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

August 13, 2018

#5E27122-BG9

NMOCD District II
Mike Bratcher
811 S. First St.
Artesia, NM 88210

SUBJECT: SOIL REMEDIATION WORK PLAN FOR THE INCIDENTS AT THE SHUGART WEST 19 FEDERAL #2, EDDY COUNTY, NEW MEXICO

Dear Mr. Bratcher:

On behalf of Marathon Oil Permian LLC, Souder, Miller & Associates (SMA) has prepared this WORK PLAN that describes the assessment, initial delineation and proposed remediation for three (3) releases associated with the Shugart West 19 Federal #2. The site is in UNIT O, SECTION 19, TOWNSHIP 18S, RANGE 31E, NMPM, Eddy County, New Mexico, on Federal land. Figure 1 illustrates the vicinity and location of the site.

Table 1, below, summarizes information regarding the release.

Table 1: Release information and Site Ranking	
Name	Shugart West 19 Federal #2
Company	Marathon Oil Permian LLC
Incident Number	2RP-4403 2RP-4404 2RP-4428
API Number	30-015-30501
Location	32.7275543, -103.9065552
Estimated Date of Release	2RP-4403-September 8, 2017 2RP-4404-September 11, 2017 2RP-4428-September 22, 2017
Date Reported to NMOCD	2RP-4403-September 11, 2017 2RP-4404-September 11, 2017 2RP-4428-September 25, 2017
Land Owner	BLM
Reported To	NMOCD District II
Source of Release	2RP-4403-Injection Pump 2RP-4404-Injection Pump 2RP-4428-Skim Tank
Released Material	2RP-4403-Produced Water 2RP-4404-Produced Water 2RP-4428-Produced Water
Released Volume	2RP-4403-5 bbl 2RP-4404-55 bbl 2RP-4428-27.62 bbl
Recovered Volume	2RP-4403-0 bbl 2RP-4404-15 bbl 2RP-4428-0 bbl

Net Release	2RP-4403-5 bbl 2RP-4404-40 bbl 2RP-4428-27.62 bbl
Nearest Waterway	Walters Lake is approximately 2.6 miles west of location
Depth to Groundwater	Estimated to be greater than 400 feet
Nearest Domestic Water Source	Greater than 1,000 feet
NMOCD Ranking	0
SMA Response Dates	April 26, May 16, 2018

1.0 Background

On September 8, 2017, a 5 bbl produced water release (2RP-4403) occurred at the Shugart West 19 Federal #2. The cause of the release was due to a hole in the injection pump drain. The surface impact was confined to within the boundaries of the location, in an approximately 20-foot radius from the injection pump.

On September 11, 2017, a 55 bbl produced water release (2RP-4404) occurred. The wells associated with the location had been shut in from the initial 5 bbl release reported in 2RP-4403. However, the tanks were not isolated, allowing fluid to be pushed through the system and out of a failed ball valve on the injection pump. The surface impact was again confined to within the boundaries of the location, and remained within the earthen berm with no breaches.

On September 22, 2017, a 28 bbl produced water release (2RP-4428) occurred. The cause of the release was a water leg on the gun barrel that had been left shut, allowing the liquids to equalize and resulting in the overflow of the skim tank. The surface impact was once again confined to the location and remained within the secondary containment.

2.0 Site Ranking and Land Jurisdiction

The release site is located approximately 7.5 miles southeast of Loco Hills, New Mexico with an elevation of approximately 3,629 feet above sea level. SMA searched the New Mexico State Engineer's Office (NMOSE) online water well database for water wells in the vicinity of the release. Several wells are located within a three-mile radius of the site. After evaluation of the site using aerial photography and topographic maps, depth to groundwater is estimated to be greater than 400 feet below ground surface (bgs).

Recommended Remediation Action Levels (RRALs) are determined by the site ranking according to the NMOCD *Guidelines for Remediation of Leaks, Spills, and Releases* (1993). Below in Table 2 are the remediation standards and the site ranking for this location. Justification for this site ranking is found in Figure 1 and Appendix B.

Table 2.

Soil Remediation Standards	0 to 9	10 to 19	>19
Benzene	10 PPM	10 PPM	10 PPM
BTEX	50 PPM	50 PPM	50 PPM
TPH	5000 PPM	1000 PPM	100 PPM

Depth to Groundwater	NMOCD Numeric Rank
< 50 BGS = 20	
50' to 99' = 10	
>100' = 0	0
Distance to Nearest Surface Water	**NMOCD Numeric Rank**
< 200' = 20	
200' - 1000' = 10	
>1000' = 0	0
Well Head Protection	**NMOCD Numeric Rank**
<1000' (or <200' domestic) = 20	
> 1000' = 0	0
Total Site Ranking	**0**

3.0 Release Characterization

On April 26, 2018, SMA field personnel assessed the release area, which was primarily inside the bermed tank battery, which is unlined. SMA performed site delineation activities by collecting soil samples around the visibly surface stained area. Soil samples were field-screened for chloride using a mobile EC meter. Four locations (L1-L4) were sampled, using a hand-auger, to depths up to one foot bgs. A total of six samples were collected for laboratory analysis for benzene and total BTEX (benzene, toluene, ethylbenzene and total xylenes) using EPA Method 8021B; MRO, DRO, and GRO (motor, diesel and gasoline range organics, respectively) by EPA Method 8015D; and total chloride using EPA Method 300.0.

On May 16, 2018 after approval from area utilities via 811, SMA field personnel returned to the location to further delineate the release area with a backhoe service. Additional samples were collected from locations L1, L3 and L5 (to 1.5, 2.5, and 3.5 feet bgs, respectively) and five more sample locations (L5-L9) were added in an attempt to define the impacted area. Two samples (L6 and L7) were collected to the north of the berm. Samples were field-screened and analyzed for the analytical suite as listed above. At all locations, the backhoe met refusal at depths between 1 to 3.5 feet bgs. Further investigation using the USDS soil survey website (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx) indicates several rocky out crops in the area and “cemented material” (likely bedrock) at around 10 inches bgs. Rock samples taken from the site were reviewed by a geologist and identified as lime rock.

For both field events, laboratory samples were placed into laboratory supplied glassware, labeled, and maintained on ice until delivery to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico (Appendix C). Sample locations are depicted on Figure 2. All laboratory results are summarized in Table 3. Laboratory reports are included in Appendix C.

Analytical results indicate that the entire area has been impacted by chlorides, ranging from 440-4,700 mg/Kg. Two sample locations resulted in total petroleum hydrocarbons (TPH; combined MRO, DRO and GRO) exceeding the NMOCD RRAL of 5,000 mg/Kg (L2-1' at 14,552 mg/Kg and L8-1 at 10,110 mg/Kg).

4.0 Proposed Soil Remediation Work Plan

SMA proposes to excavate the impacted area to bedrock. Once bedrock is reached, rock samples will be collected, crushed, and submitted to the lab for analysis. Bedrock was encountered at 1 foot at L2 and L8, at 1.5 feet bgs at L1, at 2 feet at L9, at 2.5 feet at L3, at 3 feet at L5 and L6 and at 3.5 feet at L4 and L7. These are the proposed approximate excavation depths for the areas surrounding each sample location.

SMA will guide the excavation by collecting composite soil samples for field screening for chloride using a mobile EC meter and for hydrocarbon impacts using a Dexsil® PetroFLAG TPH Analyzer, particularly in the areas of sample locations L2 and L8.

