

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

State of New Mexico  
Energy Minerals and Natural  
Resources Department  
  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

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

Incident ID	
District RP	
Facility ID	
Application ID	

## Release Notification

### Responsible Party

Responsible Party <b>Hess Corporation</b>	OGRID
Contact Name <b>Brian Epperson</b>	Contact Telephone <b>713-496-7296</b>
Contact email <b>bepperson@hess.com</b>	Incident # (assigned by OCD) <b>1R-4862</b>
Contact mailing address <b>1501 McKinney, Houston, Texas 77010</b>	

### Location of Release Source

Latitude **32° 37' 43.86"** Longitude **103° 19' 37.56"**  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name <b>1R-4862, Former Marathon McGrail State Tank Battery</b>	Site Type <b>Former Tank Battery</b>
Date Release Discovered <b>Unknown</b>	API# (if applicable)

Unit Letter	Section	Township	Range	County
<b>K</b>	<b>26</b>	<b>19S</b>	<b>36E</b>	<b>Lea</b>

Surface Owner:  State  Federal  Tribal  Private (Name: )

### Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input checked="" type="checkbox"/> Other (describe)	Volume/Weight Released (provide units) <b>Unknown</b>	Volume/Weight Recovered (provide units) <b>Unknown</b>

Cause of Release  
**Site is a former tank battery.**

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Was this a major release as defined by 19.15.29.7(A) NMAC?  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

### Initial Response

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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.
If all the actions described above have <u>not</u> been undertaken, explain why:
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.
Printed Name: <u>Brian Epperson</u> Title: <u>Remediation Manager</u>
Signature:  Date: <u>11/9/2017</u>
email: <u>beperson@hess.com</u> Telephone: <u>(713) 496-7296</u>
<b><u>OCD Only</u></b>  Received by: _____ Date: _____

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## Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	<u>  44  </u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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

<p><b>Characterization Report Checklist:</b> <i>Each of the following items must be included in the report.</i></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.</li> <li><input checked="" type="checkbox"/> Field data</li> <li><input checked="" type="checkbox"/> Data table of soil contaminant concentration data</li> <li><input checked="" type="checkbox"/> Depth to water determination</li> <li><input checked="" type="checkbox"/> Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release</li> <li><input checked="" type="checkbox"/> Boring or excavation logs</li> <li><input checked="" type="checkbox"/> Photographs including date and GIS information</li> <li><input checked="" type="checkbox"/> Topographic/Aerial maps</li> <li><input checked="" type="checkbox"/> Laboratory data including chain of custody</li> </ul>
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If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

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

Printed Name: Brian Epperson Title: Remediation Manager

Signature:  Date: 11/12/2018

email: bepperson@hess.com Telephone: (713) 496-7296

**OCD Only**

Received by:  Date: 01/30/2020

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## Remediation Plan

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

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

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

- Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- Extents of contamination must be fully delineated.
- Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Brian Epperson Title: Remediation Manager

Signature:  Date: 03/15/2019

email: bepperson@hess.com Telephone: (713) 496-7296

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Approved       Approved with Attached Conditions of Approval       Denied       Deferral Approved

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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## Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

**Closure Report Attachment Checklist:** *Each of the following items must be included in the closure report.*

- A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Brian Epperson Title: Remediation Manager

Signature:  Date: 09/04/2019

email: bepperson@hess.com Telephone: (713) 496-7296

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_



HESS CORPORATION  
1501 McKinney  
Houston, TX 77010

**Brian Epperson**  
Remediation Manager  
EHS&SR  
Phone: (713) 496-7296  
E-Mail: bepperson@hess.com

September 4, 2019

Mr. Bradford Billings  
New Mexico Oil Conservation District  
1220 South St. Francis Drive  
Santa Fe, NM 87505

VIA: Electronic Submittal Only

**Re: Excavation Summary and Request for NFA/Closure  
Former Marathon McGrail  
State Tank Battery 1RP-4862  
Unit K, Sec 26, T-19S, R-36E, Lea County**

Dear Mr. Billings:

A Site Investigation Report for 1RP-4862, Former Marathon McGrail State Tank Battery, located in Monument, New Mexico was submitted on November 12, 2018. The report detailed the completed scope of work, which was submitted in our Site Assessment Workplan on May 4, 2018 and approved on June 11, 2018. In our meeting on May 7, 2019, you requested an excavation 10 feet by 10 feet to a minimum depth of 4 feet around the sample location labeled "Center", as provided in the Investigation Report and to collect confirmation soil samples.

The requested limited excavation and delineation sampling began on June 19, 2019. A backhoe was utilized to excavate 10 feet north, south, east, and west from the sample location labeled "Center." This sample location and the excavation area are shown in **Figure 1**. Samples were collected from the four side walls and the floor of the excavation and were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), chlorides, total petroleum hydrocarbons gasoline range organics (TPH-GRO), TPH diesel range organics (TPH-DRO), and TPH Extended Diesel Range Organics (TPH-Ext DRO). A profile sample was also collected for disposal purposes. **Table 1** provides a summary of the soil laboratory results. The laboratory results are also shown on **Figure 1**. The laboratory reports are provided in **Attachment 1**. None of the samples had detected concentrations for BTEX, and none of the samples had detections for chlorides above the New Mexico Oil Conservation Division (OCD) Standard of 600 milligrams per kilogram (mg/kg). All of the collected samples had concentrations for Total TPH (C6-C36) above the NM OCD Standard of 100 mg/kg.

Based on the analytical results, the excavation was extended approximately 4 feet in all directions and approximately 3 feet in depth for a total of 7 feet deep. Samples were collected from each of the 4 side walls and the floor of the excavation and were analyzed for TPH-GRO, TPH-DRO, and TPH-Ext DRO. The samples collected from the North and East sidewalls were below the detection limits; however, the samples collected from the South sidewall, West sidewall, and Center at 7 feet exceeded the NM OCD Standard for Total TPH. On July 24, 2019, the excavation was extended to the South and West an additional 4 feet. The excavation was also extended an additional 3 feet to approximately 10 feet in depth. Samples were collected from the South sidewall, West sidewall, and floor of the excavation and analyzed for TPH-GRO, TPH-DRO, and TPH-Ext DRO. The samples collected from the West sidewall and floor at 10 feet did not have detected concentrations for Total TPH; however, the South sidewall still had concentrations for Total TPH above the NM OCD Standard. On July 26, 2019, the excavation was extended an additional 4 feet to the South. The sample collected from the South sidewall did not have detected concentrations for Total TPH.

After samples from the four sidewalls and the floor of the excavation were below the NM OCD Standard for Total TPH, the excavation area was backfilled with clean soil, and all excavated soil was taken to C and C Landfarm near Monument, New Mexico. Pictures of the excavation area are shown in **Attachment 2**. The backfilled area will be seeded with the New Mexico State Land Office's preferred seed mix once planting conditions are present. As a result of the completed scope of work, Hess is requesting a No Further Action for this site.

If you should have any further questions or require additional information, please feel free to contact the undersigned at 713-496-7296.

