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

State of New Mexico
Energy Minerals and Natural Resources Department

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

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

Incident ID	NCS1915527449
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Hilcorp Energy	OGRID 372171
Contact Name Clara Cardoza	Contact Telephone 505.564.0733
Contact email ccardoza@hilcorp.com	Incident # *(assigned by OCD)* NCS1915527449
Contact mailing address 382 CR 3100, Aztec NM 87410	

Location of Release Source

Latitude 36.6088295 Longitude -107.7280273
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Schwerdtfeger A 3M	Site Type Well Site
Date Release Discovered BGT Closure 5/31/2019	API# *(if applicable)* 30-045-11605

Unit Letter	Section	Township	Range	County
D	06	27N	8W	San Juan

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

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

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

Cause of Release Closure of two BGTs on site – the 95 bbl BGT did not meet closure standards.

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

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

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

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

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

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

Printed Name: Clara Cardoza Title: Environmental Specialist

Signature: Clara Cardoza Date: 12/04/2019

email: ccardoza@hilcorp.com Telephone: 505.564.0733

OCD Only

Received by: _____ Date: _____

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Page 3

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

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

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

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

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Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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

Printed Name: Clara Cardoza Title: Environmental Specialist

Signature: Clara Cardoza Date: 12/04/2019

email: ccardoza@hilcorp.com Telephone: 505.564.0733

OCD Only

Received by: Date: _____

Form C-141
Page 6

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

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

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

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

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

Printed Name: Clara Cardoza Title: Environmental Specialist

Signature: Clara Cardoza Date: 12/04/2019

email: ccardoza@hilcorp.com Telephone: 505.564.0733

OCD Only

Received by: OCD 12/4/2019 Date:

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

Closure Approved by: Cory Date: 2/18/2020

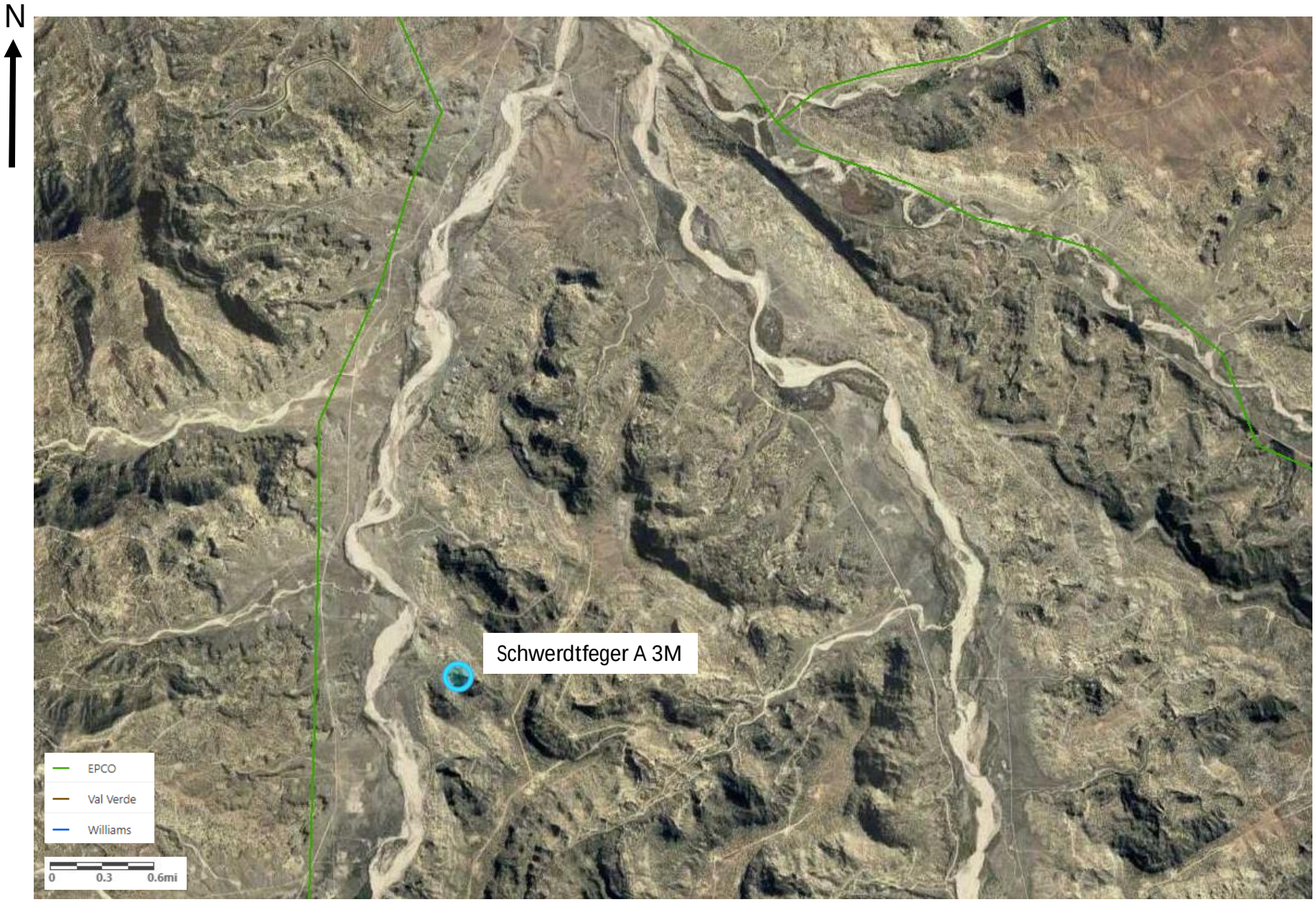
Printed Name: Cory Title: Environmental Specialist

