State of New Mexico
Oil Conservation Division

Incident ID	nCH1903533348
District RP	1RP-5320
Facility ID	
Application ID	

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: Melodie Sanjari Title: HES Professional

Signature: Melodie Sanjari Date: 6/15/2023

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

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: Brittany Hall Date: 9/12/2023

Printed Name: Brittany Hall Title: Environmental Specialist

Resubmission requested by the Division with updated aerials and the georeferenced locations sample locations that show that the sample locations are on the engineered pad. See Map on Next Page.

EXCAVATION MAP MARATHON OIL COMPANY BLACK HORSE 7 FED COM 1H LEA COUNTY, NEW MEXICO 32.578289°, -103.7016332°	CARMONA RESOURCES	FIGURE 3

Souder, Miller & Associates♦201 S. Halagueno St.♦Carlsbad, NM 88220
(575) 689-8801

March 19, 2019

#5E27499-BG31

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

SUBJECT: Remediation Closure Report for the Black Horse Federal Com 20 33 07 SB #1H Release (1RP-5320), Lea County, New Mexico

To Whom it May Concern:

On behalf of Marathon Oil Permian LLC (Marathon), Souder, Miller & Associates (SMA) has prepared this Remediation Closure Report that describes the remediation of a release of liquids related to oil and gas production activities at the Black Horse Federal Com 20 33 07 SB #1H site. The site is in Unit M, Section 07, Township 20S, Range 33E, Lea County, New Mexico, on Federal land. Figure 1 illustrates the vicinity and site location on an USGS 7.5 minute quadrangle map.

Table 1 summarizes release information and Closure Criteria.

Table 1: Release Information and Closure Criteria			
Name	Black Horse Federal Com 20 33 07 SB #1H	Company	Marathon Oil Permian LLC
API Number	30-025-43240	Location	32.58160463° -103.707935°
Incident Number	1RP-5320		
Estimated Date of Release	December 29, 2018	Date Reported to NMOCD	January 2, 2019
Land Owner	Federal	Reported To	NMOCD, BLM
Source of Release	Composite 750 Line		
Released Volume	72 bbls	Released Material	Produced Water
Recovered Volume	30 bbls	Net Release	42 bbls
NMOCD Closure Criteria	>100 feet to groundwater		
SMA Response Dates	February 7, 2019 and February 20, 2019		

1.0 Background

On December 29, 2018, a release was discovered at the Black Horse Federal Com 20 30 07 SB #1H site due to a rupture on the composite 750 line leading to the gun barrel. Initial response activities were conducted by Marathon, and included source elimination and site stabilization activities, which recovered approximately 30 barrels of fluid. Figure 1 illustrates the vicinity and site location, Figure 2 illustrates the release location. The C-141 form is included in Appendix A.

2.0 Site Information and Closure Criteria

The Black Horse Federal Com 20 33 07 SB #1H is located approximately 34 miles west of Hobbs, New Mexico on Federal (BLM) land at an elevation of approximately 3,533 feet above mean sea level (amsl).

Based upon well water data (Appendix B), depth to groundwater in the area is estimated to be 104 feet below grade surface (bgs). There is one (1) known water sources within ½-mile of the location, according to the USGS National Water Information System and the New Mexico Office of the State Engineer (NMOSE) online water well database (https://gis.ose.state.nm.us/gisapps/ose_pod_locations/; accessed 1/18/2019). The nearest significant watercourse is Laguna Gatuna Salt Playa, located approximately 404 feet to the southeast. Figure 2 illustrates the site with 200 and 300-foot radii to indicate that it does not lie within a sensitive area as described in 19.15.29.12.C(4) NMAC.

Based on the information presented herein, the applicable NMOCD Closure Criteria for this site is for a groundwater depth of greater than 100 feet bgs. The site has been restored to meet the standards of Table I of 19.15.29.12 NMAC. In addition to meeting the Closure Criteria, the top four (4) feet of impacted areas off of the well pad meet the Reclamation requirement of 19.15.29.13(D)(1).

Table 2 demonstrates the Closure Criteria applicable to this location. Pertinent well data is attached in Appendix B.

3.0 Remediation and Closure Activities

Upon completion of remedial excavation activities, NMOCD was notified on February 5, 2019 that closure samples were expected to be collected in two (2) business days. On February 7, 2019, SMA personnel arrived on to collect confirmation samples of the excavated area. The excavated area measured approximately 70 feet by 25 feet by 2.5 feet deep. SMA collected soil samples throughout the excavated area. Soil samples were field-screened for chloride using an electrical conductivity (EC) meter).

Six (6) composite samples were collected from sidewalls of the excavation (SW1-SW6), and seven (7) composite samples were collected from the base of the excavation at 2.5 feet bgs (CS1-CS7) A total of thirteen (13) composite samples were collected for laboratory analysis for total chloride using EPA Method 300.0; benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D.

Laboratory results for the western wall of the excavation (SW1) resulted in chloride exceeding the reclamation requirement of 600mg/Kg. On February 20, 2019, SMA returned to the location to guide further excavation until the reclamation requirement was met. A composite sample for area SW1 was collected for laboratory analysis for total chloride using EPA Method 300.0.

Results indicate contamination has been removed sufficiently to meet NMOCD Closure Criteria as well as reclamation requirements. Figure 3 shows the extent of the excavation and sample locations. Laboratory results are summarized in Table 3. Laboratory reports are included in Appendix D.

Contaminated soils were removed and replaced with clean backfill material to return the surface to previous contours. The contaminated soil was transported and disposed of at an NMOCD permitted disposal facility.

5.0 Scope and Limitations

The scope of our services included: assessment sampling; verifying release stabilization; regulatory liaison; remediation; and preparing this closure report. All work has been performed in accordance with generally accepted professional environmental consulting practices for oil and gas releases in the Permian Basin in New Mexico.

If there are any questions regarding this report, please contact either Heather Patterson at 575-200-5343 or Shawna Chubbuck at 505-325-7535.