Sincerely,



Brian Epperson  
Remediation Manager

cc: Brad Billings, NMOCD  
Rex Meyer, GeoMonitoring Services

**Table 1**  
**Summary of Excavation Soil Laboratory Results**  
**BTEX, TPH, Chloride**  
**Former Marathon McGrail State Tank Battery, Monument, NM**

Sample Identification	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (ng/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)	TPH-GRO (C6-C10) (mg/kg)	TPH-DRO (C10-C28) (mg/kg)	TPH-Ext DRO (C28-C36) (mg/kg)	Total TPH (C6-C36) (mg/kg)	Total TPH (C6-C36) Confirmed by PBEL (mg/kg)
NM OCD Standards:		100	NONE	NONE	NONE	50	600	NONE	NONE	NONE	100	100
Profile	6/19/2019	<0.025	<0.025	<0.025	<0.075	<0.15	80	<10	300	221	<b>521</b>	<b>742</b>
North	6/19/2019	<0.025	<0.025	<0.025	<0.075	<0.15	80.0	<10	202	200	<b>402</b>	<b>705</b>
North #2	6/19/2019	NA	NA	NA	NA	NA	NA	<10	<10	<10	ND	ND
South	6/19/2019	<0.025	<0.025	<0.025	<0.075	<0.15	160.0	<50	246	<50	<b>246</b>	<b>2510</b>
South #2	6/19/2019	NA	NA	NA	NA	NA	NA	<50	1040	493	<b>1040</b>	<b>3380</b>
South #3	7/24/2019	NA	NA	NA	NA	NA	NA	<50	3930	1460	<b>3930</b>	NA
South #4**	7/26/2019	NA	NA	NA	NA	NA	NA	<10	<10	<10	ND	ND
East	6/19/2019	<0.025	<0.025	<0.025	<0.075	<0.15	48	<10	241	281	<b>522</b>	<b>781</b>
East #2	6/19/2019	NA	NA	NA	NA	NA	NA	<10	<10	<10	ND	ND
West	6/19/2019	<0.025	<0.025	<0.025	<0.075	<0.15	112.0	<50	332	150	<b>482</b>	<b>1430</b>
West #2	6/19/2019	NA	NA	NA	NA	NA	NA	<50	230	145	<b>375</b>	<b>1670</b>
West #3	7/24/2019	NA	NA	NA	NA	NA	NA	<10	<10	<10	ND	ND
Center	6/19/2019	<0.025	<0.025	<0.025	<0.075	<0.15	304.0	<10	2700	1480	<b>4180</b>	<b>4340</b>
Center @7'	6/19/2019	NA	NA	NA	NA	NA	NA	<50	3240	1430	<b>4670</b>	<b>4250</b>
Center @10'	7/24/2019	NA	NA	NA	NA	NA	NA	<10	<10	<10	ND	ND

**NOTE:**

BTEX = Benzene, Toluene, Ethylbenzene, Total Xylenes

TPH = Total Petroleum Hydrocarbons

TPH-GRO = Total Petroleum Hydrocarbons Gasoline Range Organics

TPH-DRO = Total Petroleum Hydrocarbons Diesel Range Organics

TPH-Ext DRO = Total Petroleum Hydrocarbons Extended DRO

ND = Not Detected

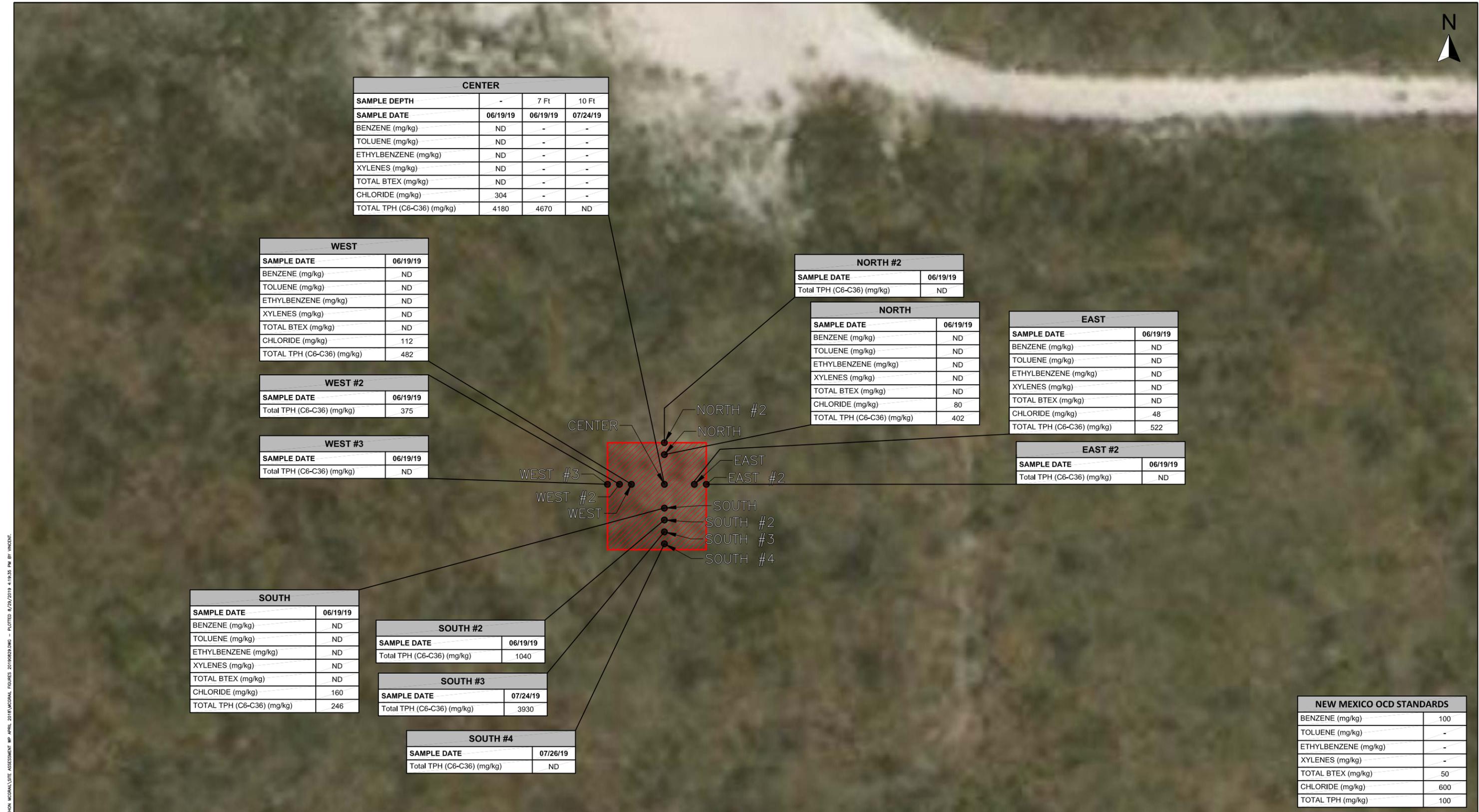
mg/kg - milligrams per kilogram

NONE = no NM OCD Standard for this constituent

**BOLD** values exceed NM OCD standards

\*\*Sample was mislabeled as West #4 but was corrected by laboratory

GeoMonitoring Services



X:\FILES - MONMINT SITES\NOCAD FILES\MARATHON MGRAL SITE ASSESSMENT WP APRIL 2018\NOCAD FIGURES 20190603.DWG - PLOTTED 8/29/2019 4:19:35 PM BY WNCBCT

**LEGEND**

- EXCAVATED AREA
- SOIL SAMPLE LOCATION
- NOT DETECTED

NOTES:  
 1. AERIAL SOURCE -- USGS IMAGEPATCH.COM © MICROSOFT CORPORATION  
 2. FOR EACH SOIL BORING, ONLY DETECTED ANALYTICAL DATA IS SHOWN. CONSTITUENTS THAT WERE NOT DETECTED ARE NOT SHOWN.

**APPROXIMATE SCALE IN FEET**

0 15 30 60

**FIGURE 1**  
 EXCAVATION AND SOIL ANALYSIS  
 FORMER MARATHON MCGRAIL STATE TANK BATTERY  
 LEA COUNTY, NEW MEXICO

DRAWN BY: VMW      DATE: 08/29/19      PROJECT NO: HESS E&P

## **Attachment 1 – Laboratory Reports**



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

June 24, 2019

BRAD FREEMAN  
GEO MONITORING SERVICES  
P. O. BOX 295  
FULSHEAR, TX 77441

RE: MC GRAIL

Enclosed are the results of analyses for samples received by the laboratory on 06/18/19 12:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene  
Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PROFILE	H902091-01	Soil	18-Jun-19 11:05	18-Jun-19 12:10
NORTH	H902091-02	Soil	18-Jun-19 11:15	18-Jun-19 12:10
SOUTH	H902091-03	Soil	18-Jun-19 11:20	18-Jun-19 12:10
EAST	H902091-04	Soil	18-Jun-19 11:25	18-Jun-19 12:10
WEST	H902091-05	Soil	18-Jun-19 11:30	18-Jun-19 12:10
CENTER	H902091-06	Soil	18-Jun-19 11:35	18-Jun-19 12:10

06/20/19- Client added TPH confirmation by a separate laboratory.