Executive Summary

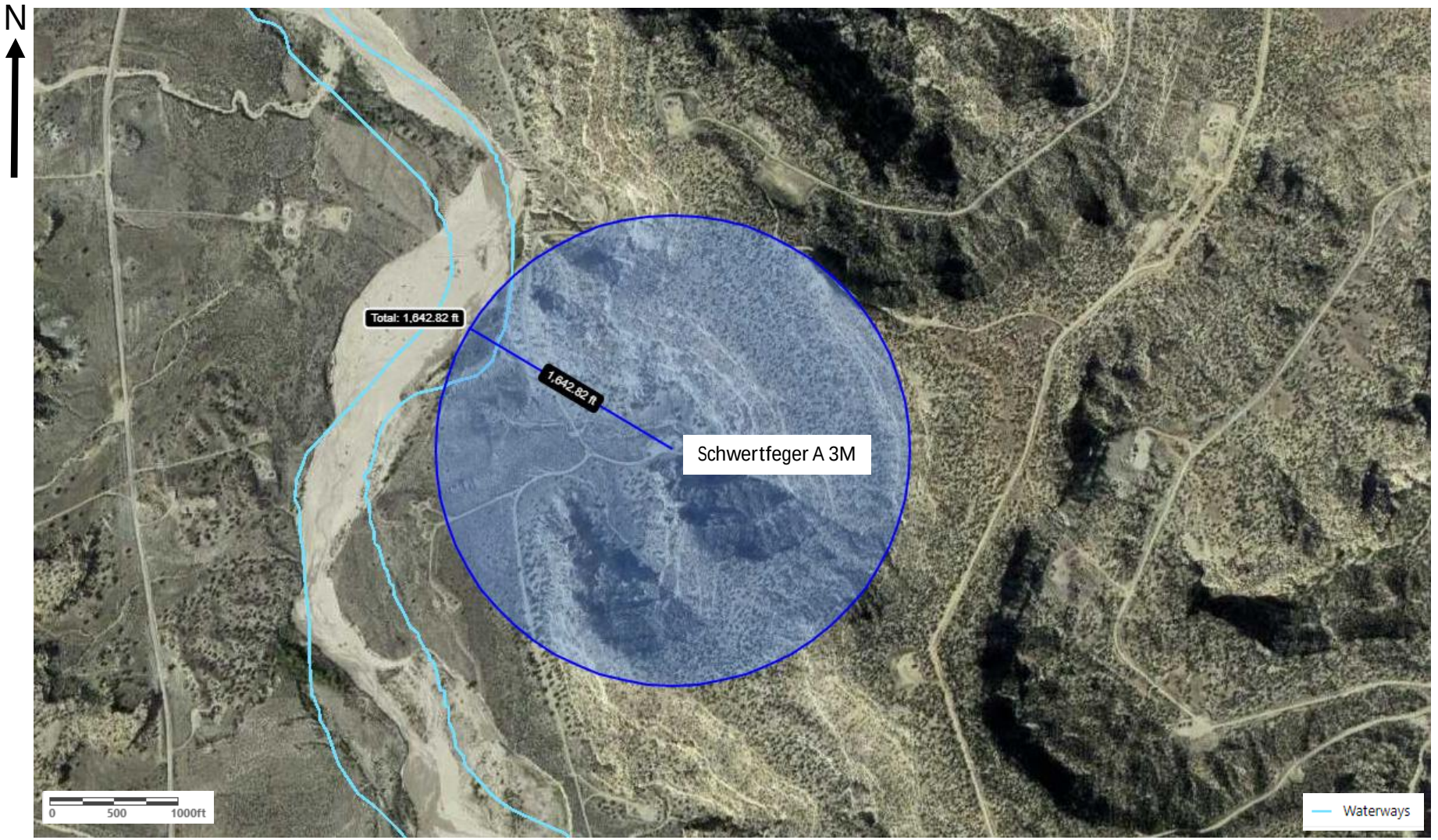
On May 31, 2019 Hilcorp Energy sampled 2 – BGTs at the Schwerdtfeger A 3M for closure. The 95 bbl BGT did not pass in accordance with the approved BGT pit closure plan approved by NMOCD on 07/06/2016. Hilcorp then requested permission to backfill both BGTs with the intent of re-excavating and removing remaining contaminants of the 95 bbl BGT once the re-fracing was completed at that site (email included).