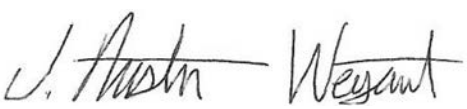
The release area will be excavated to the bedrock layer, as discussed above. Confirmation samples, composed of representative wall and base 5-point composite samples will be collected from the excavated area. The contaminated soil will be transported for proper disposal to an NMOCD permitted disposal facility. Upon confirmation of remediation, SMA will submit a closure report to NMOCD.

5.0 Scope and Limitations

The scope of our services consisted of the performance of assessment sampling, verification of release stabilization, regulatory liaison, and preparation of this work plan. 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 Austin Weyant at 575-689-8801 or Shawna Chubbuck at 505-325-7535.

Submitted by:
SOUDER, MILLER & ASSOCIATES



Austin Weyant
Project Scientist

Reviewed by:

Shawna Chubbuck
Senior Scientist

ATTACHMENTS:

Figures:

Figure 1: Vicinity and Well Head Protection Map
Figure 2: Site and Sample Location Map

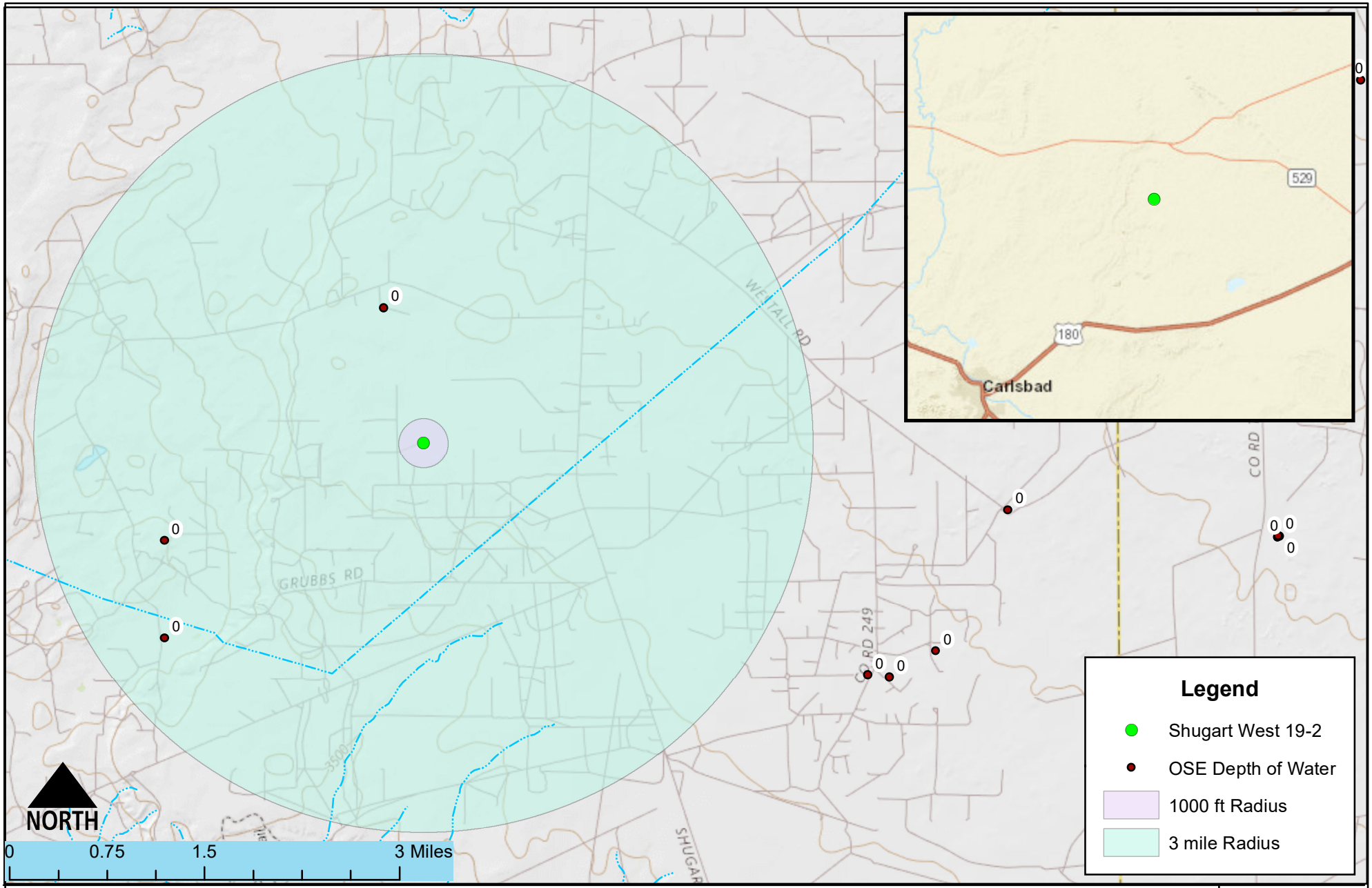
Tables:

Table 3: Summary of Sample Results

Appendices:

Appendix A: Form C141 Initial
Appendix B: NMOSE Wells Report
Appendix C: Laboratory Analytical Reports

FIGURE 1
VICINITY AND NMOSE DATA MAP



Vicinity and Well Head Protection Map
Shugart West 19 Fed #2 - Marathon
S 19-T18S-R31E, New Mexico