06/24/19 - This is the revised report with the TPH confirmation from PBEL. This report will replace the one sent on 06/19/19.

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GEO MONITORING SERVICES  
P. O. BOX 295  
FULSHEAR TX, 77441

Project: MC GRAIL  
Project Number: NONE GIVEN  
Project Manager: BRAD FREEMAN  
Fax To: NONE

Reported:  
24-Jun-19 15:48

**PROFILE**  
**H902091-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	80.0		16.0	mg/kg	4	9061814	AC	19-Jun-19	4500-Cl-B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
DRO >C10-C28*	300		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
EXT DRO >C28-C36	221		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctane			86.8 %	41-142		9061803	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			111 %	37.6-147		9061803	MS	19-Jun-19	8015B	

**Volatile Organic Compounds by EPA Method 8260B**

Benzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Toluene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Ethylbenzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total Xylenes*	<0.075		0.075	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total BTEX	<0.150		0.150	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Surrogate: Dibromofluoromethane			96.1 %	90.4-111		9061806	ms	18-Jun-19	8260B	
Surrogate: Toluene-d8			102 %	85.3-114		9061806	ms	18-Jun-19	8260B	
Surrogate: 4-Bromofluorobenzene			95.4 %	80.1-121		9061806	ms	18-Jun-19	8260B	

**Permian Basin Environmental Lab, L.P.****General Chemistry Parameters by EPA/ Standard Methods**

% Moisture	3.0		0.1	%	1	P9F2401	TB	24-Jun-19	ASTM D2216	
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	<25.8		25.8	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C12-C28	408		25.8	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C28-C35	286		25.8	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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**PROFILE**

**H902091-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

Surrogate: 1-Chlorooctane			107 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: o-Terphenyl			114 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>Total Petroleum Hydrocarbon C6-C35</b>	<b>694</b>		25.8	mg/kg dry	1	[CALC]	bb/sg	23-Jun-19	calc	

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**Analytical Results For:**

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**NORTH  
H902091-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

**Inorganic Compounds**

<b>Chloride</b>	<b>80.0</b>		16.0	mg/kg	4	9061814	AC	19-Jun-19	4500-Cl-B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
<b>DRO &gt;C10-C28*</b>	<b>202</b>		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
<b>EXT DRO &gt;C28-C36</b>	<b>200</b>		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctane			84.8 %	41-142		9061803	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			110 %	37.6-147		9061803	MS	19-Jun-19	8015B	

**Volatile Organic Compounds by EPA Method 8260B**

Benzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Toluene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Ethylbenzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total Xylenes*	<0.075		0.075	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total BTEX	<0.150		0.150	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Surrogate: Dibromofluoromethane			97.3 %	90.4-111		9061806	ms	18-Jun-19	8260B	
Surrogate: Toluene-d8			102 %	85.3-114		9061806	ms	18-Jun-19	8260B	
Surrogate: 4-Bromofluorobenzene			95.5 %	80.1-121		9061806	ms	18-Jun-19	8260B	

**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA/ Standard Methods**

<b>% Moisture</b>	<b>4.0</b>		0.1	%	1	P9F2401	TB	24-Jun-19	ASTM D2216	
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	<26.0		26.0	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>&gt;C12-C28</b>	<b>371</b>		26.0	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>&gt;C28-C35</b>	<b>334</b>		26.0	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: 1-Chlorooctane			87.6 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	

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Analytical Results For:

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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NORTH  
H902091-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

Surrogate: o-Terphenyl			93.5 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>Total Petroleum Hydrocarbon C6-C35</b>	<b>705</b>		26.0	mg/kg dry	1	[CALC]	bb/sg	23-Jun-19	calc	

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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**SOUTH  
H902091-03 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

**Inorganic Compounds**

Chloride	160		16.0	mg/kg	4	9061814	AC	19-Jun-19	4500-Cl-B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<50.0		50.0	mg/kg	5	9061803	MS	18-Jun-19	8015B	
DRO >C10-C28*	246		50.0	mg/kg	5	9061803	MS	18-Jun-19	8015B	
EXT DRO >C28-C36	<50.0		50.0	mg/kg	5	9061803	MS	18-Jun-19	8015B	
Surrogate: 1-Chlorooctane			95.0 %	41-142		9061803	MS	18-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			117 %	37.6-147		9061803	MS	18-Jun-19	8015B	

**Volatile Organic Compounds by EPA Method 8260B**

Benzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Toluene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Ethylbenzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total Xylenes*	<0.075		0.075	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total BTEX	<0.150		0.150	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Surrogate: Dibromofluoromethane			94.8 %	90.4-111		9061806	ms	18-Jun-19	8260B	
Surrogate: Toluene-d8			102 %	85.3-114		9061806	ms	18-Jun-19	8260B	
Surrogate: 4-Bromofluorobenzene			94.6 %	80.1-121		9061806	ms	18-Jun-19	8260B	

**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA/ Standard Methods**

% Moisture	8.0		0.1	%	1	P9F2401	TB	24-Jun-19	ASTM D2216	
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	<27.2		27.2	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C12-C28	1530		27.2	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C28-C35	972		27.2	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: 1-Chlorooctane			97.5 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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**SOUTH  
H902091-03 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

Surrogate: <i>o</i> -Terphenyl			107 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>Total Petroleum Hydrocarbon C6-C35</b>	<b>2510</b>		27.2	mg/kg dry	1	[CALC]	bb/sg	23-Jun-19	calc	

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**Analytical Results For:**

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**EAST  
H902091-04 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

**Inorganic Compounds**

Chloride	48.0		16.0	mg/kg	4	9061814	AC	19-Jun-19	4500-Cl-B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
DRO >C10-C28*	241		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
EXT DRO >C28-C36	281		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctane			103 %	41-142		9061803	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			132 %	37.6-147		9061803	MS	19-Jun-19	8015B	

**Volatile Organic Compounds by EPA Method 8260B**

Benzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Toluene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Ethylbenzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total Xylenes*	<0.075		0.075	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total BTEX	<0.150		0.150	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Surrogate: Dibromofluoromethane			96.5 %	90.4-111		9061806	ms	18-Jun-19	8260B	
Surrogate: Toluene-d8			103 %	85.3-114		9061806	ms	18-Jun-19	8260B	
Surrogate: 4-Bromofluorobenzene			97.0 %	80.1-121		9061806	ms	18-Jun-19	8260B	

**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA/ Standard Methods**

% Moisture	5.0		0.1	%	1	P9F2401	TB	24-Jun-19	ASTM D2216	
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	<26.3		26.3	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C12-C28	423		26.3	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C28-C35	358		26.3	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: 1-Chlorooctane			79.6 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	

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Analytical Results For:

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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EAST  
H902091-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

Surrogate: o-Terphenyl			84.1 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>Total Petroleum Hydrocarbon C6-C35</b>	<b>781</b>		26.3	mg/kg dry	1	[CALC]	bb/sg	23-Jun-19	calc	

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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**WEST  
H902091-05 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

**Inorganic Compounds**

<b>Chloride</b>	<b>112</b>		16.0	mg/kg	4	9061814	AC	19-Jun-19	4500-Cl-B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<50.0		50.0	mg/kg	5	9061803	MS	18-Jun-19	8015B	
<b>DRO &gt;C10-C28*</b>	<b>332</b>		50.0	mg/kg	5	9061803	MS	18-Jun-19	8015B	
<b>EXT DRO &gt;C28-C36</b>	<b>150</b>		50.0	mg/kg	5	9061803	MS	18-Jun-19	8015B	
Surrogate: 1-Chlorooctane			98.1 %	41-142		9061803	MS	18-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			129 %	37.6-147		9061803	MS	18-Jun-19	8015B	

**Volatile Organic Compounds by EPA Method 8260B**

Benzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Toluene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Ethylbenzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total Xylenes*	<0.075		0.075	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total BTEX	<0.150		0.150	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Surrogate: Dibromofluoromethane			95.5 %	90.4-111		9061806	ms	18-Jun-19	8260B	
Surrogate: Toluene-d8			101 %	85.3-114		9061806	ms	18-Jun-19	8260B	
Surrogate: 4-Bromofluorobenzene			95.5 %	80.1-121		9061806	ms	18-Jun-19	8260B	