Submitted by:
SOUDER, MILLER & ASSOCIATES

Reviewed by:

Ashley Maxwell
Project Scientist

Shawna Chubbuck
Senior Scientist

ATTACHMENTS:

Figures:

Figure 1: Vicinity and Well Head Protection Map
Figure 2: Surface Water Radius Map
Figure 3: Site and Sample Location Map

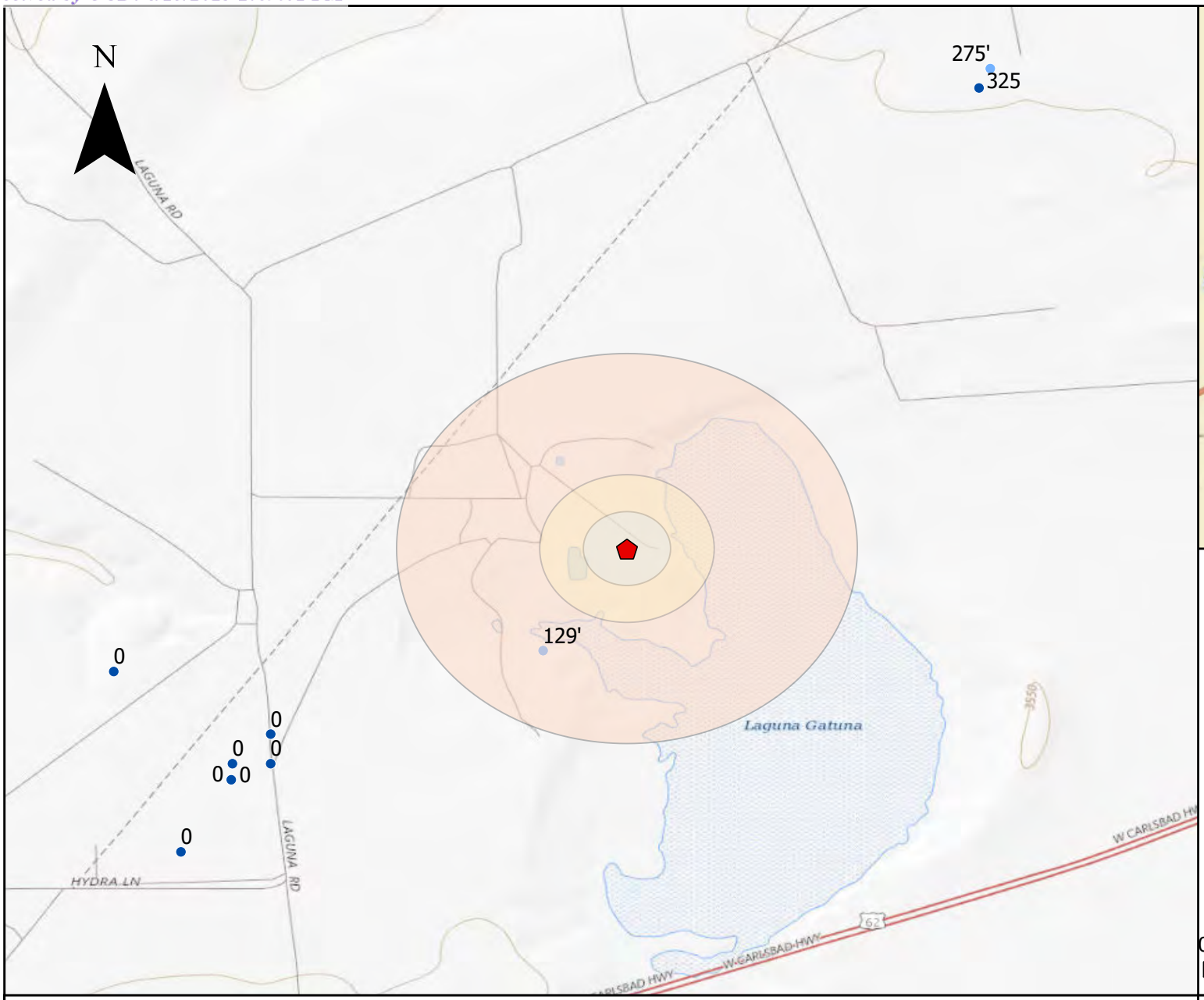
Tables:

Table 2: NMOCD Closure Criteria Justification
Table 3: Summary of Sample Results

Appendices:

Appendix A: Form C141
Appendix B: Water Well Data
Appendix C: Field Notes
Appendix D: Laboratory Analytical Reports

FIGURES



Point of Release

Lea County USGS

OSE Wells

Buffer Distance

.5 Mile

1000 Feet

500 Feet

0 0.17 0.34 0.68 Miles

Regional Vicinity & Wellhead Protection Map
Black Horse Fed Com 20 33 07 SB #1H - Marathon
Sec 7 T20S R33E, New Mexico

