | TPH            | <15    | TPH            |       | TPH            |       |
| Cl             | 140     | Cl             | <4.97  | Cl             | <5.00 | Cl             | <4.99 |

| BH 18-02 (0ft) |         | BH 18-02 (2ft) |        | BH 18-02 (4ft) |      | BH 18-02 (6ft) |      |
|----------------|---------|----------------|--------|----------------|------|----------------|------|
| B              | <0.002  | B              | <0.002 | B              |      | B              |      |
| BTEX           | 0.00977 | BTEX           | <0.002 | BTEX           |      | BTEX           |      |
| TPH            | 17      | TPH            | <15    | TPH            |      | TPH            |      |
| Cl             | 8.93    | Cl             | 78     | Cl             | 15.3 | Cl             | 11.1 |

 Sample Point  
 Release Area

**VERSATILITY. EXPERTISE.**

## **ATTACHMENT 2**



Photo 1. Overview of spill area

Photo Date: May 24, 2018

GPS: N: 32.39978 W: 103.58717



Photo 2. Overview of spill area

Photo Date: May 29, 2018

GPS: N: 32.39978 W: 103.58717



Photo 3. Sample in spill area Location

Photo Date: May 29, 2018

GPS: N: 32.39978 W: 103.58717



Photo 4. Sample in spill area Filled in

Photo Date: May 29, 2018

GPS: N: 32.39978 W: 103.58717



Photo 5. Sample number 3 Location

Photo Date: May 29, 2018

GPS: N: 32.39978 W: 103.58717



Photo 6. Sample number 3 Filled in

Photo Date: May 29, 2018

GPS: N: 32.39978 W: 103.58717

## **ATTACHMENT 3**

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

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

Form C-141  
Revised April 3, 2017

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

## Release Notification and Corrective Action

### OPERATOR

☒ Initial Report ☐ Final Report

|                                                      |                                                        |
|------------------------------------------------------|--------------------------------------------------------|
| Name of Company Marathon Oil Company                 | Contact Callie Karrigan                                |
| Address 5555 San Felipe Street, Houston, Texas 77056 | Telephone No. 405-202-1028(cell) 575-297-0956 (office) |
| Facility Name Chili Parlor 17 Fed 2H                 | Facility Type Oil well                                 |

|                    |                    |                      |
|--------------------|--------------------|----------------------|
| Surface Owner: blm | Mineral Owner: blm | API No. 30-025-43137 |
|--------------------|--------------------|----------------------|

### LOCATION OF RELEASE

|                  |              |                 |              |                      |                           |                      |                        |               |
|------------------|--------------|-----------------|--------------|----------------------|---------------------------|----------------------|------------------------|---------------|
| Unit Letter<br>P | Section<br>8 | Township<br>22S | Range<br>33E | Feet from the<br>240 | North/South Line<br>South | Feet from the<br>360 | East/West Line<br>East | County<br>Lea |
|------------------|--------------|-----------------|--------------|----------------------|---------------------------|----------------------|------------------------|---------------|

Latitude 32.39971673 Longitude -103.58819381 NAD83

### NATURE OF RELEASE

|                                                                                                                                          |                                                              |                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------|
| Type of Release: oil                                                                                                                     | Volume of Release 8.50 gallons                               | Volume Recovered 0 gallons                       |
| Source of Release: flare                                                                                                                 | Date and Hour of Occurrence<br>05/06/2018 1:07 pm            | Date and Hour of Discovery<br>05/06/2018 1:07 pm |
| Was Immediate Notice Given?<br><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required | If YES, To Whom? Lea County – Olivia Yu, BLM – Shelly Tucker |                                                  |
| By Whom? Callie Karrigan                                                                                                                 | Date and Hour 05/06/2018 5:50 pm                             |                                                  |
| Was a Watercourse Reached?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                        | If YES, Volume Impacting the Watercourse.                    |                                                  |

If a Watercourse was Impacted, Describe Fully.\*  
Not applicable.

Describe Cause of Problem and Remedial Action Taken.\*

Operator reported that the oil dump on the heater treater failed closed, sending fluid down the flare line and out the flare. Approximately 8.50 gallons of oil was released out the flare in light mist and overspray.

Describe Area Affected and Cleanup Action Taken.\*

The overspray affected a 108 ft x 252 ft area, with the mist traveling west off location into a pasture. Light scraping was completed onsite to remove saturated soils and confirmation samples will be taken. The impacted area offsite will be sampled and lightly scraped.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

|                                                                      |                                         |                                   |
|----------------------------------------------------------------------|-----------------------------------------|-----------------------------------|
| Signature: <i>Callie Karrigan</i>                                    | <b><u>OIL CONSERVATION DIVISION</u></b> |                                   |
| Printed Name: Callie Karrigan                                        |                                         |                                   |
| Title: HES Professional                                              | Approved by Environmental Specialist:   | Approval Date: Expiration Date:   |
| E-mail Address: cnkarrigan@marathonoil.com                           | Conditions of Approval:                 | Attached <input type="checkbox"/> |
| Date: 05/21/2018<br>Phone: 405-202-1028 (cell) 575-297-0956 (office) |                                         |                                   |

\* Attach Additional Sheets If Necessary

## **ATTACHMENT 4**



# 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-Code | basin | County | Q 64 | Q 16 | Q 4 | Sec | Tws | Rng | X      | Y        | Distance | Depth Well | Depth Water | Water Column |
|------------------------------|--------------|-------|--------|------|------|-----|-----|-----|-----|--------|----------|----------|------------|-------------|--------------|
| <a href="#">C 02821</a>      | C            | LE    |        | 2    | 2    | 3   | 14  | 22S | 32E | 627303 | 3584563* | 5669     | 540        | 340         | 200          |
| <a href="#">C 03717 POD1</a> | C            | LE    |        | 4    | 4    | 1   | 09  | 22S | 32E | 624094 | 3586365  | 8810     | 650        |             |              |

Average Depth to Water: **340 feet**

Minimum Depth: **340 feet**

Maximum Depth: **340 feet**

Record Count: 2

### Basin/County Search:

**Basin:** Carlsbad

**Subbasin:** Carlsbad (72121)

### UTMNAD83 Radius Search (in meters):

**Easting (X):** 632872.93

**Northing (Y):** 3585621.19

**Radius:** 10000

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

## **ATTACHMENT 5**



# New Mexico Office of the State Engineer

## Active & Inactive Points of Diversion

(with Ownership Information)

| (acre ft per annum)     |           |     |           |                                  |        |                              |      |       |         | (R=POD has been replaced and no longer serves this file, (quarters are 1=NW 2=NE 3=SW 4=SE)<br>C=the file is closed) (quarters are smallest to largest) (NAD83 UTM in meters) |   |   |      |     |     |     |     |        |          |                                                                                          |
|-------------------------|-----------|-----|-----------|----------------------------------|--------|------------------------------|------|-------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|------|-----|-----|-----|-----|--------|----------|------------------------------------------------------------------------------------------|
| WR File Nbr             | Sub basin | Use | Diversion | Owner                            | County | POD Number                   | Code | Grant | Source  | q                                                                                                                                                                             | q | q | 6416 | 4   | Sec | Tws | Rng | X      | Y        | Distance                                                                                 |
| <a href="#">C 02821</a> | C         | DOL |           | 3 THE JIMMY MILLS 2005 GST TRUST | LE     | <a href="#">C 02821</a>      |      |       | Shallow | 2                                                                                                                                                                             | 2 | 3 | 14   | 22S | 32E |     |     | 627303 | 3584563* |  5669 |
| <a href="#">C 02096</a> | CUB       | STK |           | 5.8 BUREAU OF LAND MANAGEMENT    | ED     | <a href="#">C 02096</a>      |      |       |         |                                                                                                                                                                               |   |   | 2    | 3   | 14  | 22S | 32E | 627204 | 3584464* |  5785 |
| <a href="#">C 02302</a> | C         | PRO |           | 0 POGO PRODUCING COMPANY         | LE     | <a href="#">C 02302</a>      |      |       |         | 1                                                                                                                                                                             | 2 | 2 | 26   | 22S | 32E |     |     | 627938 | 3582161* |  6027 |
| <a href="#">C 03717</a> | C         | STK |           | 3 SLASH 46 RANCH                 | LE     | <a href="#">C 03717 POD1</a> |      |       | Shallow | 4                                                                                                                                                                             | 4 | 1 | 09   | 22S | 32E |     |     | 624093 | 3586365  |  8810 |
| <a href="#">C 03771</a> | C         | STK |           | 0 SLASH 46 INC                   | LE     | <a href="#">C 03771 POD1</a> |      |       |         | 4                                                                                                                                                                             | 3 | 3 | 09   | 22S | 32E |     |     | 623603 | 3586306  |  9294 |
| <a href="#">C 03724</a> | C         | STK |           | 0 BUREAU OF LAND MANAGEMENT      | LE     | <a href="#">C 03724 POD1</a> |      |       |         | 2                                                                                                                                                                             | 1 | 1 | 09   | 22S | 32E |     |     | 623578 | 3586992  |  9395 |

Record Count: 6

### POD Search:

POD Basin: Carlsbad

### UTMNAD83 Radius Search (in meters):

Easting (X): 632872.93

Northing (Y): 3585621.19

Radius: 10000

Sorted by: Distance

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

## **ATTACHMENT 6**



# Certificate of Analysis Summary 592472

Marathon Oil Company, Tulsa, OK

Project Name: Chile Parlor 17 Fed 2H



Project Id:

Contact: Callie Karrigan

Project Location: Eddy County, New Mexico

Date Received in Lab: Tue Jul-17-18 10:48 am

Report Date: 23-JUL-18

Project Manager: Jessica Kramer

|                                    |                   |                         |  |  |  |  |  |
|------------------------------------|-------------------|-------------------------|--|--|--|--|--|
| <b>Analysis Requested</b>          | <b>Lab Id:</b>    | 592472-001              |  |  |  |  |  |
|                                    | <b>Field Id:</b>  | Chile Parlor 17-BH18-04 |  |  |  |  |  |
|                                    | <b>Depth:</b>     |                         |  |  |  |  |  |
|                                    | <b>Matrix:</b>    | SOIL                    |  |  |  |  |  |
|                                    | <b>Sampled:</b>   | Jul-15-18 09:00         |  |  |  |  |  |
| <b>BTEX by EPA 8021B</b>           | <b>Extracted:</b> | Jul-17-18 16:00         |  |  |  |  |  |
|                                    | <b>Analyzed:</b>  | Jul-18-18 03:56         |  |  |  |  |  |
|                                    | <b>Units/RL:</b>  | mg/kg RL                |  |  |  |  |  |
|                                    |                   |                         |  |  |  |  |  |
| Benzene                            |                   | <0.00199 0.00199        |  |  |  |  |  |
| Toluene                            |                   | <0.00199 0.00199        |  |  |  |  |  |
| Ethylbenzene                       |                   | <0.00199 0.00199        |  |  |  |  |  |
| m,p-Xylenes                        |                   | <0.00398 0.00398        |  |  |  |  |  |
| o-Xylene                           |                   | <0.00199 0.00199        |  |  |  |  |  |
| Total Xylenes                      |                   | <0.00199 0.00199        |  |  |  |  |  |
| Total BTEX                         |                   | <0.00199 0.00199        |  |  |  |  |  |
| <b>Inorganic Anions by EPA 300</b> | <b>Extracted:</b> | Jul-18-18 16:00         |  |  |  |  |  |
|                                    | <b>Analyzed:</b>  | Jul-18-18 19:01         |  |  |  |  |  |
|                                    | <b>Units/RL:</b>  | mg/kg RL                |  |  |  |  |  |
| Chloride                           |                   | 83.3 4.96               |  |  |  |  |  |
| <b>TPH by SW8015 Mod</b>           | <b>Extracted:</b> | Jul-19-18 12:00         |  |  |  |  |  |
|                                    | <b>Analyzed:</b>  | Jul-19-18 15:29         |  |  |  |  |  |
|                                    | <b>Units/RL:</b>  | mg/kg RL                |  |  |  |  |  |
|                                    |                   |                         |  |  |  |  |  |
| Gasoline Range Hydrocarbons (GRO)  |                   | <15.0 15.0              |  |  |  |  |  |
| Diesel Range Organics (DRO)        |                   | 21.5 15.0               |  |  |  |  |  |
| Oil Range Hydrocarbons (ORO)       |                   | <15.0 15.0              |  |  |  |  |  |
| Total TPH                          |                   | 21.5 15.0               |  |  |  |  |  |

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

*Jessica Kramer*

Jessica Kramer  
Project Assistant

# Analytical Report 592472

## for Marathon Oil Company

**Project Manager: Callie Karrigan**

**Chilie Parlor 17 Fed 2H**

**23-JUL-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-26), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab Code: TX00158): Texas (T104704400-18-15)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)

Xenco-Atlanta (LELAP Lab ID #04176)

Xenco-Tampa: Florida (E87429)

Xenco-Lakeland: Florida (E84098)



23-JUL-18

Project Manager: **Callie Karrigan**

**Marathon Oil Company**

P. O. Box 22164

Tulsa, OK 74121-2164

Reference: XENCO Report No(s): **592472**

**Chilie Parlor 17 Fed 2H**

Project Address: Eddy County, New Mexico

**Callie Karrigan:**

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) 592472. 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. 592472 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**

Project Assistant

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 592472



### Marathon Oil Company, Tulsa, OK

Chilie Parlor 17 Fed 2H

| Sample Id                | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|--------------------------|--------|----------------|--------------|---------------|
| Chilie Parlor 17-BH18-04 | S      | 07-15-18 09:00 |              | 592472-001    |



## CASE NARRATIVE

**Client Name:** Marathon Oil Company

**Project Name:** Chile Parlor 17 Fed 2H

Project ID:

Work Order Number(s): 592472

Report Date: 23-JUL-18

Date Received: 07/17/2018

---

**Sample receipt non conformances and comments:**

None

---

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

None

**Analytical non conformances and comments:**

Batch: LBA-3056801 BTEX by EPA 8021B

Lab Sample ID 592472-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 592472-001.