**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA/ Standard Methods**

<b>% Moisture</b>	<b>6.0</b>		0.1	%	1	P9F2401	TB	24-Jun-19	ASTM D2216	
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	<26.6		26.6	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>&gt;C12-C28</b>	<b>828</b>		26.6	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>&gt;C28-C35</b>	<b>604</b>		26.6	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: 1-Chlorooctane			77.7 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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**WEST  
H902091-05 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

<i>Surrogate: o-Terphenyl</i>			85.2 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>Total Petroleum Hydrocarbon C6-C35</b>	<b>1430</b>		26.6	mg/kg dry	1	[CALC]	bb/sg	23-Jun-19	calc	

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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**CENTER  
H902091-06 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

**Inorganic Compounds**

<b>Chloride</b>	<b>304</b>		16.0	mg/kg	4	9061814	AC	19-Jun-19	4500-Cl-B	
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**Petroleum Hydrocarbons by GC FID**

**S-04**

GRO C6-C10*	<10.0		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
<b>DRO &gt;C10-C28*</b>	<b>2700</b>		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
<b>EXT DRO &gt;C28-C36</b>	<b>1480</b>		10.0	mg/kg	1	9061803	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctane			105 %	41-142		9061803	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			165 %	37.6-147		9061803	MS	19-Jun-19	8015B	

**Volatile Organic Compounds by EPA Method 8260B**

Benzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Toluene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Ethylbenzene*	<0.025		0.025	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total Xylenes*	<0.075		0.075	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Total BTEX	<0.150		0.150	mg/kg	50	9061806	ms	18-Jun-19	8260B	
Surrogate: Dibromofluoromethane			96.3 %	90.4-111		9061806	ms	18-Jun-19	8260B	
Surrogate: Toluene-d8			102 %	85.3-114		9061806	ms	18-Jun-19	8260B	
Surrogate: 4-Bromofluorobenzene			91.8 %	80.1-121		9061806	ms	18-Jun-19	8260B	

**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA/ Standard Methods**

<b>% Moisture</b>	<b>9.0</b>		0.1	%	1	P9F2401	TB	24-Jun-19	ASTM D2216	
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	<27.5		27.5	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>&gt;C12-C28</b>	<b>2910</b>		27.5	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>&gt;C28-C35</b>	<b>1430</b>		27.5	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: 1-Chlorooctane			88.9 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	

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*Celey D. Keene*

Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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**CENTER  
H902091-06 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

Surrogate: <i>o</i> -Terphenyl			97.7 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>Total Petroleum Hydrocarbon C6-C35</b>	<b>4340</b>		27.5	mg/kg dry	1	[CALC]	bb/sg	23-Jun-19	calc	

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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**Inorganic Compounds - Quality Control**

**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 9061814 - 1:4 DI Water</b>										
<b>Blank (9061814-BLK1)</b> Prepared & Analyzed: 18-Jun-19										
Chloride	ND	16.0	mg/kg							
<b>LCS (9061814-BS1)</b> Prepared & Analyzed: 18-Jun-19										
Chloride	416	16.0	mg/kg	400		104	80-120			
<b>LCS Dup (9061814-BSD1)</b> Prepared & Analyzed: 18-Jun-19										
Chloride	416	16.0	mg/kg	400		104	80-120	0.00	20	

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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**Petroleum Hydrocarbons by GC FID - Quality Control**

**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 9061803 - General Prep - Organics**

<b>Blank (9061803-BLK1)</b>		Prepared & Analyzed: 18-Jun-19								
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	47.6		mg/kg	50.0		95.2	41-142			
Surrogate: 1-Chlorooctadecane	46.0		mg/kg	50.0		92.0	37.6-147			

<b>LCS (9061803-BS1)</b>		Prepared & Analyzed: 18-Jun-19								
GRO C6-C10	230	10.0	mg/kg	200		115	76.5-133			
DRO >C10-C28	206	10.0	mg/kg	200		103	72.9-138			
Total TPH C6-C28	436	10.0	mg/kg	400		109	78-132			
Surrogate: 1-Chlorooctane	54.1		mg/kg	50.0		108	41-142			
Surrogate: 1-Chlorooctadecane	51.8		mg/kg	50.0		104	37.6-147			

<b>LCS Dup (9061803-BSD1)</b>		Prepared & Analyzed: 18-Jun-19								
GRO C6-C10	233	10.0	mg/kg	200		117	76.5-133	1.60	20.6	
DRO >C10-C28	208	10.0	mg/kg	200		104	72.9-138	0.805	20.6	
Total TPH C6-C28	441	10.0	mg/kg	400		110	78-132	1.22	18	
Surrogate: 1-Chlorooctane	55.4		mg/kg	50.0		111	41-142			
Surrogate: 1-Chlorooctadecane	50.6		mg/kg	50.0		101	37.6-147			

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**Analytical Results For:**

GEO MONITORING SERVICES  
P. O. BOX 295  
FULSHEAR TX, 77441

Project: MC GRAIL  
Project Number: NONE GIVEN  
Project Manager: BRAD FREEMAN  
Fax To: NONE

Reported:  
24-Jun-19 15:48

**Volatile Organic Compounds by EPA Method 8260B - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	RPD RPD	Limit	Limit	Notes
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**Batch 9061806 - Volatiles****Blank (9061806-BLK1)**

Prepared &amp; Analyzed: 18-Jun-19

Benzene	ND	0.025	mg/kg							
Toluene	ND	0.025	mg/kg							
Ethylbenzene	ND	0.025	mg/kg							
Total Xylenes	ND	0.075	mg/kg							
Total BTEX	ND	0.150	mg/kg							
Surrogate: Dibromofluoromethane	1.22		mg/kg	1.25		97.3		90.4-111		
Surrogate: Toluene-d8	1.28		mg/kg	1.25		103		85.3-114		
Surrogate: 4-Bromofluorobenzene	1.22		mg/kg	1.25		97.9		80.1-121		

**LCS (9061806-BS1)**

Prepared &amp; Analyzed: 18-Jun-19

Benzene	1.86	0.025	mg/kg	2.00		93.1		75.1-126		
Toluene	1.98	0.025	mg/kg	2.00		98.8		71.7-121		
Ethylbenzene	1.98	0.025	mg/kg	2.00		98.9		80.2-118		
m+p - Xylene	4.29	0.050	mg/kg	4.00		107		83-124		
Total Xylenes	6.39	0.075	mg/kg	6.00		106		84.1-122		
o-Xylene	2.10	0.025	mg/kg	2.00		105		84.7-121		
Surrogate: Dibromofluoromethane	1.20		mg/kg	1.25		96.4		90.4-111		
Surrogate: Toluene-d8	1.25		mg/kg	1.25		100		85.3-114		
Surrogate: 4-Bromofluorobenzene	1.29		mg/kg	1.25		104		80.1-121		

**LCS Dup (9061806-BSD1)**

Prepared &amp; Analyzed: 18-Jun-19

Benzene	1.83	0.025	mg/kg	2.00		91.6	1.56	75.1-126	15.7	
Toluene	1.95	0.025	mg/kg	2.00		97.6	1.25	71.7-121	14.4	
Ethylbenzene	1.94	0.025	mg/kg	2.00		97.2	1.63	80.2-118	14.1	
m+p - Xylene	4.26	0.050	mg/kg	4.00		106	0.806	83-124	14.6	
o-Xylene	2.08	0.025	mg/kg	2.00		104	0.880	84.7-121	14	
Total Xylenes	6.34	0.075	mg/kg	6.00		106	0.830	84.1-122	14.1	
Surrogate: Dibromofluoromethane	1.19		mg/kg	1.25		95.1		90.4-111		
Surrogate: Toluene-d8	1.27		mg/kg	1.25		102		85.3-114		
Surrogate: 4-Bromofluorobenzene	1.30		mg/kg	1.25		104		80.1-121		

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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**General Chemistry Parameters by EPA / Standard Methods - Quality Control**