Figure 1

\\CBO10\Projects\5-Marathon MSA 2019 (5E27950)\GIS\ARCGIS\MARATHON_MIT.aprx

Date Saved: 2/19/2019

Revisions

By: _____ Date: _____ Descr: _____

By: _____ Date: _____ Descr: _____

Drawn Heather Patterson

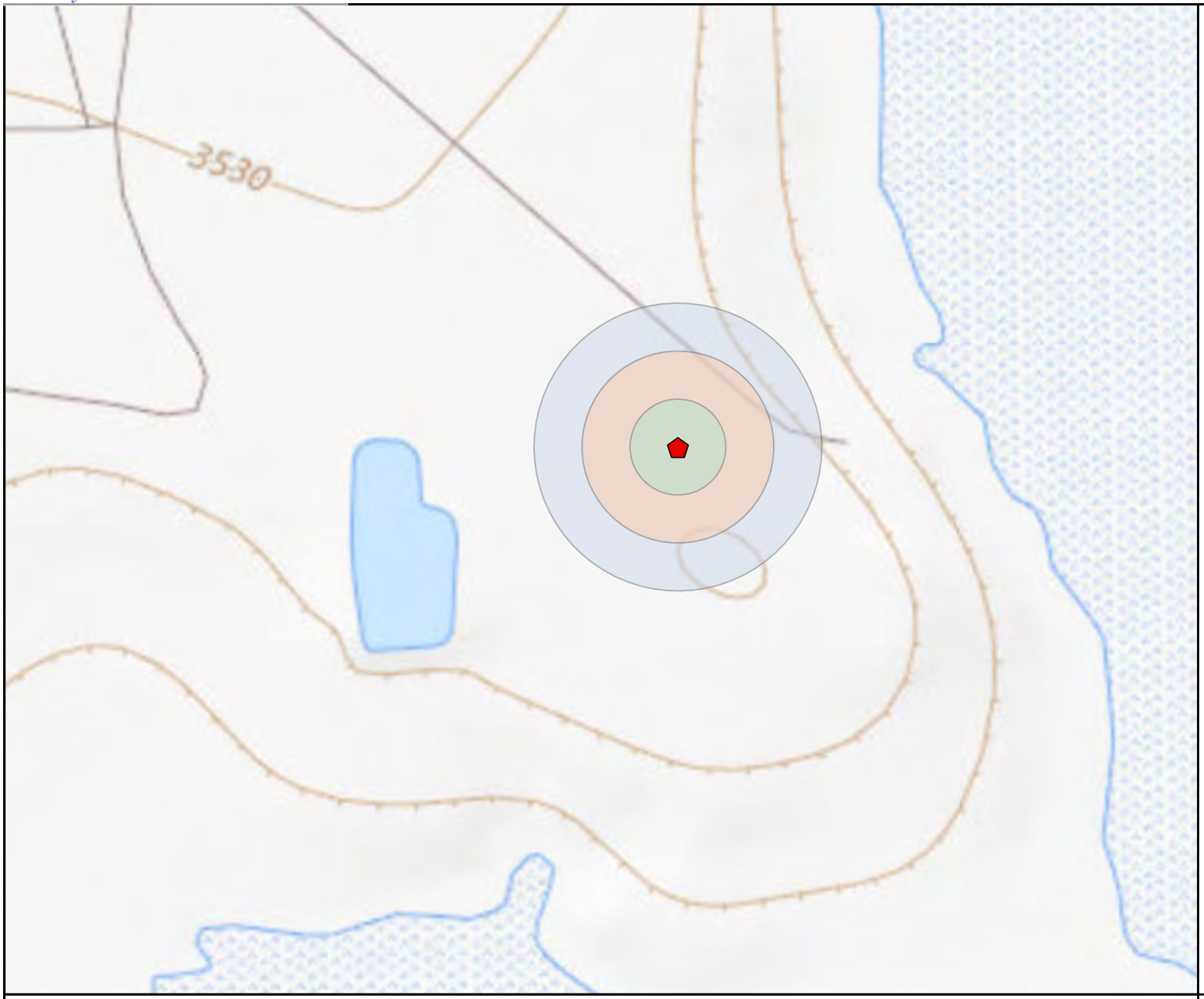
Date 2/19/2019

Checked _____

Approved _____

SMA

201 South Halaguena Street
Carlsbad, New Mexico 88221
(575) 689-7040
Serving the Southwest & Rocky Mountains



Legend

Point of Release

Buffer Distance

100 Feet

200 Feet

300 Feet

N

0 90 180 360 US Feet

Surface Water Protection Map
Black Horse Fed Com 20 33 07 SB #1H - Marathon
Sec 7 T20S R33E, New Mexico

Figure 2

\\CBO10\Projects\5-Marathon MSA 2019 (5E27950)\GIS\ARCGIS\MARATHON_MIT.aprx

Date Saved: 2/19/2019

Revisions

By:_____ Date:_____ Descr:_____

By:_____ Date:_____ Descr:_____

Drawn Heather Patterson

Date 2/19/2019

Checked

Approved

201 South Halaguena Street
Carlsbad, New Mexico 88221
(575) 689-7040
Serving the Southwest & Rocky Mountains

Legend

Sample Locations

Excavation

N

0 15.5 31 62 Feet

Site and Sample location Map
Black Horse Fed Com 20 33 07 SB #1H- Marathon
Sec 7 T20S R33E, New Mexico

Figure 3

\\CBO10\Projects\5-Marathon MSA 2019 (5E27950)\GIS\ARCGIS\MARATHON_MIT.aprx

Date Saved: 3/27/2019

Revisions

By:_____ Date:_____ Descr:_____

By:_____ Date:_____ Descr:_____

Drawn *Heather Patterson*
Date 3/27/2019
Checked
Approved

201 South Halaguena Street
Carlsbad, New Mexico 88221
(575) 689-7040
Serving the Southwest & Rocky Mountains

TABLES

Table 2:
NMOCD Closure Criteria

Marathon Oil Permian LLC
Black Horse Federal Com 20 33 07 SB #1H (1RP-5320)

Site Information (19.15.29.11.A(2, 3, and 4) NMAC)		Source/Notes
Depth to Groundwater (feet bgs)	104'	USGS
Hortizontal Distance From All Water Sources Within 1/2 Mile (ft)	404'	Figure 1
Hortizontal Distance to Nearest Significant Watercourse (ft)	404'	Figure 1

Closure Criteria (19.15.29.12.B(4) and Table 1 NMAC)						
Depth to Groundwater		**Closure Criteria (units in mg/kg)**				
		Chloride *numerical limit or background, whichever is greater	**TPH**	**GRO + DRO**	**BTEX**	**Benzene**
< 50' BGS		600	100		50	10
51' to 100'		10000	2500	1000	50	10
>100'		20000	2500	1000	50	10
Surface Water	**yes or no**	**if yes, then**				
<300' from continuously flowing watercourse or other significant watercourse?	No	600	100		50	10
<200' from lakebed, sinkhole or playa lake?	No					
Water Well or Water Source						
<500 feet from spring or a private, domestic fresh water well used by less than 5 households for domestic or stock watering purposes?	No					
<1000' from fresh water well or spring?	No					
Human and Other Areas						
<300' from an occupied permanent residence, school, hospital, institution or church?	No					
within incorporated municipal boundaries or within a defined municipal fresh water well field?	No					
<100' from wetland?	No					
within area overlying a subsurface mine	No					
within an unstable area?	No					
within a 100-year floodplain?	No					

Table 3:
Summary of Sample Results

Marathon Oil Permian LLC
Black Horse Federal Com 20 33 07 SB #1H (1RP-5320)