Confirmation samples were taken in the area of the 95 bbl BGT on July 15, 2019 in accordance with NMAC 19.15.29.12.D. NMOCD was present for sampling. Three sample were taken and came back in compliance with clean up action levels. A variance was approved for sampling methods and is included in this report.


N
Schwerdtfeger A 3M
0
15
30ft
95 bbl BGT
21 bbl BGT

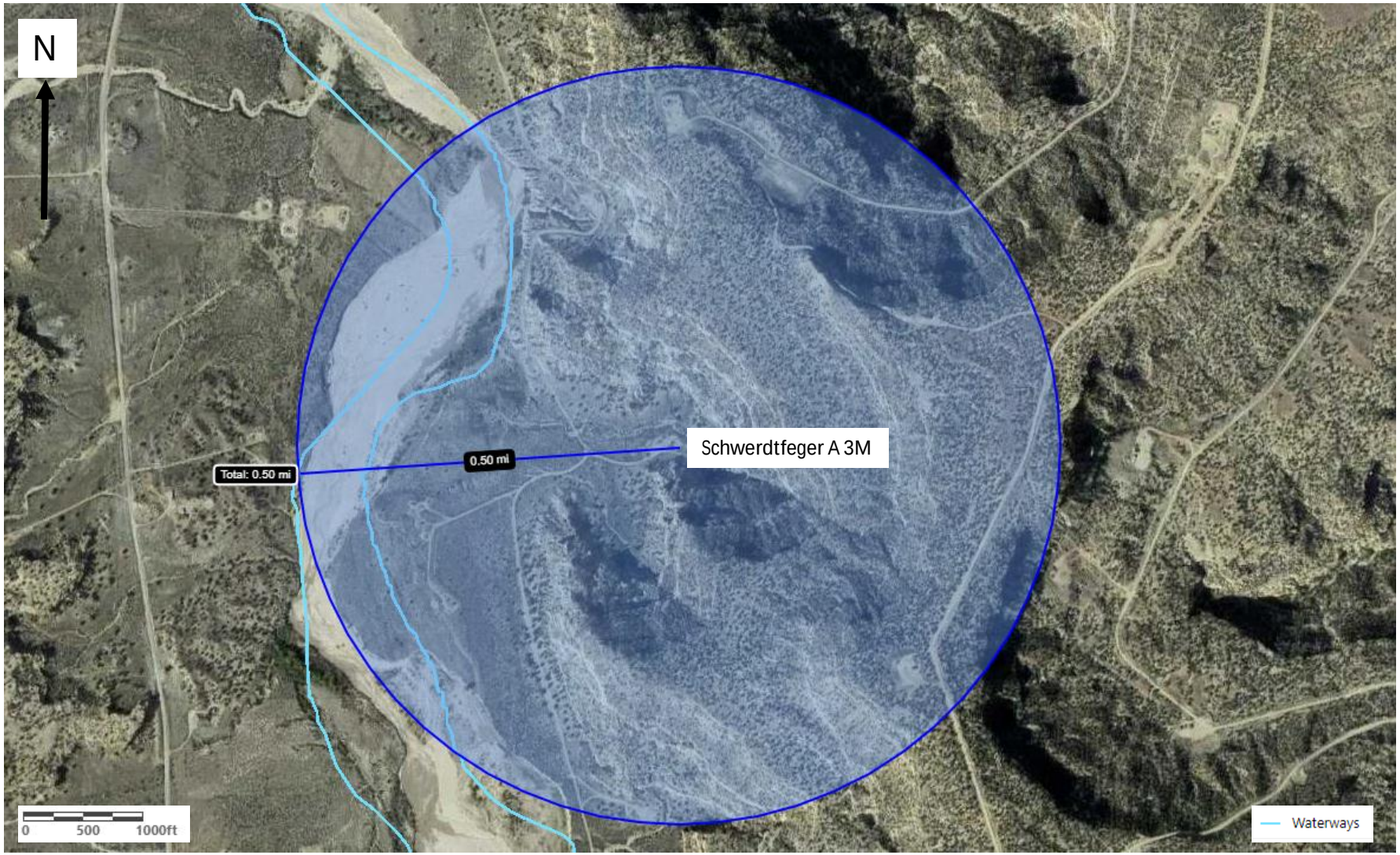

N
Schwerdtfeger A 3M
EPCO
Val Verde
Williams
0
0.3
0.6mi

Distance to watercourse



Distance to watercourse approximately 1,643 ft

Water sources or courses within ½ mile



Depth to groundwater

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

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

No records found.

PLSS Search:

Section(s): 5, 6, 7, 8 **Township:** 27N **Range:** 08W

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

12/2/19 3:18 PM WATER COLUMN/ AVERAGE DEPTH TO WATER

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

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

No records found.

PLSS Search:

Section(s): 1, 12 **Township:** 27N **Range:** 09W