**Permian Basin Environmental Lab, L.P.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch P9F2401 - \*\*\* DEFAULT PREP \*\*\***

<b>Blank (P9F2401-BLK1)</b>				Prepared & Analyzed: 24-Jun-19						
% Moisture	ND	0.1	%							
<b>Duplicate (P9F2401-DUP1)</b>				Source: 9F21005-14 Prepared & Analyzed: 24-Jun-19						
% Moisture	15.0	0.1	%		15.0			0.00	20	
<b>Duplicate (P9F2401-DUP2)</b>				Source: 9F21005-41 Prepared & Analyzed: 24-Jun-19						
% Moisture	13.0	0.1	%		13.0			0.00	20	
<b>Duplicate (P9F2401-DUP3)</b>				Source: 9F21009-06 Prepared & Analyzed: 24-Jun-19						
% Moisture	4.0	0.1	%		5.0			22.2	20	

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 15:48
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control  
Permian Basin Environmental Lab, L.P.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
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**Batch P9F2106 - TX 1005**

<b>Blank (P9F2106-BLK1)</b>		Prepared: 21-Jun-19 Analyzed: 23-Jun-19								
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	mg/kg wet							
>C28-C35	ND	25.0	mg/kg wet							
Surrogate: 1-Chlorooctane	86.0		mg/kg wet	100		86.0	70-130			
Surrogate: o-Terphenyl	46.7		mg/kg wet	50.0		93.4	70-130			

<b>LCS (P9F2106-BS1)</b>		Prepared: 21-Jun-19 Analyzed: 23-Jun-19								
C6-C12	811	25.0	mg/kg wet	1000		81.1	75-125			
>C12-C28	873	25.0	mg/kg wet	1000		87.3	75-125			
Surrogate: 1-Chlorooctane	107		mg/kg wet	100		107	70-130			
Surrogate: o-Terphenyl	42.7		mg/kg wet	50.0		85.4	70-130			

<b>LCS Dup (P9F2106-BSD1)</b>		Prepared: 21-Jun-19 Analyzed: 23-Jun-19								
C6-C12	808	25.0	mg/kg wet	1000		80.8	75-125	0.321	20	
>C12-C28	803	25.0	mg/kg wet	1000		80.3	75-125	8.39	20	
Surrogate: 1-Chlorooctane	99.6		mg/kg wet	100		99.6	70-130			
Surrogate: o-Terphenyl	39.1		mg/kg wet	50.0		78.2	70-130			

<b>Duplicate (P9F2106-DUP1)</b>		Source: 9F21004-07		Prepared: 21-Jun-19 Analyzed: 23-Jun-19						
C6-C12	ND	128	mg/kg dry		51.9					20
>C12-C28	2140	128	mg/kg dry		2100			1.52		20
Surrogate: 1-Chlorooctane	79.7		mg/kg dry	102		78.1	70-130			
Surrogate: o-Terphenyl	43.3		mg/kg dry	51.0		84.8	70-130			

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Notes and Definitions

- S-04            The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- ND             Analyte NOT DETECTED at or above the reporting limit
- RPD            Relative Percent Difference
- \*\*              Samples not received at proper temperature of 6°C or below.
- \*\*\*             Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
- Samples reported on an as received basis (wet) unless otherwise noted on report

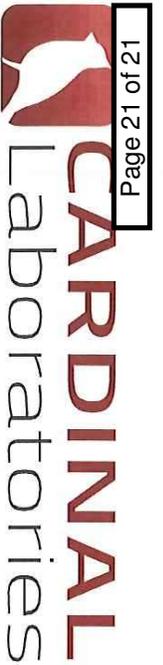
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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240  
 (575) 393-2326 FAX (575) 393-2476

12 of 12 pages

BILL TO

ANALYSIS REQUEST

Company Name: **GMS**  
 Project Manager: **Brad Freeman**  
 Address: **brad@agemon.net**  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Phone #: **713-417-6141** Fax #: \_\_\_\_\_  
 Project #: \_\_\_\_\_ Project Owner: \_\_\_\_\_  
 Project Name: **McGrail**  
 Project Location: \_\_\_\_\_  
 Sampler Name: \_\_\_\_\_  
 P.O. #: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Attn: \_\_\_\_\_  
 Address: **AR@agemon.net**  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Phone #: \_\_\_\_\_  
 Fax #: \_\_\_\_\_

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX							DATE	TIME	ANALYSIS	
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:				ICE / COOL
H962091	Profile			X								6/16/19	1105	BTEX
	1			X								6/18/19	1125	Chloride
	2			X								6/18/19	1120	TPH (ORO, GRO, MRO)
	3			X								6/18/19	1125	Added TPH Confirmation
	4			X								6/18/19	1130	
	5			X								6/18/19	1135	
	6			X								6/18/19	1135	

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Relinquished By: **Brad Freeman** Date: **6/18/19** Time: **12:10**  
 Received By: **Yvonne Stutz**  
 Relinquished By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received By: \_\_\_\_\_

Delivered By: (Circle One) **UPS**  
 Sampler - UPS - Bus - Other: **-0.8°C #97**  
 Sample Condition: Cool  Intact   
 Checked By: **TS**

Phone Result:  Yes  No  Add'l Phone #:  
 Fax Result:  Yes  No  Add'l Fax #:  
 REMARKS: **24hr TAT**



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

June 24, 2019

BRAD FREEMAN  
GEO MONITORING SERVICES  
P. O. BOX 295  
FULSHEAR, TX 77441

RE: MC GRAIL

Enclosed are the results of analyses for samples received by the laboratory on 06/19/19 16:45.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2      Total Haloacetic Acids (HAA-5)  
Method EPA 524.2      Total Trihalomethanes (TTHM)  
Method EPA 524.4      Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B      Total Coliform and E. coli (Colilert MMO-MUG)  
Method EPA 524.2      Regulated VOCs and Total Trihalomethanes (TTHM)  
Method EPA 552.2      Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene  
Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:05
--	--	------------------------------

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NORTH #2	H902120-01	Soil	19-Jun-19 16:05	19-Jun-19 16:45
EAST #2	H902120-02	Soil	19-Jun-19 16:10	19-Jun-19 16:45

06/20/19- Client added TPH confirmation by a separate laboratory.

06/24/19 - This is the revised report with the TPH confirmation from PBEL. This report will replace the one sent on 06/20/19.

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:05
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**NORTH #2  
H902120-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	9061915	MS	20-Jun-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9061915	MS	20-Jun-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9061915	MS	20-Jun-19	8015B	
Surrogate: 1-Chlorooctane			85.9 %	41-142		9061915	MS	20-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			85.4 %	37.6-147		9061915	MS	20-Jun-19	8015B	

**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

% Moisture	11.0		0.1	%	1	P9F2401	TB	24-Jun-19	ASTM D2216	
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	<28.1		28.1	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C12-C28	<28.1		28.1	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C28-C35	<28.1		28.1	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: 1-Chlorooctane			85.2 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: o-Terphenyl			92.6 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	<28.1		28.1	mg/kg dry	1	[CALC]	bb/sg	23-Jun-19	calc	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:05
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**EAST #2  
H902120-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	9061915	MS	20-Jun-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9061915	MS	20-Jun-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9061915	MS	20-Jun-19	8015B	
Surrogate: 1-Chlorooctane			88.3 %	41-142		9061915	MS	20-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			88.3 %	37.6-147		9061915	MS	20-Jun-19	8015B	

**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

% Moisture	10.0		0.1	%	1	P9F2401	TB	24-Jun-19	ASTM D2216	
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	<27.8		27.8	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C12-C28	<27.8		27.8	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C28-C35	<27.8		27.8	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: 1-Chlorooctane			86.7 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: o-Terphenyl			95.7 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	<27.8		27.8	mg/kg dry	1	[CALC]	bb/sg	23-Jun-19	calc	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:05
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**Petroleum Hydrocarbons by GC FID - Quality Control**

**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 9061915 - General Prep - Organics**

**Blank (9061915-BLK1)**

Prepared & Analyzed: 19-Jun-19

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	42.3		mg/kg	50.0		84.5	41-142			
Surrogate: 1-Chlorooctadecane	43.0		mg/kg	50.0		86.1	37.6-147			