The Laboratory Control Sample for m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



# Certificate of Analytical Results 592472



## Marathon Oil Company, Tulsa, OK

Chilie Parlor 17 Fed 2H

Sample Id: **Chilie Parlor 17-BH18-04**

Matrix: Soil

Date Received: 07.17.18 10.48

Lab Sample Id: 592472-001

Date Collected: 07.15.18 09.00

Analytical Method: Inorganic Anions by EPA 300

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 07.18.18 16.00

Basis: Wet Weight

Seq Number: 3056961

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 83.3   | 4.96 | mg/kg | 07.18.18 19.01 |      | 1   |

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 07.19.18 12.00

Basis: Wet Weight

Seq Number: 3057120

| Parameter                         | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------------------------------|------------|--------|------|-------|----------------|------|-----|
| Gasoline Range Hydrocarbons (GRO) | PHC610     | <15.0  | 15.0 | mg/kg | 07.19.18 15.29 | U    | 1   |
| Diesel Range Organics (DRO)       | C10C28DRO  | 21.5   | 15.0 | mg/kg | 07.19.18 15.29 |      | 1   |
| Oil Range Hydrocarbons (ORO)      | PHCG2835   | <15.0  | 15.0 | mg/kg | 07.19.18 15.29 | U    | 1   |
| Total TPH                         | PHC635     | 21.5   | 15.0 | mg/kg | 07.19.18 15.29 |      | 1   |

| Surrogate      | Cas Number | % Recovery | Units | Limits | Analysis Date  | Flag |
|----------------|------------|------------|-------|--------|----------------|------|
| 1-Chlorooctane | 111-85-3   | 94         | %     | 70-135 | 07.19.18 15.29 |      |
| o-Terphenyl    | 84-15-1    | 98         | %     | 70-135 | 07.19.18 15.29 |      |



# Certificate of Analytical Results 592472



## Marathon Oil Company, Tulsa, OK

Chilie Parlor 17 Fed 2H

Sample Id: **Chilie Parlor 17-BH18-04**

Matrix: Soil

Date Received: 07.17.18 10.48

Lab Sample Id: 592472-001

Date Collected: 07.15.18 09.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.17.18 16.00

Basis: Wet Weight

Seq Number: 3056801

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00199          | 0.00199      | mg/kg         | 07.18.18 03.56       | U           | 1   |
| Toluene              | 108-88-3          | <0.00199          | 0.00199      | mg/kg         | 07.18.18 03.56       | U           | 1   |
| Ethylbenzene         | 100-41-4          | <0.00199          | 0.00199      | mg/kg         | 07.18.18 03.56       | U           | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00398          | 0.00398      | mg/kg         | 07.18.18 03.56       | U           | 1   |
| o-Xylene             | 95-47-6           | <0.00199          | 0.00199      | mg/kg         | 07.18.18 03.56       | U           | 1   |
| Total Xylenes        | 1330-20-7         | <0.00199          | 0.00199      | mg/kg         | 07.18.18 03.56       | U           | 1   |
| Total BTEX           |                   | <0.00199          | 0.00199      | mg/kg         | 07.18.18 03.56       | U           | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 1,4-Difluorobenzene  | 540-36-3          | 71                | %            | 70-130        | 07.18.18 03.56       |             |     |
| 4-Bromofluorobenzene | 460-00-4          | 71                | %            | 70-130        | 07.18.18 03.56       |             |     |

- 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.

**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 592472

### Marathon Oil Company Chilie Parlor 17 Fed 2H

**Analytical Method: Inorganic Anions by EPA 300**

Seq Number: 3056961

MB Sample Id: 7658662-1-BLK

Matrix: Solid

LCS Sample Id: 7658662-1-BKS

Prep Method: E300P

Date Prep: 07.18.18

LCSD Sample Id: 7658662-1-BSD

| Parameter | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|-----------|--------------|------------|----------|-------------|-----------|--------|------|-----------|-------|----------------|------|
| Chloride  | <5.00     | 250          | 251        | 100      | 250         | 100       | 90-110 | 0    | 20        | mg/kg | 07.18.18 17:35 |      |

**Analytical Method: Inorganic Anions by EPA 300**

Seq Number: 3056961

Parent Sample Id: 592018-006

Matrix: Soil

MS Sample Id: 592018-006 S

Prep Method: E300P

Date Prep: 07.18.18

MSD Sample Id: 592018-006 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Chloride  | 282           | 250          | 532       | 100     | 522        | 96       | 90-110 | 2    | 20        | mg/kg | 07.18.18 17:51 |      |

**Analytical Method: Inorganic Anions by EPA 300**

Seq Number: 3056961

Parent Sample Id: 592472-001

Matrix: Soil

MS Sample Id: 592472-001 S

Prep Method: E300P

Date Prep: 07.18.18

MSD Sample Id: 592472-001 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Chloride  | 83.3          | 248          | 334       | 101     | 334        | 101      | 90-110 | 0    | 20        | mg/kg | 07.18.18 19:07 |      |

**Analytical Method: TPH by SW8015 Mod**

Seq Number: 3057120

MB Sample Id: 7658750-1-BLK

Matrix: Solid

LCS Sample Id: 7658750-1-BKS

Prep Method: TX1005P

Date Prep: 07.19.18

LCSD Sample Id: 7658750-1-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) | <15.0     | 1000         | 958        | 96       | 969         | 97        | 70-135 | 1    | 20        | mg/kg | 07.19.18 13:08 |      |
| Diesel Range Organics (DRO)       | <15.0     | 1000         | 986        | 99       | 1000        | 100       | 70-135 | 1    | 20        | mg/kg | 07.19.18 13:08 |      |

| Surrogate      | MB %Rec | MB Flag | LCS %Rec | LCS Flag | LCSD %Rec | LCSD Flag | Limits | Units | Analysis Date  |
|----------------|---------|---------|----------|----------|-----------|-----------|--------|-------|----------------|
| 1-Chlorooctane | 95      |         | 122      |          | 123       |           | 70-135 | %     | 07.19.18 13:08 |
| o-Terphenyl    | 101     |         | 113      |          | 114       |           | 70-135 | %     | 07.19.18 13:08 |

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

$[D] = 100 * (C - A) / B$   
 $RPD = 200 * |(C - E) / (C + E)|$   
 $[D] = 100 * (C) / [B]$   
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



## QC Summary 592472

### Marathon Oil Company Chilie Parlor 17 Fed 2H

**Analytical Method: TPH by SW8015 Mod**

Seq Number: 3057120

Parent Sample Id: 592471-001

Matrix: Soil

MS Sample Id: 592471-001 S

Prep Method: TX1005P

Date Prep: 07.19.18

MSD Sample Id: 592471-001 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) | <15.0         | 998          | 912       | 91      | 923        | 92       | 70-135 | 1    | 20        | mg/kg | 07.19.18 14:09 |      |
| Diesel Range Organics (DRO)       | <15.0         | 998          | 941       | 94      | 957        | 96       | 70-135 | 2    | 20        | mg/kg | 07.19.18 14:09 |      |

**Surrogate**

|                | MS %Rec | MS Flag | MSD %Rec | MSD Flag | Limits | Units | Analysis Date  |
|----------------|---------|---------|----------|----------|--------|-------|----------------|
| 1-Chlorooctane | 124     |         | 125      |          | 70-135 | %     | 07.19.18 14:09 |
| o-Terphenyl    | 112     |         | 118      |          | 70-135 | %     | 07.19.18 14:09 |

**Analytical Method: BTEX by EPA 8021B**

Seq Number: 3056801

MB Sample Id: 7658578-1-BLK

Matrix: Solid

LCS Sample Id: 7658578-1-BKS

Prep Method: SW5030B

Date Prep: 07.17.18

LCSD Sample Id: 7658578-1-BSD

| Parameter    | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|--------------|-----------|--------------|------------|----------|-------------|-----------|--------|------|-----------|-------|----------------|------|
| Benzene      | <0.00200  | 0.0998       | 0.0944     | 95       | 0.110       | 110       | 70-130 | 15   | 35        | mg/kg | 07.18.18 02:10 |      |
| Toluene      | <0.00200  | 0.0998       | 0.0972     | 97       | 0.106       | 106       | 70-130 | 9    | 35        | mg/kg | 07.18.18 02:10 |      |
| Ethylbenzene | <0.00200  | 0.0998       | 0.0942     | 94       | 0.103       | 103       | 70-130 | 9    | 35        | mg/kg | 07.18.18 02:10 |      |
| m,p-Xylenes  | <0.00399  | 0.200        | 0.195      | 98       | 0.212       | 105       | 70-130 | 8    | 35        | mg/kg | 07.18.18 02:10 |      |
| o-Xylene     | <0.00200  | 0.0998       | 0.0908     | 91       | 0.0994      | 99        | 70-130 | 9    | 35        | mg/kg | 07.18.18 02:10 |      |

**Surrogate**

|                      | MB %Rec | MB Flag | LCS %Rec | LCS Flag | LCSD %Rec | LCSD Flag | Limits | Units | Analysis Date  |
|----------------------|---------|---------|----------|----------|-----------|-----------|--------|-------|----------------|
| 1,4-Difluorobenzene  | 101     |         | 90       |          | 96        |           | 70-130 | %     | 07.18.18 02:10 |
| 4-Bromofluorobenzene | 102     |         | 104      |          | 101       |           | 70-130 | %     | 07.18.18 02:10 |

**Analytical Method: BTEX by EPA 8021B**

Seq Number: 3056801

Parent Sample Id: 592472-001

Matrix: Soil

MS Sample Id: 592472-001 S

Prep Method: SW5030B

Date Prep: 07.17.18

MSD Sample Id: 592472-001 SD

| Parameter    | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|--------------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Benzene      | <0.00199      | 0.0996       | 0.0740    | 74      | 0.0723     | 72       | 70-130 | 2    | 35        | mg/kg | 07.18.18 02:46 |      |
| Toluene      | <0.00199      | 0.0996       | 0.0693    | 70      | 0.0777     | 78       | 70-130 | 11   | 35        | mg/kg | 07.18.18 02:46 |      |
| Ethylbenzene | <0.00199      | 0.0996       | 0.0660    | 66      | 0.0651     | 65       | 70-130 | 1    | 35        | mg/kg | 07.18.18 02:46 | X    |
| m,p-Xylenes  | <0.00398      | 0.199        | 0.136     | 68      | 0.136      | 68       | 70-130 | 0    | 35        | mg/kg | 07.18.18 02:46 | X    |
| o-Xylene     | <0.00199      | 0.0996       | 0.0642    | 64      | 0.0658     | 66       | 70-130 | 2    | 35        | mg/kg | 07.18.18 02:46 | X    |

**Surrogate**

|                      | MS %Rec | MS Flag | MSD %Rec | MSD Flag | Limits | Units | Analysis Date  |
|----------------------|---------|---------|----------|----------|--------|-------|----------------|
| 1,4-Difluorobenzene  | 103     |         | 97       |          | 70-130 | %     | 07.18.18 02:46 |
| 4-Bromofluorobenzene | 73      |         | 89       |          | 70-130 | %     | 07.18.18 02:46 |

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

$[D] = 100 * (C - A) / B$   
 $RPD = 200 * |(C - E) / (C + E)|$   
 $[D] = 100 * (C) / [B]$   
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

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

## Page 1 of 1

592472

(Circle or Specify Method No.)

[illegible]

ORIGINAL COPY

ORIGIN ID:MAFA (800) 794-1296  
XENCO  
XENCO  
1211 W. FLORIDA AVE  
MIDLAND, TX 79701  
UNITED STATES US

SHIP DATE: 16 JUL 18  
ACTWGT: 31.00 LB  
CAD: 101813706INET3980  
DIMS: 26x14x14 IN  
BILL RECIPIENT

TO XENCO

XENCO

1211 W. FLORIDA AVE

MIDLAND TX 79701

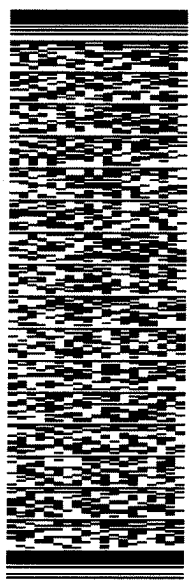
(800) 794-1296

REF:

PO:

DEPT:

552J2B532/DCA5



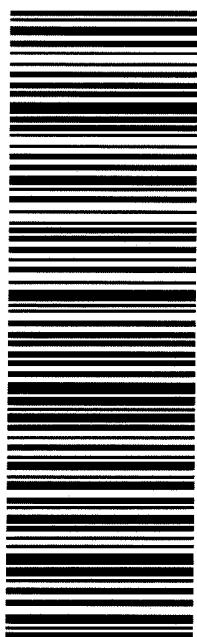
J181110912501cm

TRK# 7727 1946 1682  
#0201

TUE - 17 JUL 3:00P  
STANDARD OVERNIGHT

41 MAFA

79701  
TX-US LBB



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# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: Marathon Oil Company

Date/ Time Received: 07/17/2018 10:48:00 AM

Work Order #: 592472

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

### Sample Receipt Checklist

### Comments

|                                                         |     |
|---------------------------------------------------------|-----|
| #1 *Temperature of cooler(s)?                           | 1.3 |
| #2 *Shipping container in good condition?               | Yes |
| #3 *Samples received on ice?                            | Yes |
| #4 *Custody Seals intact on shipping container/ cooler? | N/A |
| #5 Custody Seals intact on sample bottles?              | N/A |
| #6 *Custody Seals Signed and dated?                     | N/A |
| #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:

Katie Lowe

Date: 07/17/2018

Checklist reviewed by:

Jessica Kramer

Date: 07/17/2018



# Certificate of Analysis Summary 587892

Marathon Oil Company, Tulsa, OK

Project Name: Chili Parlor 17 Fed 2H



Project Id:

Contact: Callie Karrigan

Project Location: Lea County, New Mexico

Date Received in Lab: Fri Jun-01-18 01:30 pm

Report Date: 11-JUN-18

Project Manager: Jessica Kramer

| <i>Analysis Requested</i>                | <i>Lab Id:</i>    | 587892-001          | 587892-002          | 587892-003          | 587892-004          | 587892-005          | 587892-006          |
|------------------------------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                          | <i>Field Id:</i>  | BH-18-01 Depth 0 ft | BH-18-01 Depth 2 ft | BH-18-01 Depth 4 ft | BH-18-01 Depth 6 ft | BH-18-02 Depth 0 ft | BH-18-02 Depth 2 ft |
|                                          | <i>Depth:</i>     |                     |                     |                     |                     |                     |                     |
|                                          | <i>Matrix:</i>    | SOIL                | SOIL                | SOIL                | SOIL                | SOIL                | SOIL                |
|                                          | <i>Sampled:</i>   | May-29-18 10:30     | May-29-18 10:35     | May-29-18 10:40     | May-29-18 10:45     | May-29-18 11:00     | May-29-18 11:05     |
| <b>BTEX by EPA 8021B</b>                 | <i>Extracted:</i> | Jun-05-18 15:00     | Jun-05-18 15:00     |                     |                     | Jun-05-18 17:00     | Jun-05-18 15:00     |
|                                          | <i>Analyzed:</i>  | Jun-06-18 00:34     | Jun-06-18 00:52     |                     |                     | Jun-06-18 10:43     | Jun-06-18 02:38     |
|                                          | <i>Units/RL:</i>  | mg/kg RL            | mg/kg RL            |                     |                     | mg/kg RL            | mg/kg RL            |
| Benzene                                  |                   | <0.00201 0.00201    | <0.00200 0.00200    |                     |                     | <0.00200 0.00200    | <0.00200 0.00200    |
| Toluene                                  |                   | 0.00597 0.00201     | <0.00200 0.00200    |                     |                     | 0.00632 0.00200     | <0.00200 0.00200    |
| Ethylbenzene                             |                   | <0.00201 0.00201    | <0.00200 0.00200    |                     |                     | <0.00200 0.00200    | <0.00200 0.00200    |
| m,p-Xylenes                              |                   | <0.00402 0.00402    | <0.00401 0.00401    |                     |                     | <0.00401 0.00401    | <0.00399 0.00399    |
| o-Xylene                                 |                   | <0.00201 0.00201    | <0.00200 0.00200    |                     |                     | 0.00345 0.00200     | <0.00200 0.00200    |
| Total Xylenes                            |                   | <0.00201 0.00201    | <0.00200 0.00200    |                     |                     | 0.00345 0.00200     | <0.00200 0.00200    |
| Total BTEX                               |                   | 0.00597 0.00201     | <0.00200 0.00200    |                     |                     | 0.00977 0.00200     | <0.00200 0.00200    |
| <b>Inorganic Anions by EPA 300/300.1</b> | <i>Extracted:</i> | Jun-06-18 08:30     | Jun-06-18 08:30     | Jun-06-18 08:30     | Jun-06-18 08:30     | Jun-06-18 17:45     | Jun-06-18 17:45     |
|                                          | <i>Analyzed:</i>  | Jun-06-18 11:41     | Jun-06-18 11:46     | Jun-06-18 11:51     | Jun-06-18 11:57     | Jun-06-18 22:24     | Jun-06-18 22:29     |
|                                          | <i>Units/RL:</i>  | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            |
| Chloride                                 |                   | 183 4.96            | 9.61 5.00           | <4.92 4.92          | 6.77 4.96           | 8.93 4.95           | 78.0 4.95           |
| <b>TPH By SW8015 Mod</b>                 | <i>Extracted:</i> | Jun-02-18 09:00     | Jun-02-18 09:00     |                     |                     | Jun-02-18 09:00     | Jun-02-18 09:00     |
|                                          | <i>Analyzed:</i>  | Jun-02-18 20:16     | Jun-02-18 20:37     |                     |                     | Jun-02-18 20:58     | Jun-02-18 21:19     |
|                                          | <i>Units/RL:</i>  | mg/kg RL            | mg/kg RL            |                     |                     | mg/kg RL            | mg/kg RL            |
| Gasoline Range Hydrocarbons (GRO)        |                   | <15.0 15.0          | <14.9 14.9          |                     |                     | 17.0 15.0           | <15.0 15.0          |
| Diesel Range Organics (DRO)              |                   | 85.0 15.0           | <14.9 14.9          |                     |                     | <15.0 15.0          | <15.0 15.0          |
| Oil Range Hydrocarbons (ORO)             |                   | <15.0 15.0          | <14.9 14.9          |                     |                     | <15.0 15.0          | <15.0 15.0          |
| Total TPH                                |                   | 85.0 15.0           | <14.9 14.9          |                     |                     | 17.0 15.0           | <15.0 15.0          |

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*Jessica Kramer*

Jessica Kramer  
Project Assistant



# Certificate of Analysis Summary 587892

Marathon Oil Company, Tulsa, OK

Project Name: Chili Parlor 17 Fed 2H



Project Id:

Contact: Callie Karrigan

Project Location: Lea County, New Mexico

Date Received in Lab: Fri Jun-01-18 01:30 pm

Report Date: 11-JUN-18

Project Manager: Jessica Kramer

| Analysis Requested                | Lab Id:    | 587892-007          | 587892-008          | 587892-009          | 587892-010          | 587892-011          | 587892-012          |
|-----------------------------------|------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                   | Field Id:  | BH-18-02 Depth 4 ft | BH-18-02 Depth 6 ft | BH-18-03 Depth 0 ft | BH-18-03 Depth 2 ft | BH-18-03 Depth 4 ft | BH-18-03 Depth 6 ft |
|                                   | Depth:     |                     |                     |                     |                     |                     |                     |
|                                   | Matrix:    | SOIL                | SOIL                | SOIL                | SOIL                | SOIL                | SOIL                |
|                                   | Sampled:   | May-29-18 11:10     | May-29-18 11:15     | May-29-18 11:30     | May-29-18 11:35     | May-29-18 11:40     | May-29-18 11:45     |
| BTEX by EPA 8021B                 | Extracted: |                     |                     | Jun-07-18 12:00     | Jun-07-18 12:00     |                     |                     |
|                                   | Analyzed:  |                     |                     | Jun-07-18 20:11     | Jun-08-18 02:11     |                     |                     |
|                                   | Units/RL:  |                     |                     | mg/kg RL            | mg/kg RL            |                     |                     |
|                                   |            |                     |                     |                     |                     |                     |                     |
| Benzene                           |            |                     |                     | <0.00202 0.00202    | <0.00200 0.00200    |                     |                     |
| Toluene                           |            |                     |                     | <0.00202 0.00202    | <0.00200 0.00200    |                     |                     |
| Ethylbenzene                      |            |                     |                     | <0.00202 0.00202    | <0.00200 0.00200    |                     |                     |
| m,p-Xylenes                       |            |                     |                     | 0.00441 0.00403     | <0.00401 0.00401    |                     |                     |
| o-Xylene                          |            |                     |                     | 0.00271 0.00202     | <0.00200 0.00200    |                     |                     |
| Total Xylenes                     |            |                     |                     | 0.00712 0.00202     | <0.00200 0.00200    |                     |                     |
| Total BTEX                        |            |                     |                     | 0.00712 0.00202     | <0.00200 0.00200    |                     |                     |
| Inorganic Anions by EPA 300/300.1 | Extracted: | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     |
|                                   | Analyzed:  | Jun-06-18 13:00     | Jun-06-18 13:16     | Jun-06-18 13:21     | Jun-06-18 13:27     | Jun-06-18 13:32     | Jun-06-18 13:48     |
|                                   | Units/RL:  | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            |
| Chloride                          |            | 15.3 4.94           | 11.1 4.92           | 140 4.91            | <4.97 4.97          | <5.00 5.00          | <4.99 4.99          |
| TPH By SW8015 Mod                 | Extracted: |                     |                     | Jun-02-18 09:00     | Jun-02-18 09:00     |                     |                     |
|                                   | Analyzed:  |                     |                     | Jun-02-18 21:39     | Jun-02-18 22:00     |                     |                     |
|                                   | Units/RL:  |                     |                     | mg/kg RL            | mg/kg RL            |                     |                     |
| Gasoline Range Hydrocarbons (GRO) |            |                     |                     | <15.0 15.0          | <15.0 15.0          |                     |                     |
| Diesel Range Organics (DRO)       |            |                     |                     | 37.5 15.0           | <15.0 15.0          |                     |                     |
| Oil Range Hydrocarbons (ORO)      |            |                     |                     | <15.0 15.0          | <15.0 15.0          |                     |                     |
| Total TPH                         |            |                     |                     | 37.5 15.0           | <15.0 15.0          |                     |                     |

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Jessica Kramer

Jessica Kramer  
Project Assistant



# Certificate of Analysis Summary 587892

Marathon Oil Company, Tulsa, OK

Project Name: Chili Parlor 17 Fed 2H



Project Id:

Contact: Callie Karrigan

Project Location: Lea County, New Mexico

Date Received in Lab: Fri Jun-01-18 01:30 pm

Report Date: 11-JUN-18

Project Manager: Jessica Kramer

| <i>Analysis Requested</i>                | <i>Lab Id:</i>    | 587892-013          | 587892-014          | 587892-015          | 587892-016          | 587892-017          | 587892-018          |
|------------------------------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                          | <i>Field Id:</i>  | BH-18-04 Depth 0 ft | BH-18-04 Depth 2 ft | BH-18-04 Depth 4 ft | BH-18-04 Depth 6 ft | BH-18-05 Depth 0 ft | BH-18-05 Depth 2 ft |
|                                          | <i>Depth:</i>     |                     |                     |                     |                     |                     |                     |
|                                          | <i>Matrix:</i>    | SOIL                | SOIL                | SOIL                | SOIL                | SOIL                | SOIL                |
|                                          | <i>Sampled:</i>   | May-29-18 12:00     | May-29-18 12:05     | May-29-18 12:10     | May-29-18 12:15     | May-29-18 12:30     | May-29-18 12:35     |
| <b>BTEX by EPA 8021B</b>                 | <i>Extracted:</i> | Jun-07-18 12:00     | Jun-07-18 16:00     |                     |                     | Jun-07-18 16:00     | Jun-07-18 12:00     |
|                                          | <i>Analyzed:</i>  | Jun-08-18 01:53     | Jun-08-18 12:10     |                     |                     | Jun-08-18 12:28     | Jun-08-18 00:59     |
|                                          | <i>Units/RL:</i>  | mg/kg RL            | mg/kg RL            |                     |                     | mg/kg RL            | mg/kg RL            |
| Benzene                                  |                   | <0.00200 0.00200    | <0.00200 0.00200    |                     |                     | <0.00200 0.00200    | <0.00198 0.00198    |
| Toluene                                  |                   | <0.00200 0.00200    | <0.00200 0.00200    |                     |                     | <0.00200 0.00200    | 0.00378 0.00198     |
| Ethylbenzene                             |                   | <0.00200 0.00200    | <0.00200 0.00200    |                     |                     | <0.00200 0.00200    | 0.00228 0.00198     |
| m,p-Xylenes                              |                   | <0.00399 0.00399    | <0.00401 0.00401    |                     |                     | <0.00399 0.00399    | <0.00397 0.00397    |
| o-Xylene                                 |                   | <0.00200 0.00200    | <0.00200 0.00200    |                     |                     | <0.00200 0.00200    | <0.00198 0.00198    |
| Total Xylenes                            |                   | <0.00200 0.00200    | <0.00200 0.00200    |                     |                     | <0.00200 0.00200    | <0.00198 0.00198    |
| Total BTEX                               |                   | <0.00200 0.00200    | <0.00200 0.00200    |                     |                     | <0.00200 0.00200    | 0.00606 0.00198     |
| <b>Inorganic Anions by EPA 300/300.1</b> | <i>Extracted:</i> | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     |
|                                          | <i>Analyzed:</i>  | Jun-06-18 13:54     | Jun-06-18 13:59     | Jun-06-18 14:04     | Jun-06-18 14:10     | Jun-06-18 14:15     | Jun-06-18 14:31     |
|                                          | <i>Units/RL:</i>  | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            |
| Chloride                                 |                   | 231 5.00            | 36.2 4.94           | 34.3 4.96           | <4.93 4.93          | <4.91 4.91          | <5.00 5.00          |
| <b>TPH By SW8015 Mod</b>                 | <i>Extracted:</i> | Jun-02-18 09:00     | Jun-02-18 09:00     |                     |                     | Jun-02-18 09:00     | Jun-02-18 09:00     |
|                                          | <i>Analyzed:</i>  | Jun-02-18 22:21     | Jun-02-18 22:42     |                     |                     | Jun-02-18 23:03     | Jun-02-18 23:23     |
|                                          | <i>Units/RL:</i>  | mg/kg RL            | mg/kg RL            |                     |                     | mg/kg RL            | mg/kg RL            |
| Gasoline Range Hydrocarbons (GRO)        |                   | <15.0 15.0          | <15.0 15.0          |                     |                     | 18.0 14.9           | <15.0 15.0          |
| Diesel Range Organics (DRO)              |                   | 400 15.0            | 18.7 15.0           |                     |                     | <14.9 14.9          | <15.0 15.0          |
| Oil Range Hydrocarbons (ORO)             |                   | 19.3 15.0           | <15.0 15.0          |                     |                     | <14.9 14.9          | <15.0 15.0          |
| Total TPH                                |                   | 419 15.0            | 18.7 15.0           |                     |                     | 18.0 14.9           | <15.0 15.0          |

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*Jessica Kramer*

Jessica Kramer  
Project Assistant



# Certificate of Analysis Summary 587892

Marathon Oil Company, Tulsa, OK

Project Name: Chili Parlor 17 Fed 2H



Project Id:

Contact: Callie Karrigan

Project Location: Lea County, New Mexico

Date Received in Lab: Fri Jun-01-18 01:30 pm

Report Date: 11-JUN-18

Project Manager: Jessica Kramer

| Analysis Requested                | Lab Id:      | 587892-019          | 587892-020          | 587892-021          | 587892-022          | 587892-023          | 587892-024          |
|-----------------------------------|--------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                   | Field Id:    | BH-18-05 Depth 4 ft | BH-18-05 Depth 6 ft | BH-18-06 Depth 0 ft | BH-18-06 Depth 2 ft | BH-18-06 Depth 4 ft | BH-18-06 Depth 6 ft |
|                                   | Depth:       |                     |                     |                     |                     |                     |                     |
|                                   | Matrix:      | SOIL                | SOIL                | SOIL                | SOIL                | SOIL                | SOIL                |
|                                   | Sampled:     | May-29-18 12:40     | May-29-18 12:45     | May-29-18 13:00     | May-29-18 13:05     | May-29-18 13:10     | May-29-18 13:10     |
| BTEX by EPA 8021B                 | Extracted:   |                     |                     | Jun-07-18 16:00     | Jun-07-18 16:00     |                     |                     |
|                                   | Analyzed:    |                     |                     | Jun-08-18 11:34     | Jun-08-18 11:52     |                     |                     |
|                                   | Units/RL:    |                     |                     | mg/kg RL            | mg/kg RL            |                     |                     |
|                                   | Benzene      |                     |                     | <0.00199 0.00199    | <0.00202 0.00202    |                     |                     |
|                                   | Toluene      |                     |                     | <0.00199 0.00199    | <0.00202 0.00202    |                     |                     |
|                                   | Ethylbenzene |                     |                     | <0.00199 0.00199    | <0.00202 0.00202    |                     |                     |
|                                   | m,p-Xylenes  |                     |                     | <0.00398 0.00398    | <0.00403 0.00403    |                     |                     |
|                                   | o-Xylene     |                     |                     | <0.00199 0.00199    | <0.00202 0.00202    |                     |                     |
| Total Xylenes                     |              |                     |                     | <0.00199 0.00199    | <0.00202 0.00202    |                     |                     |
| Total BTEX                        |              |                     |                     | <0.00199 0.00199    | <0.00202 0.00202    |                     |                     |
| Inorganic Anions by EPA 300/300.1 | Extracted:   | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     | Jun-06-18 09:00     |
|                                   | Analyzed:    | Jun-06-18 14:37     | Jun-06-18 14:53     | Jun-06-18 14:58     | Jun-06-18 15:04     | Jun-06-18 15:09     | Jun-06-18 15:15     |
|                                   | Units/RL:    | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            | mg/kg RL            |
| Chloride                          |              | <4.99 4.99          | <4.94 4.94          | 7.28 4.97           | 7.05 4.91           | <4.96 4.96          | <4.94 4.94          |
| TPH By SW8015 Mod                 | Extracted:   |                     |                     | Jun-01-18 16:00     | Jun-01-18 16:00     |                     |                     |
|                                   | Analyzed:    |                     |                     | Jun-02-18 10:52     | Jun-02-18 11:13     |                     |                     |
|                                   | Units/RL:    |                     |                     | mg/kg RL            | mg/kg RL            |                     |                     |
| Gasoline Range Hydrocarbons (GRO) |              |                     |                     | <14.9 14.9          | <14.9 14.9          |                     |                     |
| Diesel Range Organics (DRO)       |              |                     |                     | <14.9 14.9          | <14.9 14.9          |                     |                     |
| Oil Range Hydrocarbons (ORO)      |              |                     |                     | <14.9 14.9          | <14.9 14.9          |                     |                     |
| Total TPH                         |              |                     |                     | <14.9 14.9          | <14.9 14.9          |                     |                     |

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Jessica Kramer

Jessica Kramer  
Project Assistant

# Analytical Report 587892

## for Marathon Oil Company

**Project Manager: Callie Karrigan**

**Chili Parlor 17 Fed 2H**

**11-JUN-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-26), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab Code: TX00158): Texas (T104704400-18-14)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)

Xenco-Atlanta (LELAP Lab ID #04176)

Xenco-Tampa: Florida (E87429)

Xenco-Lakeland: Florida (E84098)



11-JUN-18

Project Manager: **Callie Karrigan**

**Marathon Oil Company**

P. O. Box 22164

Tulsa, OK 74121-2164

Reference: XENCO Report No(s): **587892**

**Chili Parlor 17 Fed 2H**

Project Address: Lea County, New Mexico

**Callie Karrigan:**

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) 587892. 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. 587892 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**

Project Assistant

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## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

| Sample Id           | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---------------------|--------|----------------|--------------|---------------|
| BH-18-01 Depth 0 ft | S      | 05-29-18 10:30 |              | 587892-001    |
| BH-18-01 Depth 2 ft | S      | 05-29-18 10:35 |              | 587892-002    |
| BH-18-01 Depth 4 ft | S      | 05-29-18 10:40 |              | 587892-003    |
| BH-18-01 Depth 6 ft | S      | 05-29-18 10:45 |              | 587892-004    |
| BH-18-02 Depth 0 ft | S      | 05-29-18 11:00 |              | 587892-005    |
| BH-18-02 Depth 2 ft | S      | 05-29-18 11:05 |              | 587892-006    |
| BH-18-02 Depth 4 ft | S      | 05-29-18 11:10 |              | 587892-007    |
| BH-18-02 Depth 6 ft | S      | 05-29-18 11:15 |              | 587892-008    |
| BH-18-03 Depth 0 ft | S      | 05-29-18 11:30 |              | 587892-009    |
| BH-18-03 Depth 2 ft | S      | 05-29-18 11:35 |              | 587892-010    |
| BH-18-03 Depth 4 ft | S      | 05-29-18 11:40 |              | 587892-011    |
| BH-18-03 Depth 6 ft | S      | 05-29-18 11:45 |              | 587892-012    |
| BH-18-04 Depth 0 ft | S      | 05-29-18 12:00 |              | 587892-013    |
| BH-18-04 Depth 2 ft | S      | 05-29-18 12:05 |              | 587892-014    |
| BH-18-04 Depth 4 ft | S      | 05-29-18 12:10 |              | 587892-015    |
| BH-18-04 Depth 6 ft | S      | 05-29-18 12:15 |              | 587892-016    |
| BH-18-05 Depth 0 ft | S      | 05-29-18 12:30 |              | 587892-017    |
| BH-18-05 Depth 2 ft | S      | 05-29-18 12:35 |              | 587892-018    |
| BH-18-05 Depth 4 ft | S      | 05-29-18 12:40 |              | 587892-019    |
| BH-18-05 Depth 6 ft | S      | 05-29-18 12:45 |              | 587892-020    |
| BH-18-06 Depth 0 ft | S      | 05-29-18 13:00 |              | 587892-021    |
| BH-18-06 Depth 2 ft | S      | 05-29-18 13:05 |              | 587892-022    |
| BH-18-06 Depth 4 ft | S      | 05-29-18 13:10 |              | 587892-023    |
| BH-18-06 Depth 6 ft | S      | 05-29-18 13:10 |              | 587892-024    |



## CASE NARRATIVE

**Client Name:** Marathon Oil Company

**Project Name:** Chili Parlor 17 Fed 2H

Project ID:  
Work Order Number(s): 587892

Report Date: 11-JUN-18  
Date Received: 06/01/2018

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**Sample receipt non conformances and comments:**

None

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

None

**Analytical non conformances and comments:**

Batch: LBA-3052154 TPH By SW8015 Mod

Diesel Range Organics (DRO), Gasoline Range Hydrocarbons (GRO) RPD was outside laboratory control limits.

Samples in the analytical batch are: 587892-021, -022

The sample used as the MS/MSD, 587820-001, was a non-detect sample and is within both RPD and passing percentage to emulate the BKS/BSD. This sample therefore demonstrates the data provided is in control.

Batch: LBA-3052450 BTEX by EPA 8021B

Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene Relative Percent Difference (RPD) between matrix spike and duplicate were above quality control limits.

Samples in the analytical batch are: 587892-001, -002, -006

Lab Sample ID 587892-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 587892-001, -002, -006.

The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3052478 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3052575 Inorganic Anions by EPA 300/300.1

Lab Sample ID 587892-017 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 587892-007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020, -021, -022, -023, -024.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.



## CASE NARRATIVE

***Client Name: Marathon Oil Company***

***Project Name: Chili Parlor 17 Fed 2H***

Project ID:

Work Order Number(s): 587892

Report Date: 11-JUN-18

Date Received: 06/01/2018

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Batch: LBA-3052795 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3052812 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-01 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-001

Date Collected: 05.29.18 10.30

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 08.30

Basis: Wet Weight

Seq Number: 3052444

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 183    | 4.96 | mg/kg | 06.06.18 11.41 |      | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.02.18 09.00

Basis: Wet Weight

Seq Number: 3052155

| Parameter                         | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------------------------------|------------|--------|------|-------|----------------|------|-----|
| Gasoline Range Hydrocarbons (GRO) | PHC610     | <15.0  | 15.0 | mg/kg | 06.02.18 20.16 | U    | 1   |
| Diesel Range Organics (DRO)       | C10C28DRO  | 85.0   | 15.0 | mg/kg | 06.02.18 20.16 |      | 1   |
| Oil Range Hydrocarbons (ORO)      | PHCG2835   | <15.0  | 15.0 | mg/kg | 06.02.18 20.16 | U    | 1   |
| Total TPH                         | PHC635     | 85.0   | 15.0 | mg/kg | 06.02.18 20.16 |      | 1   |

| Surrogate      | Cas Number | % Recovery | Units | Limits | Analysis Date  | Flag |
|----------------|------------|------------|-------|--------|----------------|------|
| 1-Chlorooctane | 111-85-3   | 72         | %     | 70-135 | 06.02.18 20.16 |      |
| o-Terphenyl    | 84-15-1    | 74         | %     | 70-135 | 06.02.18 20.16 |      |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-01 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-001

Date Collected: 05.29.18 10.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.05.18 15.00

Basis: Wet Weight

Seq Number: 3052450

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00201          | 0.00201      | mg/kg         | 06.06.18 00.34       | U           | 1   |
| <b>Toluene</b>       | 108-88-3          | <b>0.00597</b>    | 0.00201      | mg/kg         | 06.06.18 00.34       |             | 1   |
| Ethylbenzene         | 100-41-4          | <0.00201          | 0.00201      | mg/kg         | 06.06.18 00.34       | U           | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00402          | 0.00402      | mg/kg         | 06.06.18 00.34       | U           | 1   |
| o-Xylene             | 95-47-6           | <0.00201          | 0.00201      | mg/kg         | 06.06.18 00.34       | U           | 1   |
| Total Xylenes        | 1330-20-7         | <0.00201          | 0.00201      | mg/kg         | 06.06.18 00.34       | U           | 1   |
| <b>Total BTEX</b>    |                   | <b>0.00597</b>    | 0.00201      | mg/kg         | 06.06.18 00.34       |             | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 4-Bromofluorobenzene | 460-00-4          | 106               | %            | 70-130        | 06.06.18 00.34       |             |     |
| 1,4-Difluorobenzene  | 540-36-3          | 105               | %            | 70-130        | 06.06.18 00.34       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-01 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-002

Date Collected: 05.29.18 10.35

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 08.30

Basis: Wet Weight

Seq Number: 3052444

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 9.61   | 5.00 | mg/kg | 06.06.18 11.46 |      | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.02.18 09.00

Basis: Wet Weight

Seq Number: 3052155

| Parameter                         | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|-----------------------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Gasoline Range Hydrocarbons (GRO) | PHC610            | <14.9             | 14.9         | mg/kg         | 06.02.18 20.37       | U           | 1   |
| Diesel Range Organics (DRO)       | C10C28DRO         | <14.9             | 14.9         | mg/kg         | 06.02.18 20.37       | U           | 1   |
| Oil Range Hydrocarbons (ORO)      | PHCG2835          | <14.9             | 14.9         | mg/kg         | 06.02.18 20.37       | U           | 1   |
| Total TPH                         | PHC635            | <14.9             | 14.9         | mg/kg         | 06.02.18 20.37       | U           | 1   |
| <b>Surrogate</b>                  | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 1-Chlorooctane                    | 111-85-3          | 76                | %            | 70-135        | 06.02.18 20.37       |             |     |
| o-Terphenyl                       | 84-15-1           | 78                | %            | 70-135        | 06.02.18 20.37       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-01 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-002

Date Collected: 05.29.18 10.35

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.05.18 15.00

Basis: Wet Weight

Seq Number: 3052450

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00200          | 0.00200      | mg/kg         | 06.06.18 00.52       | U           | 1   |
| Toluene              | 108-88-3          | <0.00200          | 0.00200      | mg/kg         | 06.06.18 00.52       | U           | 1   |
| Ethylbenzene         | 100-41-4          | <0.00200          | 0.00200      | mg/kg         | 06.06.18 00.52       | U           | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00401          | 0.00401      | mg/kg         | 06.06.18 00.52       | U           | 1   |
| o-Xylene             | 95-47-6           | <0.00200          | 0.00200      | mg/kg         | 06.06.18 00.52       | U           | 1   |
| Total Xylenes        | 1330-20-7         | <0.00200          | 0.00200      | mg/kg         | 06.06.18 00.52       | U           | 1   |
| Total BTEX           |                   | <0.00200          | 0.00200      | mg/kg         | 06.06.18 00.52       | U           | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 1,4-Difluorobenzene  | 540-36-3          | 92                | %            | 70-130        | 06.06.18 00.52       |             |     |
| 4-Bromofluorobenzene | 460-00-4          | 99                | %            | 70-130        | 06.06.18 00.52       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-01 Depth 4 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-003

Date Collected: 05.29.18 10.40

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 08.30

Basis: Wet Weight

Seq Number: 3052444

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | <4.92  | 4.92 | mg/kg | 06.06.18 11.51 | U    | 1   |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-01 Depth 6 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-004

Date Collected: 05.29.18 10.45

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 08.30

Basis: Wet Weight

Seq Number: 3052444

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 6.77   | 4.96 | mg/kg | 06.06.18 11.57 |      | 1   |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-02 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-005

Date Collected: 05.29.18 11.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 17.45

Basis: Wet Weight

Seq Number: 3052588

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 8.93   | 4.95 | mg/kg | 06.06.18 22.24 |      | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.02.18 09.00

Basis: Wet Weight

Seq Number: 3052155

| Parameter                         | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------------------------------|------------|--------|------|-------|----------------|------|-----|
| Gasoline Range Hydrocarbons (GRO) | PHC610     | 17.0   | 15.0 | mg/kg | 06.02.18 20.58 |      | 1   |
| Diesel Range Organics (DRO)       | C10C28DRO  | <15.0  | 15.0 | mg/kg | 06.02.18 20.58 | U    | 1   |
| Oil Range Hydrocarbons (ORO)      | PHCG2835   | <15.0  | 15.0 | mg/kg | 06.02.18 20.58 | U    | 1   |
| Total TPH                         | PHC635     | 17.0   | 15.0 | mg/kg | 06.02.18 20.58 |      | 1   |

| Surrogate      | Cas Number | % Recovery | Units | Limits | Analysis Date  | Flag |
|----------------|------------|------------|-------|--------|----------------|------|
| 1-Chlorooctane | 111-85-3   | 78         | %     | 70-135 | 06.02.18 20.58 |      |
| o-Terphenyl    | 84-15-1    | 75         | %     | 70-135 | 06.02.18 20.58 |      |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-02 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-005

Date Collected: 05.29.18 11.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.05.18 17.00