Figure 1

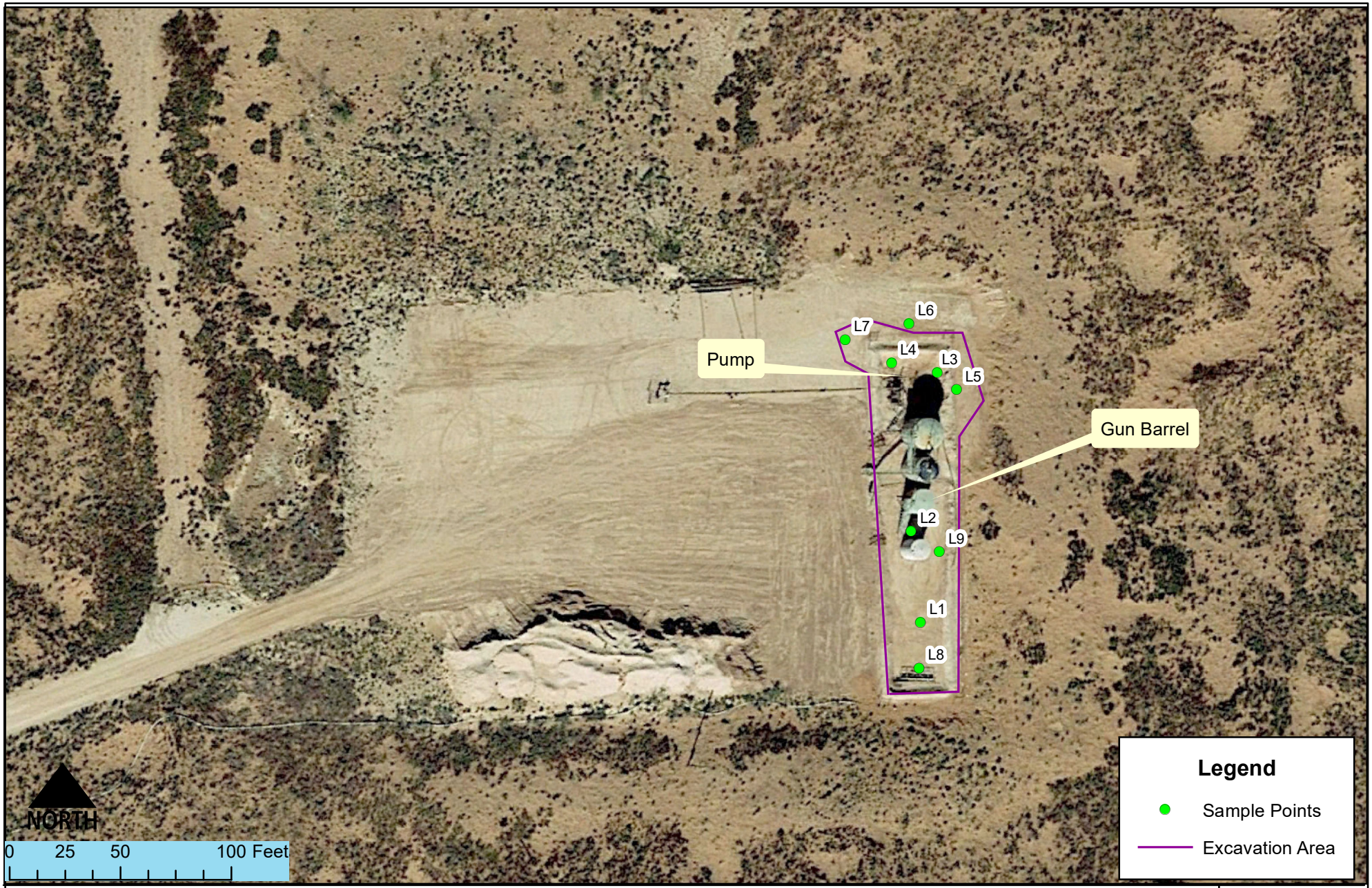
Date Saved: 5/8/2018

Revisions
By: Date: Descr:
By: Date: Descr:

Drawn Heather Patterson
Checked
Approved

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

FIGURE 2
SITE AND SAMPLE
LOCATION MAP



Site and Sample Location Map
Shugart West 19 Fed #2 - Marathon
S 19-T18S-R31E, New Mexico

Figure 2

Date Saved: 8/13/2018

Revisions
By: Date: Descr:
By: Date: Descr:

Drawn Heather Patterson
Checked
Approved

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TABLE 3
SUMMARY SAMPLE RESULTS

Shugart West 19 Federal #2 Sample Summary

Table 3.

Sample Number on Figure 2	Sample Date	Depth (feet bgs)	Proposed Action	BTEX mg/Kg	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	MRO mg/Kg	**Total TPH** mg/Kg	Cl- Laboratory mg/Kg
NMOCD RRAL's for Site Ranking 0				50 mg/Kg	10 mg/Kg				5000 mg/Kg	
L1	4/26/2018	0.5	excavate	0.836	<0.024	7.3	220	460	687.3	4,700
	5/16/2018	1.5	excavate	--	--	--	--	--	--	3,300
L2	4/26/2018	0.5	excavate	0.46	<0.023	<4.7	45	86	131	4,300
	4/26/2018	1	excavate	4.91	<0.12	52	7300	7200	**14,552**	3,000
L3	4/26/2018	0.5	excavate	<0.221	<0.025	<4.9	36	64	100	2,400
	4/26/2018	1	excavate	<0.217	<0.024	<4.8	310	520	830	910
	5/16/2018	2	excavate	<0.23	<0.023	<4.6	88	100	188	2,800
	5/16/2018	2.5	excavate	<0.23	<0.024	<4.8	19	<50	19	2,800
L4	4/26/2018	0.5	excavate	0.274	<0.024	5.7	58	160	223.7	2,600
	5/16/2018	3.5	excavate	<0.23	<0.024	<4.8	130	170	300	3,100
L5	5/16/2018	3	excavate	<0.23	<0.025	<5.0	<9.9	<49	<64	3,800
L6	5/16/2018	3	excavate	<0.23	<0.024	<4.8	<9.8	<49	<64	440
L7	5/16/2018	3.5	excavate	<0.23	<0.023	<4.6	<10	<50	<65	1800
L8	5/16/2018	1	excavate	18.86	<0.11	310	6900	2900	**10110**	2400
L9	5/16/2018	2	excavate	<0.23	<0.024	<4.8	48	<49	48	3500

"--" = Not Analyzed

APPENDIX A
FORM C141 INITIAL

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

State of New Mexico
Energy Minerals and Natural Resources

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

NM OIL CONSERVATION
ARTESIA DISTRICT
SEP 13 2017
RECEIVED

Form C-141
Revised April 3, 2017
Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Marathon Oil Permian LLC 372098	Contact Jennifer Van Curen
Address 5555 San Felipe Street, Houston, Texas 77056	Telephone No. 713-296-2500
Facility Name Shugart West 19 Federal #2	Facility Type Salt water disposal well

Surface Owner BLM	Mineral Owner BLM	API No. 30-015-30501

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	19	18S	31E	660	South	1930	East	Eddy

Latitude 32.7275543 **Longitude** -103.9065552 NAD83

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 5 barrels	Volume Recovered 0
Source of Release Injection pump	Date and Hour of Occurrence 9/8/2017	Date and Hour of Discovery 9/8/2017 8:40 PM CDST
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom? Shelly Tucker with BLM notified via email & C. Weaver and M. Bratcher with NMOCD	
By Whom?	Date and Hour 9/11/2017 approximately 2:45 PM CDST	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
A 5 bbl spill occurred at the Shugart West 19 Federal 1 well site on Friday, September 8th caused by a hole in the injection pump drain. The wells going through pump are shut in until repair can be made.

Describe Area Affected and Cleanup Action Taken.*
20' area around pump was affected. Impacted soils will be removed and disposed at NMOCD approved facility.

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

	OIL CONSERVATION DIVISION	
Jennifer Van Curen Signature:		
Printed Name: Jennifer Van Curen	Approved by Environmental Specialist: Signed By [signature]	
Title: Sr. Regulatory Compliance	Approval Date: 9/19/17	Expiration Date: N/A
E-mail Address: jvancuren@marathonoil.com	Conditions of Approval: See Attached	Attached ☐ 2RP-4403
Date: September 13, 2017 Phone: 832-480-1740 (cell) 713-296-2500 (office)		

* Attach Additional Sheets If Necessary

[illegible]

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 9/13/2017 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 2RP-4403 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 2 office in ARTESIA on or before 10/13/2017. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

- Nominal detection limits for field and laboratory analyses must be provided.

- Composite sampling is not generally allowed.

- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

•Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

• If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

• Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

District I
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State of New Mexico
Energy Minerals and Natural Resources

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NM OIL CONSERVATION
ARTESIA DISTRICT
SEP 13 2017
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Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

nAB1726352910

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Marathon Oil Permian LLC 372098	Contact Jennifer Van Curen
Address 5555 San Felipe Street, Houston, Texas 77056	Telephone No. 713-296-2500 (office)
Facility Name Shugart West 19 Federal #2	Facility Type Salt water disposal well

Surface Owner BLM	Mineral Owner BLM	API No. 30-015-30501

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	19	18S	31E	660	South	1930	East	Eddy

Latitude 32.7275543 **Longitude** -103.9065552 NAD83

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 55 bbls	Volume Recovered 15 bbls
Source of Release Injection pump	Date and Hour of Occurrence 9/11/2017	Date and Hour of Discovery 9/11/2017 8:40 PM CDST
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Shelly Tucker with BLM notified via email & C. Weaver and M. Bratcher with NMOCD	
By Whom? Wendy Gram	Date and Hour 9/11/2017 approximately 2:45 PM CDST	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Approximately 55 bbls spilled from the injection pump with a bad ball valve. The wells were shut in from initial 5 bbl release, but tanks were not isolated, allowing fluid to be pushed through the system and out bad ball valve on injection pump. This occurred at the Shugart West 19 Federal 1 well site on Friday, September 11th. The tanks were isolated and a vacuum truck was contacted to pick up standing fluid with 15 bbls were recovered with the vacuum truck.

Describe Area Affected and Cleanup Action Taken.*
The facility earthen berm held fluid with no breaches. This is an unlined facility, so saturated soil will immediately be removed and disposed at a NMOCD approved facility. The area will not be backfilled. A corrective action plan will submitted to the NMOCD and BLM for approval.

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

Jennifer Van Curen Signature:	OIL CONSERVATION DIVISION Approved by Environmental Specialist: Signed By	
Printed Name: Jennifer Van Curen		
Title: Sr. Regulatory Compliance	Approval Date: 9/19/17	Expiration Date: N/A
E-mail Address: jvancuren@marathonoil.com	Conditions of Approval: See attached	Attached ☐ 2RP-4404
Date: September 13, 2017 Phone: 832-480-1740 (cell) 713-296-2500 (office)		

* Attach Additional Sheets If Necessary

9/14/17AB

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 9/13/2017 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 3RP-4404 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

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The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

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- Composite sampling is not generally allowed.

- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

•Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

• If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

• Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

NM OIL CONSERVATION
ARTESIA DISTRICT
OCT 04 2017
RECEIVED

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

nAB1727856881

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Marathon Oil Company 372098	Contact: Jennifer Van Curen
Address: 5555 San Felipe St., Houston, TX 77056	Telephone No.: 713-296-2500
Facility Name: Shugart West 19 Federal 2 SWD	Facility Type: SWD

Surface Owner: Federal	Mineral Owner: Federal	API No.: 30-015-30501

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	19	18S	31E	660	FSL	1930	FEL	EDDY

Latitude32.7275543 **Longitude**-103.9065552 NAD83

NATURE OF RELEASE

Type of Release: Produced water	Volume of Release: 27.62 bbls	Volume Recovered: 0 bbls
Source of Release: flare	Date and Hour of Occurrence: 9/22/17: 0800 hrs	Date and Hour of Discovery: 9/22/2017: 0800 hrs
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom? M Bratcher (OCD) and Shelly Tucker (BLM)	
By Whom? Jennifer Van Curen	Date and Hour: 9/25/2017; 0800 hrs	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Upon arrival at the Shugart 19-2 SWD, the pumper noticed that the skim tank had overflowed. After further investigation it was determined that the water leg on the gun barrel hand been left shut, the liquids equalized and overflowed the skim tank. Approximately 27.62 bbls (.9bbls oil 26.72 bbls water) of produced fluid was spilled into the secondary containment. Clean up of fluid in secondary containment is underway.

Describe Area Affected and Cleanup Action Taken.*
The area affected was a 26' X 94' area. Vacuum truck was called out to pick up standing fluid.

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

Signature:	OIL CONSERVATION DIVISION Signed By Mike Bratcher	
Printed Name: Jennifer Van Curen	Approved by Environmental Specialist:	
Title: Sr. Regulatory Compliance Rep	Approval Date: 10/5/17	Expiration Date: N/A
E-mail Address: jvancuren@marathonoil.com	Conditions of Approval: See attached	Attached ☐ 2RP-4428
Date: 9/25/2017 Phone: 713-296-2500		

* Attach Additional Sheets If Necessary

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 10/4/2017 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 2RP-4428 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 2 office in ARTESIA on or before 11/4/2017. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

- Nominal detection limits for field and laboratory analyses must be provided.

- Composite sampling is not generally allowed.

- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

•Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

• If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

• Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
OCD Environmental Bureau Chief
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Santa Fe, New Mexico 87505
505-476-3465
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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 00818 POD1	CP	LE	1	4		26	18S	30E	599289	3620364*	3420	240		
CP 00767 POD1	CP	ED	3	2		35	18S	30E	599300	3619158*	4001	500		

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

Record Count: 2

UTMNAD83 Radius Search (in meters):

Easting (X): 602487.51 **Northing (Y):** 3621577.39 **Radius:** 5000

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

APPENDIX C

LABORATORY ANALYTICAL REPORTS

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

May 10, 2018

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

RE: Shuzart 19-2 OrderNo.: 1805022

Dear Austin Weyant:

Hall Environmental Analysis Laboratory received 6 sample(s) on 5/1/2018 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 #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L1-0.5
Project: Shuzart 19-2
Collection Date: 4/26/2018 12:03:00 PM
Lab ID: 1805022-001
Matrix: SOIL
Received Date: 5/1/2018 9:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	4700	300		mg/Kg	200	5/9/2018 12:07:33 AM	37967
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	220	91		mg/Kg	10	5/4/2018 10:00:02 PM	37939
Motor Oil Range Organics (MRO)	460	460		mg/Kg	10	5/4/2018 10:00:02 PM	37939
Surr: DNOP	0	70-130	S	%Rec	10	5/4/2018 10:00:02 PM	37939
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	7.3	4.8		mg/Kg	1	5/4/2018 3:40:07 PM	37890
Surr: BFB	150	15-316		%Rec	1	5/4/2018 3:40:07 PM	37890
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.095		mg/Kg	1	5/3/2018 7:41:47 PM	37890
Benzene	ND	0.024		mg/Kg	1	5/3/2018 7:41:47 PM	37890
Toluene	0.076	0.048		mg/Kg	1	5/3/2018 7:41:47 PM	37890
Ethylbenzene	0.30	0.048		mg/Kg	1	5/3/2018 7:41:47 PM	37890
Xylenes, Total	0.46	0.095		mg/Kg	1	5/3/2018 7:41:47 PM	37890
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	1	5/3/2018 7:41:47 PM	37890

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L2-0.5
Project: Shuzart 19-2
Collection Date: 4/26/2018 12:05:00 PM
Lab ID: 1805022-002
Matrix: SOIL
Received Date: 5/1/2018 9:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	4300	300		mg/Kg	200	5/9/2018 12:19:58 AM	37967
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	45	9.8		mg/Kg	1	5/4/2018 10:22:13 PM	37939
Motor Oil Range Organics (MRO)	86	49		mg/Kg	1	5/4/2018 10:22:13 PM	37939
Surr: DNOP	80.6	70-130		%Rec	1	5/4/2018 10:22:13 PM	37939
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	5/4/2018 4:03:22 PM	37890
Surr: BFB	125	15-316		%Rec	1	5/4/2018 4:03:22 PM	37890
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.093		mg/Kg	1	5/3/2018 8:28:43 PM	37890
Benzene	ND	0.023		mg/Kg	1	5/3/2018 8:28:43 PM	37890
Toluene	ND	0.047		mg/Kg	1	5/3/2018 8:28:43 PM	37890
Ethylbenzene	0.17	0.047		mg/Kg	1	5/3/2018 8:28:43 PM	37890
Xylenes, Total	0.29	0.093		mg/Kg	1	5/3/2018 8:28:43 PM	37890
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	5/3/2018 8:28:43 PM	37890