**LCS (9061915-BS1)**

Prepared & Analyzed: 19-Jun-19

GRO C6-C10	194	10.0	mg/kg	200		97.0	76.5-133			
DRO >C10-C28	183	10.0	mg/kg	200		91.4	72.9-138			
Total TPH C6-C28	377	10.0	mg/kg	400		94.2	78-132			
Surrogate: 1-Chlorooctane	45.2		mg/kg	50.0		90.4	41-142			
Surrogate: 1-Chlorooctadecane	45.1		mg/kg	50.0		90.1	37.6-147			

**LCS Dup (9061915-BS1)**

Prepared & Analyzed: 19-Jun-19

GRO C6-C10	204	10.0	mg/kg	200		102	76.5-133	5.17	20.6	
DRO >C10-C28	189	10.0	mg/kg	200		94.6	72.9-138	3.53	20.6	
Total TPH C6-C28	394	10.0	mg/kg	400		98.4	78-132	4.38	18	
Surrogate: 1-Chlorooctane	48.0		mg/kg	50.0		95.9	41-142			
Surrogate: 1-Chlorooctadecane	46.2		mg/kg	50.0		92.3	37.6-147			

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:05
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**General Chemistry Parameters by EPA / Standard Methods - Quality Control**

**Permian Basin Environmental Lab, L.P.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch P9F2401 - \*\*\* DEFAULT PREP \*\*\***

<b>Blank (P9F2401-BLK1)</b>				Prepared & Analyzed: 24-Jun-19						
% Moisture	ND	0.1	%							
<b>Duplicate (P9F2401-DUP1)</b>				Source: 9F21005-14 Prepared & Analyzed: 24-Jun-19						
% Moisture	15.0	0.1	%		15.0			0.00	20	
<b>Duplicate (P9F2401-DUP2)</b>				Source: 9F21005-41 Prepared & Analyzed: 24-Jun-19						
% Moisture	13.0	0.1	%		13.0			0.00	20	
<b>Duplicate (P9F2401-DUP3)</b>				Source: 9F21009-06 Prepared & Analyzed: 24-Jun-19						
% Moisture	4.0	0.1	%		5.0			22.2	20	

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:05
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control  
Permian Basin Environmental Lab, L.P.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
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**Batch P9F2106 - TX 1005**

<b>Blank (P9F2106-BLK1)</b>		Prepared: 21-Jun-19 Analyzed: 23-Jun-19								
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	mg/kg wet							
>C28-C35	ND	25.0	mg/kg wet							
Surrogate: 1-Chlorooctane	86.0		mg/kg wet	100		86.0	70-130			
Surrogate: o-Terphenyl	46.7		mg/kg wet	50.0		93.4	70-130			

<b>LCS (P9F2106-BS1)</b>		Prepared: 21-Jun-19 Analyzed: 23-Jun-19								
C6-C12	811	25.0	mg/kg wet	1000		81.1	75-125			
>C12-C28	873	25.0	mg/kg wet	1000		87.3	75-125			
Surrogate: 1-Chlorooctane	107		mg/kg wet	100		107	70-130			
Surrogate: o-Terphenyl	42.7		mg/kg wet	50.0		85.4	70-130			

<b>LCS Dup (P9F2106-BSD1)</b>		Prepared: 21-Jun-19 Analyzed: 23-Jun-19								
C6-C12	808	25.0	mg/kg wet	1000		80.8	75-125	0.321	20	
>C12-C28	803	25.0	mg/kg wet	1000		80.3	75-125	8.39	20	
Surrogate: 1-Chlorooctane	99.6		mg/kg wet	100		99.6	70-130			
Surrogate: o-Terphenyl	39.1		mg/kg wet	50.0		78.2	70-130			

<b>Duplicate (P9F2106-DUP1)</b>		<b>Source: 9F21004-07</b>		Prepared: 21-Jun-19 Analyzed: 23-Jun-19						
C6-C12	ND	128	mg/kg dry		51.9					20
>C12-C28	2140	128	mg/kg dry		2100			1.52		20
Surrogate: 1-Chlorooctane	79.7		mg/kg dry	102		78.1	70-130			
Surrogate: o-Terphenyl	43.3		mg/kg dry	51.0		84.8	70-130			

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Notes and Definitions

- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

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*Celey D. Keene*

Celey D. Keene, Lab Director/Quality Manager





PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

June 24, 2019

BRAD FREEMAN

GEO MONITORING SERVICES

P. O. BOX 295

FULSHEAR, TX 77441

RE: MC GRAIL

Enclosed are the results of analyses for samples received by the laboratory on 06/19/19 14:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

- Method EPA 552.2 Total Haloacetic Acids (HAA-5)
- Method EPA 524.2 Total Trihalomethanes (TTHM)
- Method EPA 524.4 Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

- Method SM 9223-B Total Coliform and E. coli (Colilert MMO-MUG)
- Method EPA 524.2 Regulated VOCs and Total Trihalomethanes (TTHM)
- Method EPA 552.2 Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: HESS- MONUMENT Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:02
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Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CENTER @ 7'	H902114-01	Soil	19-Jun-19 13:30	19-Jun-19 14:25
SOUTH #2	H902114-02	Soil	19-Jun-19 13:40	19-Jun-19 14:25
WEST #2	H902114-03	Soil	19-Jun-19 13:45	19-Jun-19 14:25

06/20/19- Client added TPH confirmation by a separate laboratory.

06/24/19 - This is the revised report with the TPH confirmation from PBEL. This report will replace the one sent on 06/20/19.

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: HESS- MONUMENT Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:02
--	--	------------------------------

**CENTER @ 7'  
H902114-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

<b>Petroleum Hydrocarbons by GC FID</b>										<b>S-06</b>
GRO C6-C10*	<50.0		50.0	mg/kg	5	9061909	MS	19-Jun-19	8015B	
<b>DRO &gt;C10-C28*</b>	<b>3240</b>		50.0	mg/kg	5	9061909	MS	19-Jun-19	8015B	
<b>EXT DRO &gt;C28-C36</b>	<b>1430</b>		50.0	mg/kg	5	9061909	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctane			104 %	41-142		9061909	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			289 %	37.6-147		9061909	MS	19-Jun-19	8015B	

**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

% Moisture	13.0		0.1	%	1	P9F2401	TB	24-Jun-19	ASTM D2216	
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	<28.7		28.7	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C12-C28	2960		28.7	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C28-C35	1290		28.7	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: 1-Chlorooctane			92.6 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: o-Terphenyl			99.2 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>Total Petroleum Hydrocarbon C6-C35</b>	<b>4250</b>		28.7	mg/kg dry	1	[CALC]	bb/sg	23-Jun-19	calc	

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: HESS- MONUMENT Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:02
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**SOUTH #2  
H902114-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

<b>Petroleum Hydrocarbons by GC FID</b>										<b>S-06</b>
GRO C6-C10*	<50.0		50.0	mg/kg	5	9061909	MS	19-Jun-19	8015B	
<b>DRO &gt;C10-C28*</b>	<b>1040</b>		50.0	mg/kg	5	9061909	MS	19-Jun-19	8015B	
<b>EXT DRO &gt;C28-C36</b>	<b>493</b>		50.0	mg/kg	5	9061909	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctane			103 %	41-142		9061909	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			193 %	37.6-147		9061909	MS	19-Jun-19	8015B	

**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

% Moisture	15.0		0.1	%	1	P9F2401	TB	24-Jun-19	ASTM D2216	
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	<29.4		29.4	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C12-C28	2220		29.4	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
>C28-C35	1160		29.4	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: 1-Chlorooctane			91.9 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: o-Terphenyl			99.6 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>Total Petroleum Hydrocarbon C6-C35</b>	<b>3380</b>		29.4	mg/kg dry	1	[CALC]	bb/sg	23-Jun-19	calc	