Basis: Wet Weight

Seq Number: 3052478

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00200          | 0.00200      | mg/kg         | 06.06.18 10.43       | U           | 1   |
| <b>Toluene</b>       | 108-88-3          | <b>0.00632</b>    | 0.00200      | mg/kg         | 06.06.18 10.43       |             | 1   |
| Ethylbenzene         | 100-41-4          | <0.00200          | 0.00200      | mg/kg         | 06.06.18 10.43       | U           | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00401          | 0.00401      | mg/kg         | 06.06.18 10.43       | U           | 1   |
| <b>o-Xylene</b>      | 95-47-6           | <b>0.00345</b>    | 0.00200      | mg/kg         | 06.06.18 10.43       |             | 1   |
| <b>Total Xylenes</b> | 1330-20-7         | <b>0.00345</b>    | 0.00200      | mg/kg         | 06.06.18 10.43       |             | 1   |
| <b>Total BTEX</b>    |                   | <b>0.00977</b>    | 0.00200      | mg/kg         | 06.06.18 10.43       |             | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 1,4-Difluorobenzene  | 540-36-3          | 99                | %            | 70-130        | 06.06.18 10.43       |             |     |
| 4-Bromofluorobenzene | 460-00-4          | 86                | %            | 70-130        | 06.06.18 10.43       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-02 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-006

Date Collected: 05.29.18 11.05

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 17.45

Basis: Wet Weight

Seq Number: 3052588

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 78.0   | 4.95 | mg/kg | 06.06.18 22.29 |      | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.02.18 09.00

Basis: Wet Weight

Seq Number: 3052155

| Parameter                         | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------------------------------|------------|--------|------|-------|----------------|------|-----|
| Gasoline Range Hydrocarbons (GRO) | PHC610     | <15.0  | 15.0 | mg/kg | 06.02.18 21.19 | U    | 1   |
| Diesel Range Organics (DRO)       | C10C28DRO  | <15.0  | 15.0 | mg/kg | 06.02.18 21.19 | U    | 1   |
| Oil Range Hydrocarbons (ORO)      | PHCG2835   | <15.0  | 15.0 | mg/kg | 06.02.18 21.19 | U    | 1   |
| Total TPH                         | PHC635     | <15.0  | 15.0 | mg/kg | 06.02.18 21.19 | U    | 1   |

| Surrogate      | Cas Number | % Recovery | Units | Limits | Analysis Date  | Flag |
|----------------|------------|------------|-------|--------|----------------|------|
| 1-Chlorooctane | 111-85-3   | 77         | %     | 70-135 | 06.02.18 21.19 |      |
| o-Terphenyl    | 84-15-1    | 80         | %     | 70-135 | 06.02.18 21.19 |      |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-02 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-006

Date Collected: 05.29.18 11.05

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.05.18 15.00

Basis: Wet Weight

Seq Number: 3052450

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00200          | 0.00200      | mg/kg         | 06.06.18 02.38       | U           | 1   |
| Toluene              | 108-88-3          | <0.00200          | 0.00200      | mg/kg         | 06.06.18 02.38       | U           | 1   |
| Ethylbenzene         | 100-41-4          | <0.00200          | 0.00200      | mg/kg         | 06.06.18 02.38       | U           | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00399          | 0.00399      | mg/kg         | 06.06.18 02.38       | U           | 1   |
| o-Xylene             | 95-47-6           | <0.00200          | 0.00200      | mg/kg         | 06.06.18 02.38       | U           | 1   |
| Total Xylenes        | 1330-20-7         | <0.00200          | 0.00200      | mg/kg         | 06.06.18 02.38       | U           | 1   |
| Total BTEX           |                   | <0.00200          | 0.00200      | mg/kg         | 06.06.18 02.38       | U           | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 1,4-Difluorobenzene  | 540-36-3          | 107               | %            | 70-130        | 06.06.18 02.38       |             |     |
| 4-Bromofluorobenzene | 460-00-4          | 102               | %            | 70-130        | 06.06.18 02.38       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-02 Depth 4 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-007

Date Collected: 05.29.18 11.10

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 15.3   | 4.94 | mg/kg | 06.06.18 13.00 |      | 1   |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-02 Depth 6 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-008

Date Collected: 05.29.18 11.15

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 11.1   | 4.92 | mg/kg | 06.06.18 13.16 |      | 1   |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-03 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-009

Date Collected: 05.29.18 11.30

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 140    | 4.91 | mg/kg | 06.06.18 13.21 |      | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.02.18 09.00

Basis: Wet Weight

Seq Number: 3052155

| Parameter                          | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|------------------------------------|------------|--------|------|-------|----------------|------|-----|
| Gasoline Range Hydrocarbons (GRO)  | PHC610     | <15.0  | 15.0 | mg/kg | 06.02.18 21.39 | U    | 1   |
| <b>Diesel Range Organics (DRO)</b> | C10C28DRO  | 37.5   | 15.0 | mg/kg | 06.02.18 21.39 |      | 1   |
| Oil Range Hydrocarbons (ORO)       | PHCG2835   | <15.0  | 15.0 | mg/kg | 06.02.18 21.39 | U    | 1   |
| <b>Total TPH</b>                   | PHC635     | 37.5   | 15.0 | mg/kg | 06.02.18 21.39 |      | 1   |

| Surrogate      | Cas Number | % Recovery | Units | Limits | Analysis Date  | Flag |
|----------------|------------|------------|-------|--------|----------------|------|
| 1-Chlorooctane | 111-85-3   | 81         | %     | 70-135 | 06.02.18 21.39 |      |
| o-Terphenyl    | 84-15-1    | 78         | %     | 70-135 | 06.02.18 21.39 |      |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-03 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-009

Date Collected: 05.29.18 11.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.07.18 12.00

Basis: Wet Weight

Seq Number: 3052795

| Parameter            | Cas Number  | Result         | RL      | Units | Analysis Date  | Flag           | Dil  |
|----------------------|-------------|----------------|---------|-------|----------------|----------------|------|
| Benzene              | 71-43-2     | <0.00202       | 0.00202 | mg/kg | 06.07.18 20.11 | U              | 1    |
| Toluene              | 108-88-3    | <0.00202       | 0.00202 | mg/kg | 06.07.18 20.11 | U              | 1    |
| Ethylbenzene         | 100-41-4    | <0.00202       | 0.00202 | mg/kg | 06.07.18 20.11 | U              | 1    |
| m,p-Xylenes          | 179601-23-1 | <b>0.00441</b> | 0.00403 | mg/kg | 06.07.18 20.11 |                | 1    |
| o-Xylene             | 95-47-6     | <b>0.00271</b> | 0.00202 | mg/kg | 06.07.18 20.11 |                | 1    |
| Total Xylenes        | 1330-20-7   | <b>0.00712</b> | 0.00202 | mg/kg | 06.07.18 20.11 |                | 1    |
| Total BTEX           |             | <b>0.00712</b> | 0.00202 | mg/kg | 06.07.18 20.11 |                | 1    |
| Surrogate            | Cas Number  | % Recovery     |         | Units | Limits         | Analysis Date  | Flag |
| 1,4-Difluorobenzene  | 540-36-3    | 94             |         | %     | 70-130         | 06.07.18 20.11 |      |
| 4-Bromofluorobenzene | 460-00-4    | 100            |         | %     | 70-130         | 06.07.18 20.11 |      |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-03 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-010

Date Collected: 05.29.18 11.35

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | <4.97  | 4.97 | mg/kg | 06.06.18 13.27 | U    | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.02.18 09.00

Basis: Wet Weight

Seq Number: 3052155

| Parameter                         | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------------------------------|------------|--------|------|-------|----------------|------|-----|
| Gasoline Range Hydrocarbons (GRO) | PHC610     | <15.0  | 15.0 | mg/kg | 06.02.18 22.00 | U    | 1   |
| Diesel Range Organics (DRO)       | C10C28DRO  | <15.0  | 15.0 | mg/kg | 06.02.18 22.00 | U    | 1   |
| Oil Range Hydrocarbons (ORO)      | PHCG2835   | <15.0  | 15.0 | mg/kg | 06.02.18 22.00 | U    | 1   |
| Total TPH                         | PHC635     | <15.0  | 15.0 | mg/kg | 06.02.18 22.00 | U    | 1   |

| Surrogate      | Cas Number | % Recovery | Units | Limits | Analysis Date  | Flag |
|----------------|------------|------------|-------|--------|----------------|------|
| 1-Chlorooctane | 111-85-3   | 84         | %     | 70-135 | 06.02.18 22.00 |      |
| o-Terphenyl    | 84-15-1    | 85         | %     | 70-135 | 06.02.18 22.00 |      |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-03 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-010

Date Collected: 05.29.18 11.35

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.07.18 12.00

Basis: Wet Weight

Seq Number: 3052795

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00200          | 0.00200      | mg/kg         | 06.08.18 02.11       | U           | 1   |
| Toluene              | 108-88-3          | <0.00200          | 0.00200      | mg/kg         | 06.08.18 02.11       | U           | 1   |
| Ethylbenzene         | 100-41-4          | <0.00200          | 0.00200      | mg/kg         | 06.08.18 02.11       | U           | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00401          | 0.00401      | mg/kg         | 06.08.18 02.11       | U           | 1   |
| o-Xylene             | 95-47-6           | <0.00200          | 0.00200      | mg/kg         | 06.08.18 02.11       | U           | 1   |
| Total Xylenes        | 1330-20-7         | <0.00200          | 0.00200      | mg/kg         | 06.08.18 02.11       | U           | 1   |
| Total BTEX           |                   | <0.00200          | 0.00200      | mg/kg         | 06.08.18 02.11       | U           | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 1,4-Difluorobenzene  | 540-36-3          | 87                | %            | 70-130        | 06.08.18 02.11       |             |     |
| 4-Bromofluorobenzene | 460-00-4          | 102               | %            | 70-130        | 06.08.18 02.11       |             |     |



## Certificate of Analytical Results 587892



### Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-03 Depth 4 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-011

Date Collected: 05.29.18 11.40

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | <5.00  | 5.00 | mg/kg | 06.06.18 13.32 | U    | 1   |



## Certificate of Analytical Results 587892



### Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-03 Depth 6 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-012

Date Collected: 05.29.18 11.45

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | <4.99  | 4.99 | mg/kg | 06.06.18 13.48 | U    | 1   |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-04 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-013

Date Collected: 05.29.18 12.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 231    | 5.00 | mg/kg | 06.06.18 13.54 |      | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.02.18 09.00

Basis: Wet Weight

Seq Number: 3052155

| Parameter                         | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------------------------------|------------|--------|------|-------|----------------|------|-----|
| Gasoline Range Hydrocarbons (GRO) | PHC610     | <15.0  | 15.0 | mg/kg | 06.02.18 22.21 | U    | 1   |
| Diesel Range Organics (DRO)       | C10C28DRO  | 400    | 15.0 | mg/kg | 06.02.18 22.21 |      | 1   |
| Oil Range Hydrocarbons (ORO)      | PHCG2835   | 19.3   | 15.0 | mg/kg | 06.02.18 22.21 |      | 1   |
| Total TPH                         | PHC635     | 419    | 15.0 | mg/kg | 06.02.18 22.21 |      | 1   |

| Surrogate      | Cas Number | % Recovery | Units | Limits | Analysis Date  | Flag |
|----------------|------------|------------|-------|--------|----------------|------|
| 1-Chlorooctane | 111-85-3   | 84         | %     | 70-135 | 06.02.18 22.21 |      |
| o-Terphenyl    | 84-15-1    | 84         | %     | 70-135 | 06.02.18 22.21 |      |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-04 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-013

Date Collected: 05.29.18 12.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.07.18 12.00

Basis: Wet Weight

Seq Number: 3052795

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00200          | 0.00200      | mg/kg         | 06.08.18 01.53       | U           | 1   |
| Toluene              | 108-88-3          | <0.00200          | 0.00200      | mg/kg         | 06.08.18 01.53       | U           | 1   |
| Ethylbenzene         | 100-41-4          | <0.00200          | 0.00200      | mg/kg         | 06.08.18 01.53       | U           | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00399          | 0.00399      | mg/kg         | 06.08.18 01.53       | U           | 1   |
| o-Xylene             | 95-47-6           | <0.00200          | 0.00200      | mg/kg         | 06.08.18 01.53       | U           | 1   |
| Total Xylenes        | 1330-20-7         | <0.00200          | 0.00200      | mg/kg         | 06.08.18 01.53       | U           | 1   |
| Total BTEX           |                   | <0.00200          | 0.00200      | mg/kg         | 06.08.18 01.53       | U           | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 4-Bromofluorobenzene | 460-00-4          | 93                | %            | 70-130        | 06.08.18 01.53       |             |     |
| 1,4-Difluorobenzene  | 540-36-3          | 94                | %            | 70-130        | 06.08.18 01.53       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-04 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-014

Date Collected: 05.29.18 12.05

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 36.2   | 4.94 | mg/kg | 06.06.18 13.59 |      | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.02.18 09.00

Basis: Wet Weight

Seq Number: 3052155

| Parameter                         | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------------------------------|------------|--------|------|-------|----------------|------|-----|
| Gasoline Range Hydrocarbons (GRO) | PHC610     | <15.0  | 15.0 | mg/kg | 06.02.18 22.42 | U    | 1   |
| Diesel Range Organics (DRO)       | C10C28DRO  | 18.7   | 15.0 | mg/kg | 06.02.18 22.42 |      | 1   |
| Oil Range Hydrocarbons (ORO)      | PHCG2835   | <15.0  | 15.0 | mg/kg | 06.02.18 22.42 | U    | 1   |
| Total TPH                         | PHC635     | 18.7   | 15.0 | mg/kg | 06.02.18 22.42 |      | 1   |

| Surrogate      | Cas Number | % Recovery | Units | Limits | Analysis Date  | Flag |
|----------------|------------|------------|-------|--------|----------------|------|
| 1-Chlorooctane | 111-85-3   | 77         | %     | 70-135 | 06.02.18 22.42 |      |
| o-Terphenyl    | 84-15-1    | 80         | %     | 70-135 | 06.02.18 22.42 |      |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-04 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-014

Date Collected: 05.29.18 12.05

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.07.18 16.00

Basis: Wet Weight

Seq Number: 3052812

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.10       | U           | 1   |
| Toluene              | 108-88-3          | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.10       | U           | 1   |
| Ethylbenzene         | 100-41-4          | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.10       | U           | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00401          | 0.00401      | mg/kg         | 06.08.18 12.10       | U           | 1   |
| o-Xylene             | 95-47-6           | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.10       | U           | 1   |
| Total Xylenes        | 1330-20-7         | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.10       | U           | 1   |
| Total BTEX           |                   | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.10       | U           | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 1,4-Difluorobenzene  | 540-36-3          | 94                | %            | 70-130        | 06.08.18 12.10       |             |     |
| 4-Bromofluorobenzene | 460-00-4          | 130               | %            | 70-130        | 06.08.18 12.10       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-04 Depth 4 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-015