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L2-1
Project: Shuzart 19-2
Collection Date: 4/26/2018 12:10:00 PM
Lab ID: 1805022-003
Matrix: SOIL
Received Date: 5/1/2018 9:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	3000	150		mg/Kg	100	5/9/2018 12:32:22 AM	37967
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	7300	960		mg/Kg	100	5/4/2018 10:44:20 PM	37939
Motor Oil Range Organics (MRO)	7200	4800		mg/Kg	100	5/4/2018 10:44:20 PM	37939
Surr: DNOP	0	70-130	S	%Rec	100	5/4/2018 10:44:20 PM	37939
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	52	24		mg/Kg	5	5/4/2018 8:19:42 PM	37890
Surr: BFB	142	15-316		%Rec	5	5/4/2018 8:19:42 PM	37890
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.48		mg/Kg	5	5/3/2018 8:52:03 PM	37890
Benzene	ND	0.12		mg/Kg	5	5/3/2018 8:52:03 PM	37890
Toluene	0.71	0.24		mg/Kg	5	5/3/2018 8:52:03 PM	37890
Ethylbenzene	1.5	0.24		mg/Kg	5	5/3/2018 8:52:03 PM	37890
Xylenes, Total	2.7	0.48		mg/Kg	5	5/3/2018 8:52:03 PM	37890
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	5	5/3/2018 8:52:03 PM	37890

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L3-0.5
Project: Shuzart 19-2
Collection Date: 4/26/2018 12:12:00 PM
Lab ID: 1805022-004
Matrix: SOIL
Received Date: 5/1/2018 9:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	2400	150		mg/Kg	100	5/9/2018 12:44:47 AM	37967
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	36	10		mg/Kg	1	5/4/2018 11:06:24 PM	37939
Motor Oil Range Organics (MRO)	64	50		mg/Kg	1	5/4/2018 11:06:24 PM	37939
Surr: DNOP	84.2	70-130		%Rec	1	5/4/2018 11:06:24 PM	37939
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/4/2018 9:06:12 PM	37890
Surr: BFB	94.2	15-316		%Rec	1	5/4/2018 9:06:12 PM	37890
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.098		mg/Kg	1	5/3/2018 9:38:15 PM	37890
Benzene	ND	0.025		mg/Kg	1	5/3/2018 9:38:15 PM	37890
Toluene	ND	0.049		mg/Kg	1	5/3/2018 9:38:15 PM	37890
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2018 9:38:15 PM	37890
Xylenes, Total	ND	0.098		mg/Kg	1	5/3/2018 9:38:15 PM	37890
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	5/3/2018 9:38:15 PM	37890

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L3-1
Project: Shuzart 19-2
Collection Date: 4/26/2018 12:15:00 PM
Lab ID: 1805022-005
Matrix: SOIL
Received Date: 5/1/2018 9:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	910	30		mg/Kg	20	5/7/2018 5:01:48 PM	37967
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	310	100		mg/Kg	10	5/4/2018 11:28:36 PM	37939
Motor Oil Range Organics (MRO)	520	500		mg/Kg	10	5/4/2018 11:28:36 PM	37939
Surr: DNOP	0	70-130	S	%Rec	10	5/4/2018 11:28:36 PM	37939
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/4/2018 9:29:33 PM	37890
Surr: BFB	87.0	15-316		%Rec	1	5/4/2018 9:29:33 PM	37890
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	5/3/2018 10:01:27 PM	37890
Benzene	ND	0.024		mg/Kg	1	5/3/2018 10:01:27 PM	37890
Toluene	ND	0.048		mg/Kg	1	5/3/2018 10:01:27 PM	37890
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2018 10:01:27 PM	37890
Xylenes, Total	ND	0.097		mg/Kg	1	5/3/2018 10:01:27 PM	37890
Surr: 4-Bromofluorobenzene	99.5	80-120		%Rec	1	5/3/2018 10:01:27 PM	37890

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L4-0.5
Project: Shuzart 19-2
Collection Date: 4/26/2018 12:20:00 PM
Lab ID: 1805022-006
Matrix: SOIL
Received Date: 5/1/2018 9:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	2600	150		mg/Kg	100	5/9/2018 12:57:11 AM	37967
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	58	9.7		mg/Kg	1	5/4/2018 11:50:33 PM	37940
Motor Oil Range Organics (MRO)	160	48		mg/Kg	1	5/4/2018 11:50:33 PM	37940
Surr: DNOP	84.6	70-130		%Rec	1	5/4/2018 11:50:33 PM	37940
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	5.7	4.8		mg/Kg	1	5/4/2018 9:53:00 PM	37890
Surr: BFB	142	15-316		%Rec	1	5/4/2018 9:53:00 PM	37890
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.096		mg/Kg	1	5/3/2018 10:24:45 PM	37890
Benzene	ND	0.024		mg/Kg	1	5/3/2018 10:24:45 PM	37890
Toluene	ND	0.048		mg/Kg	1	5/3/2018 10:24:45 PM	37890
Ethylbenzene	0.084	0.048		mg/Kg	1	5/3/2018 10:24:45 PM	37890
Xylenes, Total	0.19	0.096		mg/Kg	1	5/3/2018 10:24:45 PM	37890
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	1	5/3/2018 10:24:45 PM	37890

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#: **1805022**

10-May-18

Client: Souder, Miller & Associates

Project: Shuzart 19-2

Sample ID	**MB-37967**	SampType:	**mblk**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**37967**	RunNo:	**51083**					
Prep Date:	**5/7/2018**	Analysis Date:	**5/7/2018**	SeqNo:	**1659638**	Units:	**mg/Kg**			

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

Sample ID	**LCS-37967**	SampType:	**lcs**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**37967**	RunNo:	**51083**					
Prep Date:	**5/7/2018**	Analysis Date:	**5/7/2018**	SeqNo:	**1659639**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.0	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#: **1805022**

10-May-18

Client: Souder, Miller & Associates

Project: Shuzart 19-2

Sample ID	**LCS-37940**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**LCSS**	Batch ID:	**37940**		RunNo:	**51045**				
Prep Date:	**5/3/2018**	Analysis Date:	**5/4/2018**		SeqNo:	**1657933**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.4	70	130			
Surr: DNOP	5.2		5.000		105	70	130			

Sample ID	**MB-37940**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**PBS**	Batch ID:	**37940**		RunNo:	**51045**				
Prep Date:	**5/3/2018**	Analysis Date:	**5/4/2018**		SeqNo:	**1657934**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	12		10.00		119	70	130			

Sample ID	**LCS-37939**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**LCSS**	Batch ID:	**37939**		RunNo:	**51045**				
Prep Date:	**5/3/2018**	Analysis Date:	**5/4/2018**		SeqNo:	**1658642**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.7	70	130			
Surr: DNOP	4.7		5.000		93.6	70	130			

Sample ID	**MB-37939**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**PBS**	Batch ID:	**37939**		RunNo:	**51045**				
Prep Date:	**5/3/2018**	Analysis Date:	**5/4/2018**		SeqNo:	**1658643**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		99.3	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting 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#: **1805022**