Sample ID	Sample Date	Depth (feet bgs)	Action Taken	BTEX mg/Kg	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	MRO mg/Kg	**Total TPH** mg/Kg	Cl- mg/Kg
NMOCD Closure Criteria				50	10	1,000			2,500	20,000
SW1	2/7/2019	0-2	excavated	<0.215	<0.024	<4.8	<10	<50	<64.8	690*
	2/20/2019	0-2	in-situ	--	--	--	--	--	--	<30
SW2	2/7/2019	0-2	in-situ	<0.222	<0.025	<4.9	<9.7	<48	<62.6	170
SW3	2/7/2019	0-2	in-situ	<0.225	<0.025	<5.0	<10	<50.	<65	<60
SW4	2/7/2019	0-2	in-situ	<0.220	<0.024	<4.9	<9.8	<49	<63.7	<60
SW5	2/7/2019	0-2	in-situ	<0.216	<0.024	<4.8	<9.6	<48	<62.4	96
SW6	2/7/2019	0-2	in-situ	<0.215	<0.024	<4.8	<9.6	<48	<62.4	<60
CS1	2/7/2019	2.5	in-situ	<0.216	<0.024	<4.8	<9.8	<49	<63.6	<60
CS2	2/7/2019	2.5	in-situ	<0.216	<0.024	<4.8	<9.5	<47	<61.3	<60
CS3	2/7/2019	2.5	in-situ	<0.212	<0.024	<4.7	<10	<51	<65.7	77
CS4	2/7/2019	2.5	in-situ	0.027	0.027	<4.8	<10	<50	<64.8	<60
CS5	2/7/2019	2.5	in-situ	<0.221	<0.025	<4.9	<9.4	<47	<61.3	<60
CS6	2/7/2019	2.5	in-situ	<0.216	<0.024	<4.8	100	57	157	400
CS7	2/7/2019	2.5	in-situ	<0.219	<62.6	<4.9	<9.7	<48	<62.6	90

"--" = Not Analyzed

* = per Reclamation Standard (19.15.29.13.D(1) NMAC)

APPENDIX A
FORM C141

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	NCH1903533348
District RP	1RP-5320
Facility ID	
Application ID	pCH1903533730

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # NCH1903533348 BLACK HORSE 7 FED COM 1H @ 30-025-43240
Contact mailing address	

Incorrect GPS Coordinates

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# *(if applicable)*

Unit Letter	Section	Township	Range	County

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)

☐ Produced Water	Volume Released (bbls) Approximately 72 bbls	Volume Recovered (bbls) 30 bbls
☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

Operator reported a spill due to a rupture on the composite 750 line going to the gun barrel. The operator shut the well in and immediately called a vac truck to recover liquids. Approximately 72 bbls of produced water was spilled to the ground. All spillage is contained on location.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☐ 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

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

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

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

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

Printed Name: _____ Title: _____

Signature: Isaac Castro Date: 12/30/18

email: icastro@marathonoil.com Telephone: 575-988-0561

OCD Only

Received by: RECEIVED By CHernandez at 9:03 am, Feb 04, 2019

State of New Mexico
Oil Conservation Division

Incident ID	nCH1903533348
District RP	1RP-5320
Facility ID	
Application ID	pCH1903533730

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

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

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

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

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

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	nCH1903533348
District RP	1RP-5320
Facility ID	
Application ID	pCH1903533730

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: __Callie Karrigan_____ Title: _____HES Professional_____

Signature:_____*Callie Karrigan* _____ Date: ___3/27/2019_____

email: ___cnkarrigan@marathonoil.com_____ Telephone: ___575-297-0956_____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	nCH1903533348
District RP	1RP-5320
Facility ID	
Application ID	pCH1903533730

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: _____Callie Karrigan_____ Title: _____HES Professional_____

Signature: Callie Karrigan _____ Date: __3/27/2019_____

email: __cnkarrigan@marathonoil.com_____ Telephone: _____575-297-0956_____

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: _____
__

APPENDIX B
NMOSE WELLS REPORT

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

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

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

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

POD Number	POD Sub-basin Code	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
CP 00317	CP	LE	3	4	3	05	20S	33E	623054	3607235*	2391	680	325	355
L 07023	L	LE	2	3	3	32	19S	33E	622840	3609047*	3749	262	185	77
CP 00653 POD1	CP	LE		4	4	04	20S	33E	625573	3607367*	4635	60		

Average Depth to Water: **255 feet**

Minimum Depth: **185 feet**

Maximum Depth: **325 feet**

Record Count: 3

UTMNAD83 Radius Search (in meters):

Easting (X): 621270.14 **Northing (Y):** 3605641.59 **Radius:** 5000

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

APPENDIX C
PHOTO DOCUMENTATION & FIELD NOTES

Marathon

SMA **Field Screening**

Location Name: Black Horse **Date:** 2/7/19

Sample Name:	Collection Time:	EC (mS)	Temp (°C)	PID Reading /PF	Soil Color	Primary Soil Type	Moisture Level	Other Remarks/Notes:
SW1	1:01	0.29	14.3°		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; (Sand) Silt; Clay	Dry Moist Wet	0 - 2'
SW2	1:26	0.39	14.3°		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; (Sand) Silt; Clay	Dry Moist Wet	
SW3	1:39	0.10	13.8°		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; (Sand) Silt; Clay	Dry Moist Wet	
SW4	1:10	0.14	13.3°		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; (Sand) Silt; Clay	Dry Moist Wet	0 - 1
SW5	1:15	0.25	13.4°		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; (Sand) Silt; Clay	Dry Moist Wet	
SW6	1:19	0.14	13.4°		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; (Sand) Silt; Clay	Dry Moist Wet	
CS1 -2	1:49	0.20	13.9°		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; (Sand) Silt; Clay	Dry Moist Wet	
CS2 -2	1:52	0.26	14.5°		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; (Sand) Silt; Clay	Dry Moist Wet	
CS3 -2.5	2:09	0.17	14.2°		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; (Sand) Silt; Clay	Dry Moist Wet	