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: HESS- MONUMENT Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:02
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**WEST #2  
H902114-03 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<50.0		50.0	mg/kg	5	9061909	MS	19-Jun-19	8015B	
<b>DRO &gt;C10-C28*</b>	<b>230</b>		50.0	mg/kg	5	9061909	MS	19-Jun-19	8015B	
<b>EXT DRO &gt;C28-C36</b>	<b>145</b>		50.0	mg/kg	5	9061909	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctane			98.8 %	41-142		9061909	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			127 %	37.6-147		9061909	MS	19-Jun-19	8015B	

**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

% Moisture	6.0		0.1	%	1	P9F2401	TB	24-Jun-19	ASTM D2216	
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	<26.6		26.6	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>&gt;C12-C28</b>	<b>960</b>		26.6	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>&gt;C28-C35</b>	<b>708</b>		26.6	mg/kg dry	1	P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: 1-Chlorooctane			89.1 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
Surrogate: o-Terphenyl			97.8 %	70-130		P9F2106	bb/sg	23-Jun-19	TPH 8015M	
<b>Total Petroleum Hydrocarbon C6-C35</b>	<b>1670</b>		26.6	mg/kg dry	1	[CALC]	bb/sg	23-Jun-19	calc	

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: HESS- MONUMENT Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:02
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**Petroleum Hydrocarbons by GC FID - Quality Control**

**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 9061909 - General Prep - Organics**

<b>Blank (9061909-BLK1)</b>		Prepared & Analyzed: 19-Jun-19								
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	47.0		mg/kg	50.0		94.1	41-142			
Surrogate: 1-Chlorooctadecane	48.6		mg/kg	50.0		97.2	37.6-147			

<b>LCS (9061909-BS1)</b>		Prepared & Analyzed: 19-Jun-19								
GRO C6-C10	209	10.0	mg/kg	200		105	76.5-133			
DRO >C10-C28	174	10.0	mg/kg	200		86.9	72.9-138			
Total TPH C6-C28	383	10.0	mg/kg	400		95.8	78-132			
Surrogate: 1-Chlorooctane	51.4		mg/kg	50.0		103	41-142			
Surrogate: 1-Chlorooctadecane	50.9		mg/kg	50.0		102	37.6-147			

<b>LCS Dup (9061909-BS1)</b>		Prepared & Analyzed: 19-Jun-19								
GRO C6-C10	195	10.0	mg/kg	200		97.5	76.5-133	7.12	20.6	
DRO >C10-C28	158	10.0	mg/kg	200		78.8	72.9-138	9.86	20.6	
Total TPH C6-C28	353	10.0	mg/kg	400		88.2	78-132	8.35	18	
Surrogate: 1-Chlorooctane	46.2		mg/kg	50.0		92.5	41-142			
Surrogate: 1-Chlorooctadecane	45.8		mg/kg	50.0		91.6	37.6-147			

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: HESS- MONUMENT Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:02
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**General Chemistry Parameters by EPA / Standard Methods - Quality Control**

**Permian Basin Environmental Lab, L.P.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch P9F2401 - \*\*\* DEFAULT PREP \*\*\***

<b>Blank (P9F2401-BLK1)</b>				Prepared & Analyzed: 24-Jun-19						
% Moisture	ND	0.1	%							
<b>Duplicate (P9F2401-DUP1)</b>				Source: 9F21005-14 Prepared & Analyzed: 24-Jun-19						
% Moisture	15.0	0.1	%		15.0			0.00	20	
<b>Duplicate (P9F2401-DUP2)</b>				Source: 9F21005-41 Prepared & Analyzed: 24-Jun-19						
% Moisture	13.0	0.1	%		13.0			0.00	20	
<b>Duplicate (P9F2401-DUP3)</b>				Source: 9F21009-06 Prepared & Analyzed: 24-Jun-19						
% Moisture	4.0	0.1	%		5.0			22.2	20	

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: HESS- MONUMENT Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 24-Jun-19 16:02
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**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control  
Permian Basin Environmental Lab, L.P.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
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**Batch P9F2106 - TX 1005**

<b>Blank (P9F2106-BLK1)</b>		Prepared: 21-Jun-19 Analyzed: 23-Jun-19								
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	mg/kg wet							
>C28-C35	ND	25.0	mg/kg wet							
Surrogate: 1-Chlorooctane	86.0		mg/kg wet	100		86.0	70-130			
Surrogate: o-Terphenyl	46.7		mg/kg wet	50.0		93.4	70-130			

<b>LCS (P9F2106-BS1)</b>		Prepared: 21-Jun-19 Analyzed: 23-Jun-19								
C6-C12	811	25.0	mg/kg wet	1000		81.1	75-125			
>C12-C28	873	25.0	mg/kg wet	1000		87.3	75-125			
Surrogate: 1-Chlorooctane	107		mg/kg wet	100		107	70-130			
Surrogate: o-Terphenyl	42.7		mg/kg wet	50.0		85.4	70-130			

<b>LCS Dup (P9F2106-BSD1)</b>		Prepared: 21-Jun-19 Analyzed: 23-Jun-19								
C6-C12	808	25.0	mg/kg wet	1000		80.8	75-125	0.321	20	
>C12-C28	803	25.0	mg/kg wet	1000		80.3	75-125	8.39	20	
Surrogate: 1-Chlorooctane	99.6		mg/kg wet	100		99.6	70-130			
Surrogate: o-Terphenyl	39.1		mg/kg wet	50.0		78.2	70-130			

<b>Duplicate (P9F2106-DUP1)</b>		Source: 9F21004-07		Prepared: 21-Jun-19 Analyzed: 23-Jun-19						
C6-C12	ND	128	mg/kg dry		51.9					20
>C12-C28	2140	128	mg/kg dry		2100			1.52		20
Surrogate: 1-Chlorooctane	79.7		mg/kg dry	102		78.1	70-130			
Surrogate: o-Terphenyl	43.3		mg/kg dry	51.0		84.8	70-130			

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Celey D. Keene, Lab Director/Quality Manager



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Notes and Definitions

- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

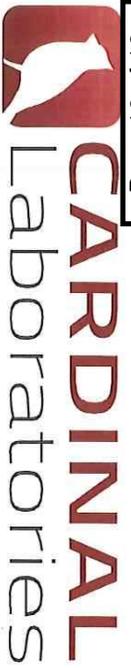
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*Celey D. Keene*

Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240  
 (575) 393-2326 FAX (575) 393-2476

**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

**BILL TO**

**ANALYSIS REQUEST**

Company Name: Geo Monitoring  
 Project Manager: Brad Freeman  
 Address: P.O. Box 295  
 City: Freshwater Tx State: Tx Zip: 77441  
 Phone #: 281-281-2812 Fax #: 281-281-2812  
 Project #: McGill Project Owner: HESS  
 Project Name: \_\_\_\_\_  
 Project Location: McGill  
 Sampler Name: McGill  
 P.O. #: \_\_\_\_\_ Company: Geo Monitoring  
 Attn: \_\_\_\_\_ Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Phone #: \_\_\_\_\_ Fax #: \_\_\_\_\_

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	REMARKS
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :			
H902114	CENTERA @ 7'	X							6/19	13:36	DRO, MRO, EXT RO	
	2 SOUTH #2	X							6/19	13:40	Added TPH confirmation	
	3 WEST #2	X							6/19	13:45		

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Relinquished By: Brad Freeman Date: 6/19/19  
 Received By: Amara Altabe Date: 7/25  
 Reinstated By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Delivered By: (Circle One) UPS 3.61 #97  
 Sample Condition: Cool  Intact   
 Eyes  Yes  No  No   
 CHECKED BY: ya.  
 Phone Result:  Yes  No Add'l Phone #: \_\_\_\_\_  
 Fax Result:  Yes  No Add'l Fax #: \_\_\_\_\_  
 REMARKS: \* RUSH - ASAP



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

July 24, 2019

BRAD FREEMAN  
GEO MONITORING SERVICES  
P. O. BOX 295  
FULSHEAR, TX 77441

RE: MC GRAIL

Enclosed are the results of analyses for samples received by the laboratory on 07/24/19 12:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene  
Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GEO MONITORING SERVICES  
 BRAD FREEMAN  
 P. O. BOX 295  
 FULSHEAR TX, 77441  
 Fax To: NONE