10-May-18

Client: Souder, Miller & Associates

Project: Shuzart 19-2

Sample ID	**MB-37890**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**37890**	RunNo:	**50982**					
Prep Date:	**5/1/2018**	Analysis Date:	**5/2/2018**	SeqNo:	**1655670**	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	910		1000		91.2	15	316			

Sample ID	**LCS-37890**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**37890**	RunNo:	**50982**					
Prep Date:	**5/1/2018**	Analysis Date:	**5/2/2018**	SeqNo:	**1655671**	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	104	75.9	131			
Surr: BFB	1000		1000		102	15	316			

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#: **1805022**

10-May-18

Client: Souder, Miller & Associates

Project: Shuzart 19-2

Sample ID **MB-37890**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **37890**	RunNo: **50982**
Prep Date: **5/1/2018**	Analysis Date: **5/2/2018**	SeqNo: **1655710** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

Sample ID **LCS-37890**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **37890**	RunNo: **50982**
Prep Date: **5/1/2018**	Analysis Date: **5/2/2018**	SeqNo: **1655711** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.96	0.10	1.000	0	95.5	70.1	121			
Benzene	0.98	0.025	1.000	0	97.9	77.3	128			
Toluene	0.99	0.050	1.000	0	99.4	79.2	125			
Ethylbenzene	0.99	0.050	1.000	0	99.2	80.7	127			
Xylenes, Total	3.1	0.10	3.000	0	102	81.6	129			
Surr: 4-Bromofluorobenzene	1.0		1.000		103	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
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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: 1805022 | RcptNo: 1

Received By: **Isaiah Ortiz** 5/1/2018 9:15:00 AM

Completed By: **Erin Melendrez** 5/1/2018 12:03:55 PM

Reviewed By: ENM 5/1/18

LB: 2no

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 ☑	
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: 2no (≤2 or ≥12 unless noted)

Adjusted? 5/1

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	0.8	Good	Yes			

Chain-of-Custody Record

Client: SMA

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

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

Project Name: Shugart 19-2

Project #:

Project Manager: Austin Weggant

Sampler: Heather Patterson

On Ice: ☐ Yes ☐ No

Sample Temperature: 0.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1805022	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
4/24/18	12:03	Soil	L1-0.5	4oz		-001	X		X					X								
	12:05		L2-0.5			-002	X		X					X								
	12:10		L2-1			-003	X		X					X								
	12:12		L3-0.5			-004	X		X					X								
	12:15		L3-1			-005	X		X					X								
	12:20		L4-0.5			-006	X		X					X								

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/30/18	0830	Heather Patterson		4/30/18	0830
Date:	Time:	Relinquished by:	Received by:	Date	Time
4/30/18	1500		Courier	5/1/18	915

Remarks: Matthew

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

May 29, 2018

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

RE: Shugart 19-2 OrderNo.: 1805A37

Dear Austin Weyant:

Hall Environmental Analysis Laboratory received 11 sample(s) on 5/18/2018 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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L4-3.5
Project: Shugart 19-2
Collection Date: 5/16/2018 9:59:00 AM
Lab ID: 1805A37-001
Matrix: SOIL
Received Date: 5/18/2018 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	3100	150		mg/Kg	100	5/24/2018 3:22:27 PM	38282
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	130	9.9		mg/Kg	1	5/23/2018 5:56:53 PM	38269
Motor Oil Range Organics (MRO)	170	50		mg/Kg	1	5/23/2018 5:56:53 PM	38269
Surr: DNOP	111	70-130		%Rec	1	5/23/2018 5:56:53 PM	38269
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/23/2018 1:33:29 AM	38224
Surr: BFB	87.1	15-316		%Rec	1	5/23/2018 1:33:29 AM	38224
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	5/23/2018 1:33:29 AM	38224
Benzene	ND	0.024		mg/Kg	1	5/23/2018 1:33:29 AM	38224
Toluene	ND	0.048		mg/Kg	1	5/23/2018 1:33:29 AM	38224
Ethylbenzene	ND	0.048		mg/Kg	1	5/23/2018 1:33:29 AM	38224
Xylenes, Total	ND	0.097		mg/Kg	1	5/23/2018 1:33:29 AM	38224
Surr: 4-Bromofluorobenzene	96.2	80-120		%Rec	1	5/23/2018 1:33:29 AM	38224

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L3-2
Project: Shugart 19-2
Collection Date: 5/16/2018 10:09:00 AM
Lab ID: 1805A37-002
Matrix: SOIL
Received Date: 5/18/2018 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	2800	150		mg/Kg	100	5/24/2018 3:34:51 PM	38282
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	88	9.8		mg/Kg	1	5/23/2018 7:09:51 PM	38269
Motor Oil Range Organics (MRO)	100	49		mg/Kg	1	5/23/2018 7:09:51 PM	38269
Surr: DNOP	113	70-130		%Rec	1	5/23/2018 7:09:51 PM	38269
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	5/23/2018 1:57:04 AM	38224
Surr: BFB	86.5	15-316		%Rec	1	5/23/2018 1:57:04 AM	38224
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.092		mg/Kg	1	5/23/2018 1:57:04 AM	38224
Benzene	ND	0.023		mg/Kg	1	5/23/2018 1:57:04 AM	38224
Toluene	ND	0.046		mg/Kg	1	5/23/2018 1:57:04 AM	38224
Ethylbenzene	ND	0.046		mg/Kg	1	5/23/2018 1:57:04 AM	38224
Xylenes, Total	ND	0.092		mg/Kg	1	5/23/2018 1:57:04 AM	38224
Surr: 4-Bromofluorobenzene	95.0	80-120		%Rec	1	5/23/2018 1:57:04 AM	38224

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW1
Project: Shugart 19-2
Collection Date: 5/16/2018 10:43:00 AM
Lab ID: 1805A37-003
Matrix: SOIL
Received Date: 5/18/2018 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	4100	150		mg/Kg	100	5/24/2018 3:47:16 PM	38282
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	5/23/2018 7:34:15 PM	38269
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/23/2018 7:34:15 PM	38269
Surr: DNOP	115	70-130		%Rec	1	5/23/2018 7:34:15 PM	38269
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	5/23/2018 2:20:30 AM	38224
Surr: BFB	91.0	15-316		%Rec	1	5/23/2018 2:20:30 AM	38224
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.092		mg/Kg	1	5/23/2018 2:20:30 AM	38224
Benzene	ND	0.023		mg/Kg	1	5/23/2018 2:20:30 AM	38224
Toluene	ND	0.046		mg/Kg	1	5/23/2018 2:20:30 AM	38224
Ethylbenzene	ND	0.046		mg/Kg	1	5/23/2018 2:20:30 AM	38224
Xylenes, Total	ND	0.092		mg/Kg	1	5/23/2018 2:20:30 AM	38224
Surr: 4-Bromofluorobenzene	99.8	80-120		%Rec	1	5/23/2018 2:20:30 AM	38224