SMA Field Screening

Location Name: Black Horse **Date:** 2/7/19

Sample Name:	Collection Time:	EC (mS)	Temp (°C)	PID Reading /PF	Soil Color	Primary Soil Type	Moisture Level	Other Remarks/Notes:
[redacted]					Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; Sand Silt; Clay	Dry Moist Wet	
CS4 -2.5	2:15	0.17	13.4°		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; **Sand** Silt; Clay	Dry Moist Wet	
CS5 -1.5	2:18	0.14	14.3°		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; **Sand** Silt; Clay	Dry Moist Wet	
CS6 -1.5	2:23	0.36	13.9		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; Sand Silt; Clay	Dry Moist Wet	
CS7 -2		0.31	14.3		Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; **Sand** Silt; Clay	Dry Moist Wet	
					Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; Sand Silt; Clay	Dry Moist Wet	
					Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; Sand Silt; Clay	Dry Moist Wet	
					Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; Sand Silt; Clay	Dry Moist Wet	
					Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; Sand Silt; Clay	Dry Moist Wet	

Photo Log

Photo Taken February 7, 2019

Facing northeast

32.578547°, -103.701678°

Photo Taken February 7, 2019

Facing southwest

32.578547°, -103.701678°

APPENDIX D

LABORATORY ANALYTICAL REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 19, 2019

Heather Patterson

Souder, Miller & Associates
201 S Halagueno
Carlsbad, NM 88221
TEL: (575) 689-7040
FAX

RE: Black Horse OrderNo.: 1902403

Dear Heather Patterson:

Hall Environmental Analysis Laboratory received 13 sample(s) on 2/9/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW 1
Project: Black Horse
Collection Date: 2/7/2019 1:01:00 PM
Lab ID: 1902403-001 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	690	60		mg/Kg	20	2/14/2019 7:42:02 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	2/12/2019 2:20:59 PM	43090
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	2/12/2019 2:20:59 PM	43090
Surr: DNOP	98.8	50.6-138		%Rec	1	2/12/2019 2:20:59 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/12/2019 7:46:21 PM	43071
Surr: BFB	102	73.8-119		%Rec	1	2/12/2019 7:46:21 PM	43071
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	2/12/2019 7:46:21 PM	43071
Toluene	ND	0.048		mg/Kg	1	2/12/2019 7:46:21 PM	43071
Ethylbenzene	ND	0.048		mg/Kg	1	2/12/2019 7:46:21 PM	43071
Xylenes, Total	ND	0.095		mg/Kg	1	2/12/2019 7:46:21 PM	43071
Surr: 4-Bromofluorobenzene	92.1	80-120		%Rec	1	2/12/2019 7:46:21 PM	43071

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

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW 2
Project: Black Horse
Collection Date: 2/7/2019 1:26:00 PM
Lab ID: 1902403-002 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	170	60		mg/Kg	20	2/15/2019 12:15:25 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	2/12/2019 2:44:53 PM	43090
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/12/2019 2:44:53 PM	43090
Surr: DNOP	83.4	50.6-138		%Rec	1	2/12/2019 2:44:53 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/12/2019 8:09:08 PM	43071
Surr: BFB	100	73.8-119		%Rec	1	2/12/2019 8:09:08 PM	43071
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.025		mg/Kg	1	2/12/2019 8:09:08 PM	43071
Toluene	ND	0.049		mg/Kg	1	2/12/2019 8:09:08 PM	43071
Ethylbenzene	ND	0.049		mg/Kg	1	2/12/2019 8:09:08 PM	43071
Xylenes, Total	ND	0.099		mg/Kg	1	2/12/2019 8:09:08 PM	43071
Surr: 4-Bromofluorobenzene	89.6	80-120		%Rec	1	2/12/2019 8:09:08 PM	43071

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

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW 3
Project: Black Horse
Collection Date: 2/7/2019 1:39:00 PM
Lab ID: 1902403-003 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	ND	60		mg/Kg	20	2/14/2019 8:56:30 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	2/12/2019 3:08:51 PM	43090
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	2/12/2019 3:08:51 PM	43090
Surr: DNOP	95.6	50.6-138		%Rec	1	2/12/2019 3:08:51 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	2/12/2019 8:31:54 PM	43071
Surr: BFB	100	73.8-119		%Rec	1	2/12/2019 8:31:54 PM	43071
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.025		mg/Kg	1	2/12/2019 8:31:54 PM	43071
Toluene	ND	0.050		mg/Kg	1	2/12/2019 8:31:54 PM	43071
Ethylbenzene	ND	0.050		mg/Kg	1	2/12/2019 8:31:54 PM	43071
Xylenes, Total	ND	0.10		mg/Kg	1	2/12/2019 8:31:54 PM	43071
Surr: 4-Bromofluorobenzene	88.4	80-120		%Rec	1	2/12/2019 8:31:54 PM	43071

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

Qualifiers:

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW 4
Project: Black Horse
Collection Date: 2/7/2019 1:10:00 PM
Lab ID: 1902403-004 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	ND	60		mg/Kg	20	2/14/2019 9:08:54 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	2/12/2019 3:32:50 PM	43090
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/12/2019 3:32:50 PM	43090
Surr: DNOP	107	50.6-138		%Rec	1	2/12/2019 3:32:50 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/12/2019 8:54:42 PM	43071
Surr: BFB	101	73.8-119		%Rec	1	2/12/2019 8:54:42 PM	43071
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	2/12/2019 8:54:42 PM	43071
Toluene	ND	0.049		mg/Kg	1	2/12/2019 8:54:42 PM	43071
Ethylbenzene	ND	0.049		mg/Kg	1	2/12/2019 8:54:42 PM	43071
Xylenes, Total	ND	0.098		mg/Kg	1	2/12/2019 8:54:42 PM	43071
Surr: 4-Bromofluorobenzene	89.2	80-120		%Rec	1	2/12/2019 8:54:42 PM	43071

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

Qualifiers:

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW 5
Project: Black Horse
Collection Date: 2/7/2019 1:15:00 PM
Lab ID: 1902403-005 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	96	60		mg/Kg	20	2/15/2019 12:27:49 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	2/12/2019 3:56:51 PM	43090
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/12/2019 3:56:51 PM	43090
Surr: DNOP	107	50.6-138		%Rec	1	2/12/2019 3:56:51 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/12/2019 9:17:30 PM	43071
Surr: BFB	98.4	73.8-119		%Rec	1	2/12/2019 9:17:30 PM	43071
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	2/12/2019 9:17:30 PM	43071
Toluene	ND	0.048		mg/Kg	1	2/12/2019 9:17:30 PM	43071
Ethylbenzene	ND	0.048		mg/Kg	1	2/12/2019 9:17:30 PM	43071
Xylenes, Total	ND	0.096		mg/Kg	1	2/12/2019 9:17:30 PM	43071
Surr: 4-Bromofluorobenzene	86.3	80-120		%Rec	1	2/12/2019 9:17:30 PM	43071