Received:	07/24/2019	Sampling Date:	07/24/2019
Reported:	07/24/2019	Sampling Type:	Soil
Project Name:	MC GRAIL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

**Sample ID: CENTER @ 10' (H902541-01)**

TPH 8015M	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2019	ND	187	93.3	200	2.77	
DRO >C10-C28*	<10.0	10.0	07/24/2019	ND	188	94.1	200	1.57	
EXT DRO >C28-C36	<10.0	10.0	07/24/2019	ND					
<hr/>									
Surrogate: 1-Chlorooctane	84.1 %	41-142							
Surrogate: 1-Chlorooctadecane	88.2 %	37.6-147							

**Sample ID: SOUTH NO3 (H902541-02)**

TPH 8015M	mg/kg	Analyzed By: MS								S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<50.0	50.0	07/24/2019	ND	187	93.3	200	2.77		
<b>DRO &gt;C10-C28*</b>	<b>3930</b>	50.0	07/24/2019	ND	188	94.1	200	1.57		
<b>EXT DRO &gt;C28-C36</b>	<b>1460</b>	50.0	07/24/2019	ND						
<hr/>										
Surrogate: 1-Chlorooctane	81.9 %	41-142								
Surrogate: 1-Chlorooctadecane	174 %	37.6-147								

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**Analytical Results For:**

GEO MONITORING SERVICES  
 BRAD FREEMAN  
 P. O. BOX 295  
 FULSHEAR TX, 77441  
 Fax To: NONE

Received:	07/24/2019	Sampling Date:	07/24/2019
Reported:	07/24/2019	Sampling Type:	Soil
Project Name:	MC GRAIL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

**Sample ID: WEST NO3 (H902541-03)**

TPH 8015M	mg/kg		Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	07/24/2019	ND	187	93.3	200	2.77		
DRO >C10-C28*	<10.0	10.0	07/24/2019	ND	188	94.1	200	1.57		
EXT DRO >C28-C36	<10.0	10.0	07/24/2019	ND						
<hr/>										
Surrogate: 1-Chlorooctane	77.5 %	41-142								
Surrogate: 1-Chlorooctadecane	81.1 %	37.6-147								

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Notes and Definitions

- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

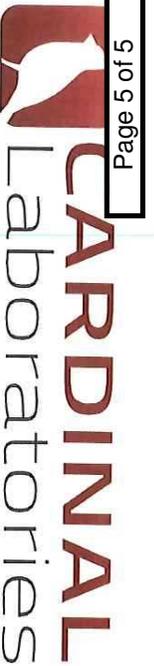
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*Celey D. Keene*

Celey D. Keene, Lab Director/Quality Manager



5 of 5 pages

101 East Marland, Hobbs, NM 88240  
 (575) 393-2326 FAX (575) 393-2476

**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

**BILL TO**

**ANALYSIS REQUEST**

Company Name: Geemastering Services P.O. #:  
 Project Manager: Brad Freeman Company:  
 Address: Brad Freeman Attn:  
 City: State: Zip: Address: Ar Ogden  
 Phone #: 713-417-6141 Fax #: City: State: Zip:  
 Project #: Project Owner: Phone #: Zip:  
 Project Location: McCrail Phone #: Zip:  
 Sampler Name: Fax #:

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						PRESERV.	SAMPLING	DATE	TIME	REMARKS
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :					
<u>4962541</u>														
	<u>Center Q10</u>										<u>7/24/19</u>	<u>1030</u>	<u>X</u>	<u>TPH GRO, DRO, EXT DRO</u>
	<u>South No 3</u>										<u>7/24/19</u>	<u>1025</u>	<u>X</u>	
	<u>West No 3</u>										<u>7/24/19</u>	<u>1030</u>	<u>X</u>	

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Relinquished By: Brad Free Date: 7/24/19 Received By: Jawara Alldridge  
 Relinquished By: Date: 12:55 Received By: Jawara Alldridge  
 Time: Time:  
 Delivered By: (Circle One) 1.1g # 97 Sample Condition:  Cool  Intact  
 Sampler - UPS - Bus - Other: Container 1.5g  Yes  No  Yes  No  
 CHECKED BY: JA  
 Phone Result:  Yes  No Add'l Phone #:  
 Fax Result:  Yes  No Add'l Fax #:  
 REMARKS: Rush



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

August 27, 2019

BRAD FREEMAN  
GEO MONITORING SERVICES  
P. O. BOX 295  
FULSHEAR, TX 77441

RE: MC GRAIL

Enclosed are the results of analyses for samples received by the laboratory on 07/29/19 11:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene  
Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 27-Aug-19 09:31
--	--	------------------------------

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SOUTH NO. 4	H902581-01	Soil	26-Jul-19 14:30	29-Jul-19 11:25

08/26/19 - Client revised the sample ID via email.  
08/27/19 - This is the revised report and will replace the one sent on 07/30/19.

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\*=Accredited Analyte

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 27-Aug-19 09:31
--	--	------------------------------

**SOUTH NO. 4  
H902581-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	9072910	MS	30-Jul-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9072910	MS	30-Jul-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9072910	MS	30-Jul-19	8015B	
Surrogate: 1-Chlorooctane			82.7 %	41-142		9072910	MS	30-Jul-19	8015B	
Surrogate: 1-Chlorooctadecane			96.0 %	37.6-147		9072910	MS	30-Jul-19	8015B	

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**Analytical Results For:**

GEO MONITORING SERVICES P. O. BOX 295 FULSHEAR TX, 77441	Project: MC GRAIL Project Number: NONE GIVEN Project Manager: BRAD FREEMAN Fax To: NONE	Reported: 27-Aug-19 09:31
--	--	------------------------------

**Petroleum Hydrocarbons by GC FID - Quality Control**

**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 9072910 - General Prep - Organics**

**Blank (9072910-BLK1)**

Prepared: 29-Jul-19 Analyzed: 30-Jul-19

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	48.8		mg/kg	50.0		97.7	41-142			
Surrogate: 1-Chlorooctadecane	52.5		mg/kg	50.0		105	37.6-147			

**LCS (9072910-BS1)**

Prepared: 29-Jul-19 Analyzed: 30-Jul-19

GRO C6-C10	206	10.0	mg/kg	200		103	76.5-133			
DRO >C10-C28	228	10.0	mg/kg	200		114	72.9-138			
Total TPH C6-C28	434	10.0	mg/kg	400		109	78-132			
Surrogate: 1-Chlorooctane	51.4		mg/kg	50.0		103	41-142			
Surrogate: 1-Chlorooctadecane	51.7		mg/kg	50.0		103	37.6-147			

**LCS Dup (9072910-BSD1)**

Prepared: 29-Jul-19 Analyzed: 30-Jul-19

GRO C6-C10	200	10.0	mg/kg	200		100	76.5-133	2.76	20.6	
DRO >C10-C28	201	10.0	mg/kg	200		101	72.9-138	12.5	20.6	
Total TPH C6-C28	402	10.0	mg/kg	400		100	78-132	7.76	18	
Surrogate: 1-Chlorooctane	53.8		mg/kg	50.0		108	41-142			
Surrogate: 1-Chlorooctadecane	55.0		mg/kg	50.0		110	37.6-147			

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Notes and Definitions

- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



### Attachment 2 – Photo Log

Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



**District I**  
 1625 N. French Dr., Hobbs, NM 88240  
 Phone:(575) 393-6161 Fax:(575) 393-0720

**District II**  
 811 S. First St., Artesia, NM 88210  
 Phone:(575) 748-1283 Fax:(575) 748-9720

**District III**  
 1000 Rio Brazos Rd., Aztec, NM 87410  
 Phone:(505) 334-6178 Fax:(505) 334-6170

**District IV**  
 1220 S. St Francis Dr., Santa Fe, NM 87505  
 Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS  
  
 Action 2459

**CONDITIONS**

Operator: HESS CORPORATION P.O. Box 840 Seminole, TX 79360	OGRID: 495
	Action Number: 2459
	Action Type: [C-141] Release Corrective Action (C-141)

**CONDITIONS**

Created By	Condition	Condition Date
bbillings	None	6/16/2021