Date Collected: 05.29.18 12.10

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 34.3   | 4.96 | mg/kg | 06.06.18 14.04 |      | 1   |



## Certificate of Analytical Results 587892



### Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-04 Depth 6 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-016

Date Collected: 05.29.18 12.15

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | <4.93  | 4.93 | mg/kg | 06.06.18 14.10 | U    | 1   |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-05 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-017

Date Collected: 05.29.18 12.30

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | <4.91  | 4.91 | mg/kg | 06.06.18 14.15 | U    | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.02.18 09.00

Basis: Wet Weight

Seq Number: 3052155

| Parameter                                | Cas Number | Result      | RL   | Units | Analysis Date  | Flag | Dil |
|------------------------------------------|------------|-------------|------|-------|----------------|------|-----|
| <b>Gasoline Range Hydrocarbons (GRO)</b> | PHC610     | <b>18.0</b> | 14.9 | mg/kg | 06.02.18 23.03 |      | 1   |
| Diesel Range Organics (DRO)              | C10C28DRO  | <14.9       | 14.9 | mg/kg | 06.02.18 23.03 | U    | 1   |
| Oil Range Hydrocarbons (ORO)             | PHCG2835   | <14.9       | 14.9 | mg/kg | 06.02.18 23.03 | U    | 1   |
| <b>Total TPH</b>                         | PHC635     | <b>18.0</b> | 14.9 | mg/kg | 06.02.18 23.03 |      | 1   |

| Surrogate      | Cas Number | % Recovery | Units | Limits | Analysis Date  | Flag |
|----------------|------------|------------|-------|--------|----------------|------|
| 1-Chlorooctane | 111-85-3   | 80         | %     | 70-135 | 06.02.18 23.03 |      |
| o-Terphenyl    | 84-15-1    | 77         | %     | 70-135 | 06.02.18 23.03 |      |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-05 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-017

Date Collected: 05.29.18 12.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.07.18 16.00

Basis: Wet Weight

Seq Number: 3052812

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.28       | U           | 1   |
| Toluene              | 108-88-3          | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.28       | U           | 1   |
| Ethylbenzene         | 100-41-4          | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.28       | U           | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00399          | 0.00399      | mg/kg         | 06.08.18 12.28       | U           | 1   |
| o-Xylene             | 95-47-6           | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.28       | U           | 1   |
| Total Xylenes        | 1330-20-7         | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.28       | U           | 1   |
| Total BTEX           |                   | <0.00200          | 0.00200      | mg/kg         | 06.08.18 12.28       | U           | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 1,4-Difluorobenzene  | 540-36-3          | 101               | %            | 70-130        | 06.08.18 12.28       |             |     |
| 4-Bromofluorobenzene | 460-00-4          | 122               | %            | 70-130        | 06.08.18 12.28       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-05 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-018

Date Collected: 05.29.18 12.35

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | <5.00  | 5.00 | mg/kg | 06.06.18 14.31 | U    | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.02.18 09.00

Basis: Wet Weight

Seq Number: 3052155

| Parameter                         | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------------------------------|------------|--------|------|-------|----------------|------|-----|
| Gasoline Range Hydrocarbons (GRO) | PHC610     | <15.0  | 15.0 | mg/kg | 06.02.18 23.23 | U    | 1   |
| Diesel Range Organics (DRO)       | C10C28DRO  | <15.0  | 15.0 | mg/kg | 06.02.18 23.23 | U    | 1   |
| Oil Range Hydrocarbons (ORO)      | PHCG2835   | <15.0  | 15.0 | mg/kg | 06.02.18 23.23 | U    | 1   |
| Total TPH                         | PHC635     | <15.0  | 15.0 | mg/kg | 06.02.18 23.23 | U    | 1   |

| Surrogate      | Cas Number | % Recovery | Units | Limits | Analysis Date  | Flag |
|----------------|------------|------------|-------|--------|----------------|------|
| 1-Chlorooctane | 111-85-3   | 87         | %     | 70-135 | 06.02.18 23.23 |      |
| o-Terphenyl    | 84-15-1    | 90         | %     | 70-135 | 06.02.18 23.23 |      |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-05 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-018

Date Collected: 05.29.18 12.35

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.07.18 12.00

Basis: Wet Weight

Seq Number: 3052795

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00198          | 0.00198      | mg/kg         | 06.08.18 00.59       | U           | 1   |
| <b>Toluene</b>       | 108-88-3          | <b>0.00378</b>    | 0.00198      | mg/kg         | 06.08.18 00.59       |             | 1   |
| <b>Ethylbenzene</b>  | 100-41-4          | <b>0.00228</b>    | 0.00198      | mg/kg         | 06.08.18 00.59       |             | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00397          | 0.00397      | mg/kg         | 06.08.18 00.59       | U           | 1   |
| o-Xylene             | 95-47-6           | <0.00198          | 0.00198      | mg/kg         | 06.08.18 00.59       | U           | 1   |
| Total Xylenes        | 1330-20-7         | <0.00198          | 0.00198      | mg/kg         | 06.08.18 00.59       | U           | 1   |
| <b>Total BTEX</b>    |                   | <b>0.00606</b>    | 0.00198      | mg/kg         | 06.08.18 00.59       |             | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 4-Bromofluorobenzene | 460-00-4          | 108               | %            | 70-130        | 06.08.18 00.59       |             |     |
| 1,4-Difluorobenzene  | 540-36-3          | 107               | %            | 70-130        | 06.08.18 00.59       |             |     |



## Certificate of Analytical Results 587892



### Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-05 Depth 4 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-019

Date Collected: 05.29.18 12.40

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | <4.99  | 4.99 | mg/kg | 06.06.18 14.37 | U    | 1   |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-05 Depth 6 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-020

Date Collected: 05.29.18 12.45

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | <4.94  | 4.94 | mg/kg | 06.06.18 14.53 | U    | 1   |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-06 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-021

Date Collected: 05.29.18 13.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 7.28   | 4.97 | mg/kg | 06.06.18 14.58 |      | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.01.18 16.00

Basis: Wet Weight

Seq Number: 3052154

| Parameter                         | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|-----------------------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Gasoline Range Hydrocarbons (GRO) | PHC610            | <14.9             | 14.9         | mg/kg         | 06.02.18 10.52       | U           | 1   |
| Diesel Range Organics (DRO)       | C10C28DRO         | <14.9             | 14.9         | mg/kg         | 06.02.18 10.52       | U           | 1   |
| Oil Range Hydrocarbons (ORO)      | PHCG2835          | <14.9             | 14.9         | mg/kg         | 06.02.18 10.52       | U           | 1   |
| Total TPH                         | PHC635            | <14.9             | 14.9         | mg/kg         | 06.02.18 10.52       | U           | 1   |
| <b>Surrogate</b>                  | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 1-Chlorooctane                    | 111-85-3          | 80                | %            | 70-135        | 06.02.18 10.52       |             |     |
| o-Terphenyl                       | 84-15-1           | 84                | %            | 70-135        | 06.02.18 10.52       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-06 Depth 0 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-021

Date Collected: 05.29.18 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.07.18 16.00

Basis: Wet Weight

Seq Number: 3052812

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00199          | 0.00199      | mg/kg         | 06.08.18 11.34       | U           | 1   |
| Toluene              | 108-88-3          | <0.00199          | 0.00199      | mg/kg         | 06.08.18 11.34       | U           | 1   |
| Ethylbenzene         | 100-41-4          | <0.00199          | 0.00199      | mg/kg         | 06.08.18 11.34       | U           | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00398          | 0.00398      | mg/kg         | 06.08.18 11.34       | U           | 1   |
| o-Xylene             | 95-47-6           | <0.00199          | 0.00199      | mg/kg         | 06.08.18 11.34       | U           | 1   |
| Total Xylenes        | 1330-20-7         | <0.00199          | 0.00199      | mg/kg         | 06.08.18 11.34       | U           | 1   |
| Total BTEX           |                   | <0.00199          | 0.00199      | mg/kg         | 06.08.18 11.34       | U           | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 4-Bromofluorobenzene | 460-00-4          | 120               | %            | 70-130        | 06.08.18 11.34       |             |     |
| 1,4-Difluorobenzene  | 540-36-3          | 104               | %            | 70-130        | 06.08.18 11.34       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-06 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-022

Date Collected: 05.29.18 13.05

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | 7.05   | 4.91 | mg/kg | 06.06.18 15.04 |      | 1   |

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.01.18 16.00

Basis: Wet Weight

Seq Number: 3052154

| Parameter                         | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|-----------------------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Gasoline Range Hydrocarbons (GRO) | PHC610            | <14.9             | 14.9         | mg/kg         | 06.02.18 11.13       | U           | 1   |
| Diesel Range Organics (DRO)       | C10C28DRO         | <14.9             | 14.9         | mg/kg         | 06.02.18 11.13       | U           | 1   |
| Oil Range Hydrocarbons (ORO)      | PHCG2835          | <14.9             | 14.9         | mg/kg         | 06.02.18 11.13       | U           | 1   |
| Total TPH                         | PHC635            | <14.9             | 14.9         | mg/kg         | 06.02.18 11.13       | U           | 1   |
| <b>Surrogate</b>                  | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 1-Chlorooctane                    | 111-85-3          | 87                | %            | 70-135        | 06.02.18 11.13       |             |     |
| o-Terphenyl                       | 84-15-1           | 92                | %            | 70-135        | 06.02.18 11.13       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-06 Depth 2 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-022

Date Collected: 05.29.18 13.05

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.07.18 16.00

Basis: Wet Weight

Seq Number: 3052812

| Parameter            | Cas Number        | Result            | RL           | Units         | Analysis Date        | Flag        | Dil |
|----------------------|-------------------|-------------------|--------------|---------------|----------------------|-------------|-----|
| Benzene              | 71-43-2           | <0.00202          | 0.00202      | mg/kg         | 06.08.18 11.52       | U           | 1   |
| Toluene              | 108-88-3          | <0.00202          | 0.00202      | mg/kg         | 06.08.18 11.52       | U           | 1   |
| Ethylbenzene         | 100-41-4          | <0.00202          | 0.00202      | mg/kg         | 06.08.18 11.52       | U           | 1   |
| m,p-Xylenes          | 179601-23-1       | <0.00403          | 0.00403      | mg/kg         | 06.08.18 11.52       | U           | 1   |
| o-Xylene             | 95-47-6           | <0.00202          | 0.00202      | mg/kg         | 06.08.18 11.52       | U           | 1   |
| Total Xylenes        | 1330-20-7         | <0.00202          | 0.00202      | mg/kg         | 06.08.18 11.52       | U           | 1   |
| Total BTEX           |                   | <0.00202          | 0.00202      | mg/kg         | 06.08.18 11.52       | U           | 1   |
| <b>Surrogate</b>     | <b>Cas Number</b> | <b>% Recovery</b> | <b>Units</b> | <b>Limits</b> | <b>Analysis Date</b> | <b>Flag</b> |     |
| 1,4-Difluorobenzene  | 540-36-3          | 102               | %            | 70-130        | 06.08.18 11.52       |             |     |
| 4-Bromofluorobenzene | 460-00-4          | 124               | %            | 70-130        | 06.08.18 11.52       |             |     |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-06 Depth 4 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-023

Date Collected: 05.29.18 13.10

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | <4.96  | 4.96 | mg/kg | 06.06.18 15.09 | U    | 1   |



# Certificate of Analytical Results 587892



## Marathon Oil Company, Tulsa, OK

Chili Parlor 17 Fed 2H

Sample Id: **BH-18-06 Depth 6 ft**

Matrix: Soil

Date Received: 06.01.18 13.30

Lab Sample Id: 587892-024

Date Collected: 05.29.18 13.10

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 06.06.18 09.00

Basis: Wet Weight

Seq Number: 3052575

| Parameter | Cas Number | Result | RL   | Units | Analysis Date  | Flag | Dil |
|-----------|------------|--------|------|-------|----------------|------|-----|
| Chloride  | 16887-00-6 | <4.94  | 4.94 | mg/kg | 06.06.18 15.15 | U    | 1   |

- 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.