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

Qualifiers:

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW 6
Project: Black Horse
Collection Date: 2/7/2019 1:19:00 PM
Lab ID: 1902403-006 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	ND	60		mg/Kg	20	2/15/2019 12:40:14 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	2/12/2019 4:20:51 PM	43090
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/12/2019 4:20:51 PM	43090
Surr: DNOP	86.2	50.6-138		%Rec	1	2/12/2019 4:20:51 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/12/2019 9:40:13 PM	43071
Surr: BFB	101	73.8-119		%Rec	1	2/12/2019 9:40:13 PM	43071
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	2/12/2019 9:40:13 PM	43071
Toluene	ND	0.048		mg/Kg	1	2/12/2019 9:40:13 PM	43071
Ethylbenzene	ND	0.048		mg/Kg	1	2/12/2019 9:40:13 PM	43071
Xylenes, Total	ND	0.095		mg/Kg	1	2/12/2019 9:40:13 PM	43071
Surr: 4-Bromofluorobenzene	87.7	80-120		%Rec	1	2/12/2019 9:40:13 PM	43071

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

Qualifiers:

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: CS 1
Project: Black Horse
Collection Date: 2/7/2019 1:49:00 PM
Lab ID: 1902403-007 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	ND	60		mg/Kg	20	2/14/2019 9:46:08 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	2/12/2019 4:44:49 PM	43090
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/12/2019 4:44:49 PM	43090
Surr: DNOP	86.8	50.6-138		%Rec	1	2/12/2019 4:44:49 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/12/2019 10:02:59 PM	43071
Surr: BFB	103	73.8-119		%Rec	1	2/12/2019 10:02:59 PM	43071
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	2/12/2019 10:02:59 PM	43071
Toluene	ND	0.048		mg/Kg	1	2/12/2019 10:02:59 PM	43071
Ethylbenzene	ND	0.048		mg/Kg	1	2/12/2019 10:02:59 PM	43071
Xylenes, Total	ND	0.096		mg/Kg	1	2/12/2019 10:02:59 PM	43071
Surr: 4-Bromofluorobenzene	90.0	80-120		%Rec	1	2/12/2019 10:02:59 PM	43071

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

Qualifiers:

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: CS 2
Project: Black Horse
Collection Date: 2/7/2019 1:52:00 PM
Lab ID: 1902403-008 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	ND	60		mg/Kg	20	2/14/2019 9:58:33 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	2/12/2019 5:08:46 PM	43090
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/12/2019 5:08:46 PM	43090
Surr: DNOP	86.7	50.6-138		%Rec	1	2/12/2019 5:08:46 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/12/2019 10:25:43 PM	43071
Surr: BFB	102	73.8-119		%Rec	1	2/12/2019 10:25:43 PM	43071
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	2/12/2019 10:25:43 PM	43071
Toluene	ND	0.048		mg/Kg	1	2/12/2019 10:25:43 PM	43071
Ethylbenzene	ND	0.048		mg/Kg	1	2/12/2019 10:25:43 PM	43071
Xylenes, Total	ND	0.096		mg/Kg	1	2/12/2019 10:25:43 PM	43071
Surr: 4-Bromofluorobenzene	89.5	80-120		%Rec	1	2/12/2019 10:25:43 PM	43071

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

Qualifiers:

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: CS 3
Project: Black Horse
Collection Date: 2/7/2019 2:09:00 PM
Lab ID: 1902403-009 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	77	60		mg/Kg	20	2/15/2019 12:52:39 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	2/12/2019 5:32:38 PM	43090
Motor Oil Range Organics (MRO)	ND	51		mg/Kg	1	2/12/2019 5:32:38 PM	43090
Surr: DNOP	87.9	50.6-138		%Rec	1	2/12/2019 5:32:38 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/12/2019 11:56:30 PM	43071
Surr: BFB	103	73.8-119		%Rec	1	2/12/2019 11:56:30 PM	43071
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	2/12/2019 11:56:30 PM	43071
Toluene	ND	0.047		mg/Kg	1	2/12/2019 11:56:30 PM	43071
Ethylbenzene	ND	0.047		mg/Kg	1	2/12/2019 11:56:30 PM	43071
Xylenes, Total	ND	0.094		mg/Kg	1	2/12/2019 11:56:30 PM	43071
Surr: 4-Bromofluorobenzene	91.1	80-120		%Rec	1	2/12/2019 11:56:30 PM	43071

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

Qualifiers:

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: CS 4
Project: Black Horse
Collection Date: 2/7/2019 2:15:00 PM
Lab ID: 1902403-010 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	ND	60		mg/Kg	20	2/14/2019 10:48:10 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	2/12/2019 5:56:24 PM	43090
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	2/12/2019 5:56:24 PM	43090
Surr: DNOP	89.0	50.6-138		%Rec	1	2/12/2019 5:56:24 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/12/2019 3:26:58 PM	43077
Surr: BFB	98.4	73.8-119		%Rec	1	2/12/2019 3:26:58 PM	43077
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	0.027	0.024		mg/Kg	1	2/12/2019 3:26:58 PM	43077
Toluene	ND	0.048		mg/Kg	1	2/12/2019 3:26:58 PM	43077
Ethylbenzene	ND	0.048		mg/Kg	1	2/12/2019 3:26:58 PM	43077
Xylenes, Total	ND	0.096		mg/Kg	1	2/12/2019 3:26:58 PM	43077
Surr: 4-Bromofluorobenzene	95.3	80-120		%Rec	1	2/12/2019 3:26:58 PM	43077

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

Qualifiers:

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: CS 5
Project: Black Horse
Collection Date: 2/7/2019 2:15:00 PM
Lab ID: 1902403-011 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	ND	60		mg/Kg	20	2/14/2019 11:00:35 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	2/12/2019 6:20:07 PM	43090
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/12/2019 6:20:07 PM	43090
Surr: DNOP	104	50.6-138		%Rec	1	2/12/2019 6:20:07 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/12/2019 4:36:55 PM	43077
Surr: BFB	93.6	73.8-119		%Rec	1	2/12/2019 4:36:55 PM	43077
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.025		mg/Kg	1	2/12/2019 4:36:55 PM	43077
Toluene	ND	0.049		mg/Kg	1	2/12/2019 4:36:55 PM	43077
Ethylbenzene	ND	0.049		mg/Kg	1	2/12/2019 4:36:55 PM	43077
Xylenes, Total	ND	0.098		mg/Kg	1	2/12/2019 4:36:55 PM	43077
Surr: 4-Bromofluorobenzene	90.9	80-120		%Rec	1	2/12/2019 4:36:55 PM	43077

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

Qualifiers:

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: CS 6
Project: Black Horse
Collection Date: 2/7/2019 2:23:00 PM
Lab ID: 1902403-012 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	400	60		mg/Kg	20	2/15/2019 1:05:04 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	100	10		mg/Kg	1	2/12/2019 6:43:47 PM	43090
Motor Oil Range Organics (MRO)	57	50		mg/Kg	1	2/12/2019 6:43:47 PM	43090
Surr: DNOP	95.8	50.6-138		%Rec	1	2/12/2019 6:43:47 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/12/2019 5:47:16 PM	43077
Surr: BFB	105	73.8-119		%Rec	1	2/12/2019 5:47:16 PM	43077
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	2/12/2019 5:47:16 PM	43077
Toluene	ND	0.048		mg/Kg	1	2/12/2019 5:47:16 PM	43077
Ethylbenzene	ND	0.048		mg/Kg	1	2/12/2019 5:47:16 PM	43077
Xylenes, Total	ND	0.096		mg/Kg	1	2/12/2019 5:47:16 PM	43077
Surr: 4-Bromofluorobenzene	93.1	80-120		%Rec	1	2/12/2019 5:47:16 PM	43077

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

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

Analytical Report
Lab Order **1902403**
Date Reported: **2/19/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: CS 7
Project: Black Horse
Collection Date: 2/7/2019 2:40:00 PM
Lab ID: 1902403-013 **Matrix:** SOIL **Received Date:** 2/9/2019 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	90	60		mg/Kg	20	2/15/2019 1:17:29 PM	43176
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**CLP**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	2/12/2019 7:30:53 PM	43090
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/12/2019 7:30:53 PM	43090
Surr: DNOP	91.2	50.6-138		%Rec	1	2/12/2019 7:30:53 PM	43090
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/12/2019 6:10:44 PM	43077
Surr: BFB	96.4	73.8-119		%Rec	1	2/12/2019 6:10:44 PM	43077
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	2/12/2019 6:10:44 PM	43077
Toluene	ND	0.049		mg/Kg	1	2/12/2019 6:10:44 PM	43077
Ethylbenzene	ND	0.049		mg/Kg	1	2/12/2019 6:10:44 PM	43077
Xylenes, Total	ND	0.097		mg/Kg	1	2/12/2019 6:10:44 PM	43077
Surr: 4-Bromofluorobenzene	93.3	80-120		%Rec	1	2/12/2019 6:10:44 PM	43077

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1902403**
19-Feb-19

Client: Souder, Miller & Associates
Project: Black Horse

Sample ID	**MB-43176**	SampType:	**mblk**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**43176**	RunNo:	**57701**					
Prep Date:	**2/14/2019**	Analysis Date:	**2/14/2019**	SeqNo:	**1932398**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	**LCS-43176**	SampType:	**lcs**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**43176**	RunNo:	**57701**					
Prep Date:	**2/14/2019**	Analysis Date:	**2/14/2019**	SeqNo:	**1932399**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	98.1	90	110			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1902403**
19-Feb-19

Client: Souder, Miller & Associates
Project: Black Horse

Sample ID	**MB-43090**	SampType:	**MBLK**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**PBS**	Batch ID:	**43090**	RunNo:	**57659**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929614**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	50.6	138			

Sample ID	**LCS-43090**	SampType:	**LCS**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**LCSS**	Batch ID:	**43090**	RunNo:	**57659**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929615**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	97.8	63.9	124			
Surr: DNOP	4.9		5.000		98.7	50.6	138			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1902403**
19-Feb-19

Client: Souder, Miller & Associates
Project: Black Horse

Sample ID	**MB-43071**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**43071**	RunNo:	**57650**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929282**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1100		1000		107	73.8	119			

Sample ID	**LCS-43071**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**43071**	RunNo:	**57650**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929283**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	80.1	123			
Surr: BFB	1200		1000		121	73.8	119			S

Sample ID	**MB-43077**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**43077**	RunNo:	**57649**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929350**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		103	73.8	119			

Sample ID	**LCS-43077**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**43077**	RunNo:	**57649**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929351**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	25.00	0	107	80.1	123			
Surr: BFB	1100		1000		113	73.8	119			

Sample ID	**1902403-010AMS**	SampType:	**MS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**CS 4**	Batch ID:	**43077**	RunNo:	**57649**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929353**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	30	4.9	24.53	0	121	69.1	142			
Surr: BFB	1100		981.4		111	73.8	119			

Sample ID	**1902403-010AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**CS 4**	Batch ID:	**43077**	RunNo:	**57649**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929354**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1902403**
19-Feb-19

Client: Souder, Miller & Associates
Project: Black Horse

Sample ID	**1902403-010AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**CS 4**	Batch ID:	**43077**	RunNo:	**57649**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929354**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	30	4.8	23.90	0	127	69.1	142	2.02	20	
Surr: BFB	1100		956.0		111	73.8	119	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1902403**

19-Feb-19

Client: Souder, Miller & Associates

Project: Black Horse

Sample ID	**MB-43071**	SampType:	**MBLK**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**PBS**	Batch ID:	**43071**	RunNo:	**57650**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929312**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.98		1.000		98.2	80	120			

Sample ID	**LCS-43071**	SampType:	**LCS**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**LCSS**	Batch ID:	**43071**	RunNo:	**57650**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929313**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.025	1.000	0	83.0	80	120			
Toluene	0.97	0.050	1.000	0	96.5	80	120			
Ethylbenzene	1.0	0.050	1.000	0	101	80	120			
Xylenes, Total	3.0	0.10	3.000	0	100	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		107	80	120			