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW2
Project: Shugart 19-2
Collection Date: 5/16/2018 10:46:00 AM
Lab ID: 1805A37-004
Matrix: SOIL
Received Date: 5/18/2018 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	2700	150		mg/Kg	100	5/24/2018 4:24:30 PM	38282
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	31	10		mg/Kg	1	5/23/2018 7:58:32 PM	38269
Motor Oil Range Organics (MRO)	56	50		mg/Kg	1	5/23/2018 7:58:32 PM	38269
Surr: DNOP	115	70-130		%Rec	1	5/23/2018 7:58:32 PM	38269
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/23/2018 2:43:57 AM	38224
Surr: BFB	93.3	15-316		%Rec	1	5/23/2018 2:43:57 AM	38224
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	5/23/2018 2:43:57 AM	38224
Benzene	ND	0.025		mg/Kg	1	5/23/2018 2:43:57 AM	38224
Toluene	ND	0.050		mg/Kg	1	5/23/2018 2:43:57 AM	38224
Ethylbenzene	ND	0.050		mg/Kg	1	5/23/2018 2:43:57 AM	38224
Xylenes, Total	ND	0.10		mg/Kg	1	5/23/2018 2:43:57 AM	38224
Surr: 4-Bromofluorobenzene	99.7	80-120		%Rec	1	5/23/2018 2:43:57 AM	38224

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L5-3
Project: Shugart 19-2
Collection Date: 5/16/2018 11:55:00 AM
Lab ID: 1805A37-005
Matrix: SOIL
Received Date: 5/18/2018 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	3800	150		mg/Kg	100	5/24/2018 4:36:54 PM	38282
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	5/23/2018 8:22:52 PM	38269
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/23/2018 8:22:52 PM	38269
Surr: DNOP	114	70-130		%Rec	1	5/23/2018 8:22:52 PM	38269
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/23/2018 3:07:22 AM	38224
Surr: BFB	90.0	15-316		%Rec	1	5/23/2018 3:07:22 AM	38224
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.099		mg/Kg	1	5/23/2018 3:07:22 AM	38224
Benzene	ND	0.025		mg/Kg	1	5/23/2018 3:07:22 AM	38224
Toluene	ND	0.050		mg/Kg	1	5/23/2018 3:07:22 AM	38224
Ethylbenzene	ND	0.050		mg/Kg	1	5/23/2018 3:07:22 AM	38224
Xylenes, Total	ND	0.099		mg/Kg	1	5/23/2018 3:07:22 AM	38224
Surr: 4-Bromofluorobenzene	98.7	80-120		%Rec	1	5/23/2018 3:07:22 AM	38224

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L8-1
Project: Shugart 19-2
Collection Date: 5/16/2018 12:45:00 PM
Lab ID: 1805A37-006
Matrix: SOIL
Received Date: 5/18/2018 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	2400	75		mg/Kg	50	5/24/2018 4:49:18 PM	38282
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	6900	200		mg/Kg	20	5/23/2018 8:47:10 PM	38269
Motor Oil Range Organics (MRO)	2900	990		mg/Kg	20	5/23/2018 8:47:10 PM	38269
Surr: DNOP	0	70-130	S	%Rec	20	5/23/2018 8:47:10 PM	38269
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	310	23		mg/Kg	5	5/23/2018 3:30:45 AM	38224
Surr: BFB	494	15-316	S	%Rec	5	5/23/2018 3:30:45 AM	38224
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.46		mg/Kg	5	5/23/2018 3:30:45 AM	38224
Benzene	ND	0.11		mg/Kg	5	5/23/2018 3:30:45 AM	38224
Toluene	0.26	0.23		mg/Kg	5	5/23/2018 3:30:45 AM	38224
Ethylbenzene	8.7	0.23		mg/Kg	5	5/23/2018 3:30:45 AM	38224
Xylenes, Total	9.9	0.46		mg/Kg	5	5/23/2018 3:30:45 AM	38224
Surr: 4-Bromofluorobenzene	152	80-120	S	%Rec	5	5/23/2018 3:30:45 AM	38224

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L1-1.5
Project: Shugart 19-2
Collection Date: 5/16/2018 12:52:00 PM
Lab ID: 1805A37-007
Matrix: SOIL
Received Date: 5/18/2018 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	3300	150		mg/Kg	100	5/24/2018 5:01:42 PM	38282

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L6-3
Project: Shugart 19-2
Collection Date: 5/16/2018 1:16:00 PM
Lab ID: 1805A37-008
Matrix: SOIL
Received Date: 5/18/2018 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	440	30		mg/Kg	20	5/23/2018 10:23:31 PM	38282
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	5/23/2018 9:35:36 PM	38269
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/23/2018 9:35:36 PM	38269
Surr: DNOP	121	70-130		%Rec	1	5/23/2018 9:35:36 PM	38269
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/23/2018 3:54:13 AM	38224
Surr: BFB	90.8	15-316		%Rec	1	5/23/2018 3:54:13 AM	38224
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.095		mg/Kg	1	5/23/2018 3:54:13 AM	38224
Benzene	ND	0.024		mg/Kg	1	5/23/2018 3:54:13 AM	38224
Toluene	ND	0.048		mg/Kg	1	5/23/2018 3:54:13 AM	38224
Ethylbenzene	ND	0.048		mg/Kg	1	5/23/2018 3:54:13 AM	38224
Xylenes, Total	ND	0.095		mg/Kg	1	5/23/2018 3:54:13 AM	38224
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	5/23/2018 3:54:13 AM	38224

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L7-3.5
Project: Shugart 19-2
Collection Date: 5/16/2018 1:21:00 PM
Lab ID: 1805A37-009
Matrix: SOIL
Received Date: 5/18/2018 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	1800	75		mg/Kg	50	5/24/2018 5:14:06 PM	38282
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	5/23/2018 9:59:54 PM	38269
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/23/2018 9:59:54 PM	38269
Surr: DNOP	112	70-130		%Rec	1	5/23/2018 9:59:54 PM	38269
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	5/23/2018 4:17:39 AM	38224
Surr: BFB	91.0	15-316		%Rec	1	5/23/2018 4:17:39 AM	38224
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.093		mg/Kg	1	5/23/2018 4:17:39 AM	38224
Benzene	ND	0.023		mg/Kg	1	5/23/2018 4:17:39 AM	38224
Toluene	ND	0.046		mg/Kg	1	5/23/2018 4:17:39 AM	38224
Ethylbenzene	ND	0.046		mg/Kg	1	5/23/2018 4:17:39 AM	38224
Xylenes, Total	ND	0.093		mg/Kg	1	5/23/2018 4:17:39 AM	38224
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	5/23/2018 4:17:39 AM	38224

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L9-2
Project: Shugart 19-2
Collection Date: 5/16/2018 12:55:00 PM
Lab ID: 1805A37-010
Matrix: SOIL
Received Date: 5/18/2018 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	3500	150		mg/Kg	100	5/24/2018 5:26:30 PM	38282
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	48	9.8		mg/Kg	1	5/23/2018 10:24:03 PM	38269
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/23/2018 10:24:03 PM	38269
Surr: DNOP	103	70-130		%Rec	1	5/23/2018 10:24:03 PM	38269
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/23/2018 12:16:07 PM	38224
Surr: BFB	89.6	15-316		%Rec	1	5/23/2018 12:16:07 PM	38224
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	5/23/2018 12:16:07 PM	38224
Benzene	ND	0.024		mg/Kg	1	5/23/2018 12:16:07 PM	38224
Toluene	ND	0.048		mg/Kg	1	5/23/2018 12:16:07 PM	38224
Ethylbenzene	ND	0.048		mg/Kg	1	5/23/2018 12:16:07 PM	38224
Xylenes, Total	ND	0.097		mg/Kg	1	5/23/2018 12:16:07 PM	38224
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	5/23/2018 12:16:07 PM	38224