**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

Marathon Oil Company  
Chili Parlor 17 Fed 2H

## Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3052444

Matrix: Solid

Prep Method: E300P

MB Sample Id: 7656086-1-BLK

LCS Sample Id: 7656086-1-BKS

Date Prep: 06.06.18

LCSD Sample Id: 7656086-1-BSD

| Parameter | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|-----------|--------------|------------|----------|-------------|-----------|--------|------|-----------|-------|----------------|------|
| Chloride  | <5.00     | 250          | 273        | 109      | 273         | 109       | 90-110 | 0    | 20        | mg/kg | 06.06.18 09:24 |      |

## Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3052575

Matrix: Solid

Prep Method: E300P

MB Sample Id: 7656087-1-BLK

LCS Sample Id: 7656087-1-BKS

Date Prep: 06.06.18

LCSD Sample Id: 7656087-1-BSD

| Parameter | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|-----------|--------------|------------|----------|-------------|-----------|--------|------|-----------|-------|----------------|------|
| Chloride  | <5.00     | 250          | 274        | 110      | 274         | 110       | 90-110 | 0    | 20        | mg/kg | 06.06.18 12:49 |      |

## Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3052588

Matrix: Solid

Prep Method: E300P

MB Sample Id: 7656154-1-BLK

LCS Sample Id: 7656154-1-BKS

Date Prep: 06.06.18

LCSD Sample Id: 7656154-1-BSD

| Parameter | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|-----------|--------------|------------|----------|-------------|-----------|--------|------|-----------|-------|----------------|------|
| Chloride  | <5.00     | 250          | 267        | 107      | 265         | 106       | 90-110 | 1    | 20        | mg/kg | 06.06.18 21:57 |      |

## Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3052444

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 587962-006

MS Sample Id: 587962-006 S

Date Prep: 06.06.18

MSD Sample Id: 587962-006 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Chloride  | 308           | 247          | 544       | 96      | 545        | 96       | 90-110 | 0    | 20        | mg/kg | 06.06.18 09:41 |      |

## Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3052444

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 587963-001

MS Sample Id: 587963-001 S

Date Prep: 06.06.18

MSD Sample Id: 587963-001 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Chloride  | 164           | 249          | 414       | 100     | 411        | 99       | 90-110 | 1    | 20        | mg/kg | 06.06.18 10:56 |      |

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

$[D] = 100 * (C - A) / B$   
 $RPD = 200 * |(C - E) / (C + E)|$   
 $[D] = 100 * (C) / [B]$   
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

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

Marathon Oil Company  
Chili Parlor 17 Fed 2H

## Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3052575

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 587892-007

MS Sample Id: 587892-007 S

Date Prep: 06.06.18

MSD Sample Id: 587892-007 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Chloride  | 15.3          | 247          | 298       | 114     | 291        | 112      | 90-110 | 2    | 20        | mg/kg | 06.06.18 13:05 | X    |

## Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3052575

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 587892-017

MS Sample Id: 587892-017 S

Date Prep: 06.06.18

MSD Sample Id: 587892-017 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Chloride  | <4.91         | 246          | 228       | 93      | 232        | 94       | 90-110 | 2    | 20        | mg/kg | 06.06.18 14:21 |      |

## Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3052588

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 587900-004

MS Sample Id: 587900-004 S

Date Prep: 06.06.18

MSD Sample Id: 587900-004 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Chloride  | 1050          | 247          | 1290      | 97      | 1270       | 89       | 90-110 | 2    | 20        | mg/kg | 06.06.18 22:13 | X    |

## Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3052588

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 587900-011

MS Sample Id: 587900-011 S

Date Prep: 06.06.18

MSD Sample Id: 587900-011 SD

| Parameter | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|-----------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Chloride  | 89.0          | 250          | 359       | 108     | 365        | 110      | 90-110 | 2    | 20        | mg/kg | 06.06.18 23:29 |      |

## Analytical Method: TPH By SW8015 Mod

Seq Number: 3052154

Matrix: Solid

Prep Method: TX1005P

MB Sample Id: 7655905-1-BLK

LCS Sample Id: 7655905-1-BKS

Date Prep: 06.01.18

LCSD Sample Id: 7655905-1-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) | <15.0     | 1000         | 884        | 88       | 1160        | 116       | 70-135 | 27   | 20        | mg/kg | 06.01.18 22:14 | F    |
| Diesel Range Organics (DRO)       | <15.0     | 1000         | 946        | 95       | 1230        | 123       | 70-135 | 26   | 20        | mg/kg | 06.01.18 22:14 | F    |

| Surrogate      | MB %Rec | MB Flag | LCS %Rec | LCS Flag | LCSD %Rec | LCSD Flag | Limits | Units | Analysis Date  |
|----------------|---------|---------|----------|----------|-----------|-----------|--------|-------|----------------|
| 1-Chlorooctane | 84      |         | 115      |          | 128       |           | 70-135 | %     | 06.01.18 22:14 |
| o-Terphenyl    | 90      |         | 114      |          | 126       |           | 70-135 | %     | 06.01.18 22:14 |

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference $[D] = 100 * (C-A) / B$   
 $RPD = 200 * |(C-E) / (C+E)|$   
 $[D] = 100 * (C) / [B]$   
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$ LCS = Laboratory Control Sample  
A = Parent Result  
C = MS/LCS Result  
E = MSD/LCSD ResultMS = Matrix Spike  
B = Spike Added  
D = MSD/LCSD % Rec

Marathon Oil Company  
Chili Parlor 17 Fed 2H

## Analytical Method: TPH By SW8015 Mod

Seq Number: 3052155

MB Sample Id: 7655906-1-BLK

Matrix: Solid

LCS Sample Id: 7655906-1-BKS

Prep Method: TX1005P

Date Prep: 06.02.18

LCSD Sample Id: 7655906-1-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) | <15.0     | 1000         | 810        | 81       | 804         | 80        | 70-135    | 1    | 20        | mg/kg | 06.02.18 14:40 |      |
| Diesel Range Organics (DRO)       | <15.0     | 1000         | 852        | 85       | 805         | 81        | 70-135    | 6    | 20        | mg/kg | 06.02.18 14:40 |      |
| Surrogate                         | MB %Rec   | MB Flag      | LCS %Rec   | LCS Flag |             | LCSD %Rec | LCSD Flag |      | Limits    | Units | Analysis Date  |      |
| 1-Chlorooctane                    | 92        |              | 104        |          |             | 110       |           |      | 70-135    | %     | 06.02.18 14:40 |      |
| o-Terphenyl                       | 100       |              | 100        |          |             | 94        |           |      | 70-135    | %     | 06.02.18 14:40 |      |

## Analytical Method: TPH By SW8015 Mod

Seq Number: 3052154

Parent Sample Id: 587820-001

Matrix: Soil

MS Sample Id: 587820-001 S

Prep Method: TX1005P

Date Prep: 06.01.18

MSD Sample Id: 587820-001 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) | <15.0         | 998          | 981       | 98      | 911        | 91       | 70-135   | 7    | 20        | mg/kg | 06.01.18 23:18 |      |
| Diesel Range Organics (DRO)       | <15.0         | 998          | 1080      | 108     | 996        | 100      | 70-135   | 8    | 20        | mg/kg | 06.01.18 23:18 |      |
| Surrogate                         |               |              | MS %Rec   | MS Flag |            | MSD %Rec | MSD Flag |      | Limits    | Units | Analysis Date  |      |
| 1-Chlorooctane                    |               |              | 107       |         |            | 102      |          |      | 70-135    | %     | 06.01.18 23:18 |      |
| o-Terphenyl                       |               |              | 107       |         |            | 97       |          |      | 70-135    | %     | 06.01.18 23:18 |      |

## Analytical Method: TPH By SW8015 Mod

Seq Number: 3052155

Parent Sample Id: 587888-003

Matrix: Soil

MS Sample Id: 587888-003 S

Prep Method: TX1005P

Date Prep: 06.02.18

MSD Sample Id: 587888-003 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) | <15.0         | 999          | 900       | 90      | 839        | 84       | 70-135   | 7    | 20        | mg/kg | 06.02.18 16:26 |      |
| Diesel Range Organics (DRO)       | 25.6          | 999          | 913       | 89      | 903        | 88       | 70-135   | 1    | 20        | mg/kg | 06.02.18 16:26 |      |
| Surrogate                         |               |              | MS %Rec   | MS Flag |            | MSD %Rec | MSD Flag |      | Limits    | Units | Analysis Date  |      |
| 1-Chlorooctane                    |               |              | 114       |         |            | 121      |          |      | 70-135    | %     | 06.02.18 16:26 |      |
| o-Terphenyl                       |               |              | 85        |         |            | 92       |          |      | 70-135    | %     | 06.02.18 16:26 |      |

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference $[D] = 100 * (C - A) / B$   
 $RPD = 200 * |(C - E) / (C + E)|$   
 $[D] = 100 * (C) / [B]$   
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$ LCS = Laboratory Control Sample  
A = Parent Result  
C = MS/LCS Result  
E = MSD/LCSD ResultMS = Matrix Spike  
B = Spike Added  
D = MSD/LCSD % Rec

Marathon Oil Company  
Chili Parlor 17 Fed 2H

## Analytical Method: BTEX by EPA 8021B

Seq Number: 3052450

MB Sample Id: 7656078-1-BLK

Matrix: Solid

LCS Sample Id: 7656078-1-BKS

Prep Method: SW5030B

Date Prep: 06.05.18

LCSD Sample Id: 7656078-1-BSD

| Parameter            | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|----------------------|-----------|--------------|------------|----------|-------------|-----------|--------|------|-----------|-------|----------------|------|
| Benzene              | <0.00199  | 0.0996       | 0.0947     | 95       | 0.0938      | 94        | 70-130 | 1    | 35        | mg/kg | 06.05.18 21:00 |      |
| Toluene              | <0.00199  | 0.0996       | 0.0986     | 99       | 0.100       | 100       | 70-130 | 1    | 35        | mg/kg | 06.05.18 21:00 |      |
| Ethylbenzene         | <0.00199  | 0.0996       | 0.103      | 103      | 0.0976      | 98        | 70-130 | 5    | 35        | mg/kg | 06.05.18 21:00 |      |
| m,p-Xylenes          | <0.00398  | 0.199        | 0.204      | 103      | 0.203       | 102       | 70-130 | 0    | 35        | mg/kg | 06.05.18 21:00 |      |
| o-Xylene             | <0.00199  | 0.0996       | 0.0957     | 96       | 0.0972      | 97        | 70-130 | 2    | 35        | mg/kg | 06.05.18 21:00 |      |
| Surrogate            | MB %Rec   | MB Flag      | LCS %Rec   | LCS Flag | LCSD %Rec   | LCSD Flag | Limits |      |           | Units | Analysis Date  |      |
| 1,4-Difluorobenzene  | 102       |              | 92         |          | 94          |           | 70-130 |      |           | %     | 06.05.18 21:00 |      |
| 4-Bromofluorobenzene | 94        |              | 95         |          | 117         |           | 70-130 |      |           | %     | 06.05.18 21:00 |      |

## Analytical Method: BTEX by EPA 8021B

Seq Number: 3052478

MB Sample Id: 7656132-1-BLK

Matrix: Solid

LCS Sample Id: 7656132-1-BKS

Prep Method: SW5030B

Date Prep: 06.05.18

LCSD Sample Id: 7656132-1-BSD

| Parameter            | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|----------------------|-----------|--------------|------------|----------|-------------|-----------|--------|------|-----------|-------|----------------|------|
| Benzene              | <0.00202  | 0.101        | 0.0896     | 89       | 0.0927      | 93        | 70-130 | 3    | 35        | mg/kg | 06.06.18 05:37 |      |
| Toluene              | <0.00202  | 0.101        | 0.0939     | 93       | 0.0979      | 98        | 70-130 | 4    | 35        | mg/kg | 06.06.18 05:37 |      |
| Ethylbenzene         | <0.00202  | 0.101        | 0.0917     | 91       | 0.0967      | 97        | 70-130 | 5    | 35        | mg/kg | 06.06.18 05:37 |      |
| m,p-Xylenes          | <0.00403  | 0.202        | 0.190      | 94       | 0.199       | 100       | 70-130 | 5    | 35        | mg/kg | 06.06.18 05:37 |      |
| o-Xylene             | <0.00202  | 0.101        | 0.0892     | 88       | 0.0944      | 94        | 70-130 | 6    | 35        | mg/kg | 06.06.18 05:37 |      |
| Surrogate            | MB %Rec   | MB Flag      | LCS %Rec   | LCS Flag | LCSD %Rec   | LCSD Flag | Limits |      |           | Units | Analysis Date  |      |
| 1,4-Difluorobenzene  | 81        |              | 93         |          | 95          |           | 70-130 |      |           | %     | 06.06.18 05:37 |      |
| 4-Bromofluorobenzene | 79        |              | 90         |          | 94          |           | 70-130 |      |           | %     | 06.06.18 05:37 |      |

## Analytical Method: BTEX by EPA 8021B

Seq Number: 3052795

MB Sample Id: 7656286-1-BLK

Matrix: Solid

LCS Sample Id: 7656286-1-BKS

Prep Method: SW5030B

Date Prep: 06.07.18

LCSD Sample Id: 7656286-1-BSD

| Parameter            | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|----------------------|-----------|--------------|------------|----------|-------------|-----------|--------|------|-----------|-------|----------------|------|
| Benzene              | <0.00200  | 0.100        | 0.0915     | 92       | 0.0903      | 91        | 70-130 | 1    | 35        | mg/kg | 06.07.18 18:04 |      |
| Toluene              | <0.00200  | 0.100        | 0.0987     | 99       | 0.0948      | 95        | 70-130 | 4    | 35        | mg/kg | 06.07.18 18:04 |      |
| Ethylbenzene         | <0.00200  | 0.100        | 0.0962     | 96       | 0.0946      | 95        | 70-130 | 2    | 35        | mg/kg | 06.07.18 18:04 |      |
| m,p-Xylenes          | <0.00401  | 0.200        | 0.201      | 101      | 0.197       | 99        | 70-130 | 2    | 35        | mg/kg | 06.07.18 18:04 |      |
| o-Xylene             | <0.00200  | 0.100        | 0.0943     | 94       | 0.0907      | 91        | 70-130 | 4    | 35        | mg/kg | 06.07.18 18:04 |      |
| Surrogate            | MB %Rec   | MB Flag      | LCS %Rec   | LCS Flag | LCSD %Rec   | LCSD Flag | Limits |      |           | Units | Analysis Date  |      |
| 1,4-Difluorobenzene  | 97        |              | 97         |          | 103         |           | 70-130 |      |           | %     | 06.07.18 18:04 |      |
| 4-Bromofluorobenzene | 97        |              | 100        |          | 102         |           | 70-130 |      |           | %     | 06.07.18 18:04 |      |

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference $[D] = 100 * (C - A) / B$   
 $RPD = 200 * |(C - E) / (C + E)|$   
 $[D] = 100 * (C) / [B]$   
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$ LCS = Laboratory Control Sample  
A = Parent Result  
C = MS/LCS Result  
E = MSD/LCSD ResultMS = Matrix Spike  
B = Spike Added  
D = MSD/LCSD % Rec

Marathon Oil Company  
Chili Parlor 17 Fed 2H

## Analytical Method: BTEX by EPA 8021B

Seq Number: 3052812

MB Sample Id: 7656308-1-BLK

Matrix: Solid

LCS Sample Id: 7656308-1-BKS

Prep Method: SW5030B

Date Prep: 06.07.18

LCSD Sample Id: 7656308-1-BSD

| Parameter    | MB Result | Spike Amount | LCS Result | LCS %Rec | LCSD Result | LCSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|--------------|-----------|--------------|------------|----------|-------------|-----------|--------|------|-----------|-------|----------------|------|
| Benzene      | <0.00200  | 0.100        | 0.0782     | 78       | 0.0826      | 83        | 70-130 | 5    | 35        | mg/kg | 06.08.18 02:47 |      |
| Toluene      | <0.00200  | 0.100        | 0.0810     | 81       | 0.0878      | 88        | 70-130 | 8    | 35        | mg/kg | 06.08.18 02:47 |      |
| Ethylbenzene | <0.00200  | 0.100        | 0.0813     | 81       | 0.0859      | 86        | 70-130 | 6    | 35        | mg/kg | 06.08.18 02:47 |      |
| m,p-Xylenes  | <0.00401  | 0.200        | 0.168      | 84       | 0.179       | 90        | 70-130 | 6    | 35        | mg/kg | 06.08.18 02:47 |      |
| o-Xylene     | <0.00200  | 0.100        | 0.0805     | 81       | 0.0861      | 86        | 70-130 | 7    | 35        | mg/kg | 06.08.18 02:47 |      |

| Surrogate            | MB %Rec | MB Flag | LCS %Rec | LCS Flag | LCSD %Rec | LCSD Flag | Limits | Units | Analysis Date  |
|----------------------|---------|---------|----------|----------|-----------|-----------|--------|-------|----------------|
| 1,4-Difluorobenzene  | 95      |         | 103      |          | 93        |           | 70-130 | %     | 06.08.18 02:47 |
| 4-Bromofluorobenzene | 98      |         | 84       |          | 87        |           | 70-130 | %     | 06.08.18 02:47 |