Sample ID	**MB-43077**	SampType:	**MBLK**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**PBS**	Batch ID:	**43077**	RunNo:	**57649**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929385**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID	**LCS-43077**	SampType:	**LCS**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**LCSS**	Batch ID:	**43077**	RunNo:	**57649**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**	SeqNo:	**1929386**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	1.000	0	87.5	80	120			
Toluene	0.92	0.050	1.000	0	92.3	80	120			
Ethylbenzene	0.93	0.050	1.000	0	92.8	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.4	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1902403**
19-Feb-19

Client: Souder, Miller & Associates
Project: Black Horse

Sample ID	**1902403-011AMS**	SampType:	**MS**		TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**CS 5**	Batch ID:	**43077**		RunNo:	**57649**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**		SeqNo:	**1929389**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.92	0.024	0.9443	0.01159	96.2	63.9	127				
Toluene	0.99	0.047	0.9443	0	105	69.9	131				
Ethylbenzene	1.0	0.047	0.9443	0	107	71	132				
Xylenes, Total	3.1	0.094	2.833	0.01424	108	71.8	131				
Surr: 4-Bromofluorobenzene	0.87		0.9443		92.1	80	120				

Sample ID	**1902403-011AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**CS 5**	Batch ID:	**43077**		RunNo:	**57649**					
Prep Date:	**2/11/2019**	Analysis Date:	**2/12/2019**		SeqNo:	**1929390**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.93	0.025	0.9881	0.01159	93.3	63.9	127	1.46	20		
Toluene	0.99	0.049	0.9881	0	100	69.9	131	0.109	20		
Ethylbenzene	1.0	0.049	0.9881	0	103	71	132	0.376	20		
Xylenes, Total	3.1	0.099	2.964	0.01424	103	71.8	131	0.0713	20		
Surr: 4-Bromofluorobenzene	0.90		0.9881		91.2	80	120	0	0		

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **SMA-CARLSBAD** Work Order Number: **1902403** RcptNo: 1

Received By: **Leah Baca** **2/9/2019 10:15:00 AM** Leah Baca

Completed By: **Erin Melendrez** **2/11/2019 8:47:39 AM**

Reviewed By: TMM 2-11-19

LB: IO 2/11/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑

IO 2/11/19

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

Adjusted? _____

Checked by: _____

11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: SMA

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day, tm
☐ Standard ☐ Rush

Project Name: Black Horse

Project #:

Project Manager: Heath Patterson

Sampler: HWP

On Ice: ☑ Yes ☐ No

# of Coolers: 0

Cooler Temp(including CF): 3.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1902403	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
2/7/19	1:01	Soil	SW1			-001	X	X					X			
	1:20		SW2			-002	X	X					X			
	1:39		SW3			-003	X	X					X			
	1:10		SW4			-004	X	X					X			
	1:15		SW5			-005	X	X					X			
	1:19		SW6			-006	X	X					X			
	1:49		CS1			-007	X	X					X			
	1:52		CS2			-008	X	X					X			
	2:09		CS3			-009	X	X					X			
	2:15		CS4			-010	X	X					X			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					2/8/19	1415
Date: 2/8/19	Time: 1900	Relinquished by:	Received by:	Via: Courier	Date 2/9/19	Time 1015

Remarks: pg 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: SMT

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day
☐ Standard ☐ Rush

Project Name: Black Horse

Project #:

Project Manager: Heather Patterson

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 3.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1902403	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	(Cl, F, Br, NO_3, NO_2, PO_4, SO_4)	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
2/7/19	2:15	Soil	CS5	4oz		-011	X	X					X			
	2:23		CS6			-012	X	X					X			
	2:40		CS7			-013	X	X					X			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					2/8/19	1405
2/8/19	1900			Courier	2/9/19	1615

Remarks: pg 2 of 2

Marathon

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 25, 2019

Heather Patterson

Souder, Miller & Associates
201 S Halagueno
Carlsbad, NM 88221
TEL: (575) 689-7040
FAX

RE: Black Horse OrderNo.: 1902898

Dear Heather Patterson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 2/21/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1902898**
Date Reported: **2/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW-1
Project: Black Horse
Collection Date: 2/20/2019 9:01:00 AM
Lab ID: 1902898-001 **Matrix:** SOIL **Received Date:** 2/21/2019 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	ND	60		mg/Kg	20	2/22/2019 8:52:59 PM	43302

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1902898**

25-Feb-19

Client: Souder, Miller & Associates

Project: Black Horse

Sample ID: **MB-43302**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **43302**	RunNo: **57905**							
Prep Date: **2/22/2019**	Analysis Date: **2/22/2019**	SeqNo: **1939513**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-43302**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **43302**	RunNo: **57905**							
Prep Date: **2/22/2019**	Analysis Date: **2/22/2019**	SeqNo: **1939514**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.7	90	110			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **SMA-CARLSBAD** Work Order Number: **1902898** RcptNo: **1**

Received By: **Isaiah Ortiz** **2/21/2019 8:40:00 AM** I-OK

Completed By: **Leah Baca** **2/21/2019 9:04:22 AM** Leah Baca

Reviewed By: DAD 2/21/19

Labeled by IO 2/21/19

Chain of Custody

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

Log In

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

#of preserved bottles checked for pH: 2/21/19 (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.1	Good	Yes			

Chain-of-Custody Record

Client: SMA Carlsbad

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day turn
☐ Standard ☐ Rush

Project Name: Black Horse

Project #:

Project Manager: H. Patterson

Sampler: HMP

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 2.1 °C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1902898	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, ~~NO3, NO2, PO4, SO4~~	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
2-20-19	9:01	soil	SW 1	4oz		-001							X			

Date	Time	Relinquished by	Received by	Via	Date	Time
2-20-19	11:05	Samantha Watson				
2/20/19	1900			Courier	2/21/19	0840

Remarks: Marathon

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 228855

CONDITIONS

Operator: MARATHON OIL PERMIAN LLC 990 Town & Country Blvd. Houston, TX 77024	OGRID: 372098
	Action Number: 228855
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
bhall	Closure approved. Site will need to meet the requirements of 19.15.29.13 NMAC.	9/12/2023