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L3-2.5
Project: Shugart 19-2
Collection Date: 5/16/2018 11:58:00 AM
Lab ID: 1805A37-011
Matrix: SOIL
Received Date: 5/18/2018 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	2800	150		mg/Kg	100	5/24/2018 5:38:55 PM	38282
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	19	9.9		mg/Kg	1	5/23/2018 10:48:27 PM	38269
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/23/2018 10:48:27 PM	38269
Surr: DNOP	111	70-130		%Rec	1	5/23/2018 10:48:27 PM	38269
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/23/2018 12:39:24 PM	38224
Surr: BFB	86.4	15-316		%Rec	1	5/23/2018 12:39:24 PM	38224
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.096		mg/Kg	1	5/23/2018 12:39:24 PM	38224
Benzene	ND	0.024		mg/Kg	1	5/23/2018 12:39:24 PM	38224
Toluene	ND	0.048		mg/Kg	1	5/23/2018 12:39:24 PM	38224
Ethylbenzene	ND	0.048		mg/Kg	1	5/23/2018 12:39:24 PM	38224
Xylenes, Total	ND	0.096		mg/Kg	1	5/23/2018 12:39:24 PM	38224
Surr: 4-Bromofluorobenzene	97.6	80-120		%Rec	1	5/23/2018 12:39:24 PM	38224

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#: **1805A37**

29-May-18

Client: Souder, Miller & Associates

Project: Shugart 19-2

Sample ID	**MB-38282**	SampType:	**mblk**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**38282**	RunNo:	**51462**					
Prep Date:	**5/23/2018**	Analysis Date:	**5/23/2018**	SeqNo:	**1677418**	Units:	**mg/Kg**			

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

Sample ID	**LCS-38282**	SampType:	**lcs**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**38282**	RunNo:	**51462**					
Prep Date:	**5/23/2018**	Analysis Date:	**5/23/2018**	SeqNo:	**1677419**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.2	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#: **1805A37**

29-May-18

Client: Souder, Miller & Associates

Project: Shugart 19-2

Sample ID	**LCS-38208**	SampType: **LCS**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**LCSS**	Batch ID: **38208**			RunNo: **51394**					
Prep Date:	**5/18/2018**	Analysis Date: **5/22/2018**			SeqNo: **1673851**		Units: **%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.7		5.000		93.9	70	130			

Sample ID	**MB-38208**	SampType: **MBLK**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**PBS**	Batch ID: **38208**			RunNo: **51394**					
Prep Date:	**5/18/2018**	Analysis Date: **5/21/2018**			SeqNo: **1673852**		Units: **%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.9		10.00		98.6	70	130			

Sample ID	**1805A37-001AMS**	SampType: **MS**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**L4-3.5**	Batch ID: **38269**			RunNo: **51394**					
Prep Date:	**5/22/2018**	Analysis Date: **5/23/2018**			SeqNo: **1676928**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	100	10	49.90	134.1	-67.7	62	120			S
Surr: DNOP	5.4		4.990		109	70	130			

Sample ID	**1805A37-001AMSD**	SampType: **MSD**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**L4-3.5**	Batch ID: **38269**			RunNo: **51394**					
Prep Date:	**5/22/2018**	Analysis Date: **5/23/2018**			SeqNo: **1676929**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	89	9.9	49.70	134.1	-91.7	62	120	12.5	20	S
Surr: DNOP	5.3		4.970		108	70	130	0	0	

Sample ID	**LCS-38269**	SampType: **LCS**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**LCSS**	Batch ID: **38269**			RunNo: **51394**					
Prep Date:	**5/22/2018**	Analysis Date: **5/23/2018**			SeqNo: **1676949**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.2	70	130			
Surr: DNOP	5.3		5.000		105	70	130			

Sample ID	**MB-38269**	SampType: **MBLK**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**PBS**	Batch ID: **38269**			RunNo: **51394**					
Prep Date:	**5/22/2018**	Analysis Date: **5/23/2018**			SeqNo: **1676950**		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								

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#: **1805A37**

29-May-18

Client: Souder, Miller & Associates

Project: Shugart 19-2

Sample ID	**MB-38269**	SampType:	**MBLK**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**PBS**	Batch ID:	**38269**	RunNo:	**51394**					
Prep Date:	**5/22/2018**	Analysis Date:	**5/23/2018**	SeqNo:	**1676950**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	12		10.00		116	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting 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#: **1805A37**

29-May-18

Client: Souder, Miller & Associates

Project: Shugart 19-2

Sample ID	**MB-38224**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**38224**	RunNo:	**51433**					
Prep Date:	**5/21/2018**	Analysis Date:	**5/22/2018**	SeqNo:	**1674612**	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	910		1000		90.6	15	316			

Sample ID	**LCS-38224**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**38224**	RunNo:	**51433**					
Prep Date:	**5/21/2018**	Analysis Date:	**5/22/2018**	SeqNo:	**1674613**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	29	5.0	25.00	0	118	75.9	131			
Surr: BFB	1000		1000		104	15	316			

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#: **1805A37**

29-May-18

Client: Souder, Miller & Associates

Project: Shugart 19-2

Sample ID **MB-38224**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **38224**	RunNo: **51433**
Prep Date: **5/21/2018**	Analysis Date: **5/22/2018**	SeqNo: **1674648** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
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-38224**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **38224**	RunNo: **51433**
Prep Date: **5/21/2018**	Analysis Date: **5/22/2018**	SeqNo: **1674649** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.93	0.10	1.000	0	92.5	70.1	121			
Benzene	0.95	0.025	1.000	0	94.6	77.3	128			
Toluene	0.96	0.050	1.000	0	96.2	79.2	125			
Ethylbenzene	0.95	0.050	1.000	0	95.4	80.7	127			
Xylenes, Total	2.9	0.10	3.000	0	97.7	81.6	129			
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

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: 1805A37 RcptNo: 1

Received By: **Michelle Garcia** 5/18/2018 9:30:00 AM Michelle Garcia

Completed By: **Michelle Garcia** 5/18/2018 12:44:47 PM Michelle Garcia

Reviewed By: 05/18/18 labeled by: 05/18/18

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 ☑	
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 (<2 or >12 unless noted)
Adjusted? 05/18/18
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	2.8	Good	Yes			

Chain-of-Custody Record

Client: SMA

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

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

Project Name: Shugart 19-2

Project #:

Project Manager: Austin Weygant

Sampler: SH/Hmp

On Ice: ☐ Yes ☐ No

Sample Temperature: 2.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1805137	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F^-,Cl^-,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
5/16/18	9:59	Soil	L4-3.5	4oz		001	X		X					X								
	10:09		L3-2			002	X		X					X								
	10:43		SW1			003	X		X					X								
	10:46		SW2			004	X		X					X								
	11:55		L5-3			005	X		X					X								
	12:45		L8-1			006	X		X					X								
	12:52		L1-1.5			007								X								
	1:16		L6-3			008	X		X					X								
	1:21		L7-3.5			009	X		X					X								
	12:55		L9-2			010	X		X					X								
	11:58	Rock	L3-2.5	Qt Bag		011																

Date:	Time:	Relinquished by:	Received by:	Date	Time
5/17/18	1310			5/17/18	1310
Date:	Time:	Relinquished by:	Received by:	Date	Time
5/17/18	1900			05/18/18	0930

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.