## Analytical Method: BTEX by EPA 8021B

Seq Number: 3052450

Parent Sample Id: 587892-001

Matrix: Soil

MS Sample Id: 587892-001 S

Prep Method: SW5030B

Date Prep: 06.05.18

MSD Sample Id: 587892-001 SD

| Parameter    | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|--------------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Benzene      | <0.00201      | 0.100        | 0.0795    | 80      | 0.0525     | 52       | 70-130 | 41   | 35        | mg/kg | 06.05.18 21:36 | XF   |
| Toluene      | 0.00597       | 0.100        | 0.0832    | 77      | 0.0504     | 44       | 70-130 | 49   | 35        | mg/kg | 06.05.18 21:36 | XF   |
| Ethylbenzene | <0.00201      | 0.100        | 0.0723    | 72      | 0.0413     | 41       | 70-130 | 55   | 35        | mg/kg | 06.05.18 21:36 | XF   |
| m,p-Xylenes  | <0.00402      | 0.201        | 0.151     | 75      | 0.0823     | 41       | 70-130 | 59   | 35        | mg/kg | 06.05.18 21:36 | XF   |
| o-Xylene     | <0.00201      | 0.100        | 0.0717    | 72      | 0.0399     | 40       | 70-130 | 57   | 35        | mg/kg | 06.05.18 21:36 | XF   |

| Surrogate            | MS %Rec | MS Flag | MSD %Rec | MSD Flag | Limits | Units | Analysis Date  |
|----------------------|---------|---------|----------|----------|--------|-------|----------------|
| 1,4-Difluorobenzene  | 94      |         | 100      |          | 70-130 | %     | 06.05.18 21:36 |
| 4-Bromofluorobenzene | 109     |         | 90       |          | 70-130 | %     | 06.05.18 21:36 |

## Analytical Method: BTEX by EPA 8021B

Seq Number: 3052478

Parent Sample Id: 587888-008

Matrix: Soil

MS Sample Id: 587888-008 S

Prep Method: SW5030B

Date Prep: 06.05.18

MSD Sample Id: 587888-008 SD

| Parameter    | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|--------------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Benzene      | <0.00200      | 0.100        | 0.0884    | 88      | 0.0817     | 82       | 70-130 | 8    | 35        | mg/kg | 06.06.18 06:14 |      |
| Toluene      | <0.00200      | 0.100        | 0.0943    | 94      | 0.0862     | 86       | 70-130 | 9    | 35        | mg/kg | 06.06.18 06:14 |      |
| Ethylbenzene | <0.00200      | 0.100        | 0.0916    | 92      | 0.0831     | 83       | 70-130 | 10   | 35        | mg/kg | 06.06.18 06:14 |      |
| m,p-Xylenes  | <0.00401      | 0.200        | 0.189     | 95      | 0.171      | 86       | 70-130 | 10   | 35        | mg/kg | 06.06.18 06:14 |      |
| o-Xylene     | <0.00200      | 0.100        | 0.0890    | 89      | 0.0807     | 81       | 70-130 | 10   | 35        | mg/kg | 06.06.18 06:14 |      |

| Surrogate            | MS %Rec | MS Flag | MSD %Rec | MSD Flag | Limits | Units | Analysis Date  |
|----------------------|---------|---------|----------|----------|--------|-------|----------------|
| 1,4-Difluorobenzene  | 90      |         | 95       |          | 70-130 | %     | 06.06.18 06:14 |
| 4-Bromofluorobenzene | 93      |         | 95       |          | 70-130 | %     | 06.06.18 06:14 |

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference $[D] = 100 * (C - A) / B$   
 $RPD = 200 * |(C - E) / (C + E)|$   
 $[D] = 100 * (C) / [B]$   
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$ LCS = Laboratory Control Sample  
A = Parent Result  
C = MS/LCS Result  
E = MSD/LCSD ResultMS = Matrix Spike  
B = Spike Added  
D = MSD/LCSD % Rec

Marathon Oil Company  
Chili Parlor 17 Fed 2H

## Analytical Method: BTEX by EPA 8021B

Seq Number: 3052795

Parent Sample Id: 587962-001

Matrix: Soil

MS Sample Id: 587962-001 S

Prep Method: SW5030B

Date Prep: 06.07.18

MSD Sample Id: 587962-001 SD

| Parameter    | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|--------------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Benzene      | <0.00201      | 0.100        | 0.0530    | 53      | 0.0655     | 66       | 70-130 | 21   | 35        | mg/kg | 06.07.18 18:40 | X    |
| Toluene      | <0.00201      | 0.100        | 0.0530    | 53      | 0.0685     | 69       | 70-130 | 26   | 35        | mg/kg | 06.07.18 18:40 | X    |
| Ethylbenzene | <0.00201      | 0.100        | 0.0516    | 52      | 0.0662     | 66       | 70-130 | 25   | 35        | mg/kg | 06.07.18 18:40 | X    |
| m,p-Xylenes  | <0.00402      | 0.201        | 0.107     | 53      | 0.138      | 69       | 70-130 | 25   | 35        | mg/kg | 06.07.18 18:40 | X    |
| o-Xylene     | <0.00201      | 0.100        | 0.0512    | 51      | 0.0662     | 66       | 70-130 | 26   | 35        | mg/kg | 06.07.18 18:40 | X    |

| Surrogate            | MS %Rec | MS Flag | MSD %Rec | MSD Flag | Limits | Units | Analysis Date  |
|----------------------|---------|---------|----------|----------|--------|-------|----------------|
| 1,4-Difluorobenzene  | 101     |         | 95       |          | 70-130 | %     | 06.07.18 18:40 |
| 4-Bromofluorobenzene | 105     |         | 100      |          | 70-130 | %     | 06.07.18 18:40 |

## Analytical Method: BTEX by EPA 8021B

Seq Number: 3052812

Parent Sample Id: 587900-012

Matrix: Soil

MS Sample Id: 587900-012 S

Prep Method: SW5030B

Date Prep: 06.07.18

MSD Sample Id: 587900-012 SD

| Parameter    | Parent Result | Spike Amount | MS Result | MS %Rec | MSD Result | MSD %Rec | Limits | %RPD | RPD Limit | Units | Analysis Date  | Flag |
|--------------|---------------|--------------|-----------|---------|------------|----------|--------|------|-----------|-------|----------------|------|
| Benzene      | <0.00200      | 0.0998       | 0.0497    | 50      | 0.0459     | 45       | 70-130 | 8    | 35        | mg/kg | 06.08.18 08:25 | X    |
| Toluene      | <0.00200      | 0.0998       | 0.0468    | 47      | 0.0374     | 37       | 70-130 | 22   | 35        | mg/kg | 06.08.18 08:25 | X    |
| Ethylbenzene | <0.00200      | 0.0998       | 0.0386    | 39      | 0.0243     | 24       | 70-130 | 45   | 35        | mg/kg | 06.08.18 08:25 | XF   |
| m,p-Xylenes  | <0.00399      | 0.200        | 0.0787    | 39      | 0.0476     | 24       | 70-130 | 49   | 35        | mg/kg | 06.08.18 08:25 | XF   |
| o-Xylene     | <0.00200      | 0.0998       | 0.0412    | 41      | 0.0245     | 24       | 70-130 | 51   | 35        | mg/kg | 06.08.18 08:25 | XF   |

| Surrogate            | MS %Rec | MS Flag | MSD %Rec | MSD Flag | Limits | Units | Analysis Date  |
|----------------------|---------|---------|----------|----------|--------|-------|----------------|
| 1,4-Difluorobenzene  | 93      |         | 97       |          | 70-130 | %     | 06.08.18 08:25 |
| 4-Bromofluorobenzene | 95      |         | 104      |          | 70-130 | %     | 06.08.18 08:25 |

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference $[D] = 100 * (C - A) / B$   
 $RPD = 200 * |(C - E) / (C + E)|$   
 $[D] = 100 * (C) / [B]$   
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)LCS = Laboratory Control Sample  
A = Parent Result  
C = MS/LCS Result  
E = MSD/LCSD ResultMS = Matrix Spike  
B = Spike Added  
D = MSD/LCSD % Rec

|                                                              |  |                                                         |  |
|--------------------------------------------------------------|--|---------------------------------------------------------|--|
| Client Name: Marathon Oil                                    |  | Site Manager:                                           |  |
| Project Name: Chili Parlor 17 Fed 2H                         |  | Project #:                                              |  |
| Project Location: (county, state) Lea County, New Mexico     |  | Invoice to: Callie Karrigan at Marathon Oil Permian LLC |  |
| Receiving Laboratory: 5555 San Felipe St., Houston, TX 77056 |  | Sampler Signature:                                      |  |
| Comments: Midland, TX                                        |  |                                                         |  |

| LAB # | SAMPLE IDENTIFICATION | SAMPLING   |       | MATRIX | PRESERVATIVE METHOD |      |     | # CONTAINERS | FILTERED (Y/N) |                  |     |
|-------|-----------------------|------------|-------|--------|---------------------|------|-----|--------------|----------------|------------------|-----|
|       |                       | DATE       | TIME  |        | WATER               | SOIL | HCL |              |                | HNO <sub>3</sub> | ICE |
|       |                       |            |       |        |                     |      |     |              |                |                  |     |
|       | BH18-01 Depth 0' ft   | 05/29/2018 | 10:30 |        | X                   |      |     | X            | 2              |                  |     |
|       | BH18-01 Depth 2' ft   | 05/29/2018 | 10:35 |        | X                   |      |     | X            | 2              |                  |     |
|       | BH18-01 Depth 4' ft   | 05/29/2018 | 10:40 |        | X                   |      |     | X            | 2              |                  |     |
|       | BH18-01 Depth 6' ft   | 05/29/2018 | 10:45 |        | X                   |      |     | X            | 2              |                  |     |
|       | BH18-02 Depth 0' ft   | 05/29/2018 | 11:00 |        | X                   |      |     | X            | 2              |                  |     |
|       | BH18-02 Depth 2' ft   | 05/29/2018 | 11:05 |        | X                   |      |     | X            | 2              |                  |     |
|       | BH18-02 Depth 4' ft   | 05/29/2018 | 11:10 |        | X                   |      |     | X            | 2              |                  |     |
|       | BH18-02 Depth 6' ft   | 05/29/2018 | 11:15 |        | X                   |      |     | X            | 2              |                  |     |
|       | BH18-03 Depth 0' ft   | 05/29/2018 | 11:30 |        | X                   |      |     | X            | 2              |                  |     |
|       | BH18-03 Depth 2' ft   | 05/29/2018 | 11:35 |        | X                   |      |     | X            | 2              |                  |     |

|                               |                 |             |
|-------------------------------|-----------------|-------------|
| Relinquished by: Robyn Filer  | Date: 5/31/2018 | Time: 2:30  |
| Relinquished by: Chris Pulice | Date: 5/31/2018 | Time: 15:30 |
| Relinquished by:              | Date:           | Time:       |

|                          |                 |             |
|--------------------------|-----------------|-------------|
| Received by: [Signature] | Date: 5/31/2018 | Time: 14:30 |
| Received by: [Signature] | Date: 6/1/2018  | Time: 13:30 |
| Received by:             | Date:           | Time:       |

|                          |                                                               |
|--------------------------|---------------------------------------------------------------|
| LAB USE ONLY             | REMARKS:                                                      |
| Sample Temperature: 23.0 | <input type="checkbox"/> RUSH: Same Day 24 hr 48 hr 72 hr     |
|                          | <input type="checkbox"/> Rush Charges Authorized              |
|                          | <input type="checkbox"/> Special Report Limits or TRRP Report |

|      |                             |                         |            |            |                |                                     |                |                     |     |                        |                            |                 |      |                |                       |                      |                                             |                      |
|------|-----------------------------|-------------------------|------------|------------|----------------|-------------------------------------|----------------|---------------------|-----|------------------------|----------------------------|-----------------|------|----------------|-----------------------|----------------------|---------------------------------------------|----------------------|
| Hold | TPH 8015M (GRO - DRO - MRO) | TPH TX1005 (Ext to C35) | BTEX 8021B | BTEX 8260B | TCLP Volatiles | TCLP Metals Ag As Ba Cd Cr Pb Se Hg | TCLP Volatiles | TCLP Semi Volatiles | RCI | GC/MS Vol. 8260B / 624 | GC/MS Semi. Vol. 8270C/625 | PCBs 8082 / 608 | NORM | PLM (Asbestos) | Chlordem (method 300) | Chloride Sulfate TDS | General Water Chemistry (see attached list) | Anion/Cation Balance |
|------|-----------------------------|-------------------------|------------|------------|----------------|-------------------------------------|----------------|---------------------|-----|------------------------|----------------------------|-----------------|------|----------------|-----------------------|----------------------|---------------------------------------------|----------------------|

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# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



**Client:** Marathon Oil Company

**Date/ Time Received:** 06/01/2018 01:30:00 PM

**Work Order #:** 587892

**Acceptable Temperature Range:** 0 - 6 degC

**Air and Metal samples Acceptable Range:** Ambient

**Temperature Measuring device used :** R8

| Sample Receipt Checklist                                | Comments |
|---------------------------------------------------------|----------|
| #1 *Temperature of cooler(s)?                           | 2.3      |
| #2 *Shipping container in good condition?               | Yes      |
| #3 *Samples received on ice?                            | Yes      |
| #4 *Custody Seals intact on shipping container/ cooler? | N/A      |
| #5 Custody Seals intact on sample bottles?              | N/A      |
| #6 *Custody Seals Signed and dated?                     | N/A      |
| #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)?                           | N/A      |
| #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:**

*Brianna Teel*

Brianna Teel

Date: 06/01/2018

**Checklist reviewed by:**

*Jessica Kramer*

Jessica Kramer

Date: 06/01/2018