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

12/2/19 3:20 PM WATER COLUMN/ AVERAGE DEPTH TO WATER

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

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

No records found.

PLSS Search:

Section(s): 36 **Township:** 28N **Range:** 09W

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

12/2/19 3:22 PM WATER COLUMN/ AVERAGE DEPTH TO WATER

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

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

No records found.

PLSS Search:

Section(s): 31, 32 **Township:** 28N **Range:** 08W

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

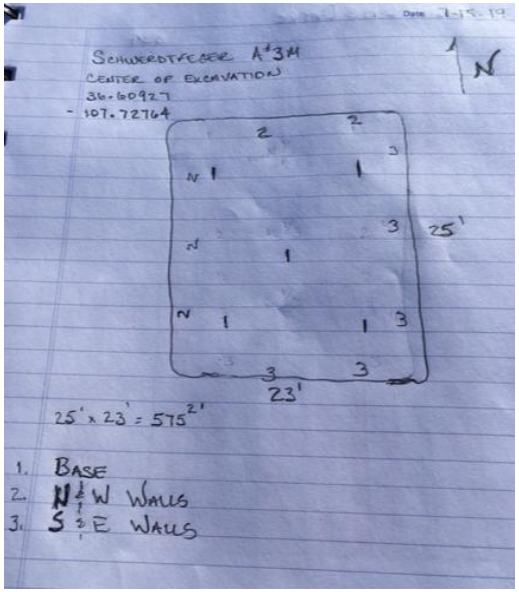
12/2/19 3:24 PM WATER COLUMN/ AVERAGE DEPTH TO WATER

No data available on the NM Office State Engineers. Default to the closure clean-up standards from BGT permit of < 50 ft for groundwater depth. For any future reporting and/or closures this will be revisited as necessary.

Depth to groundwater

No groundwater depth data available on the NM Office of the State Engineer website or cathodic data from HEC

Sample locations from excavation of 95 bbl BGT



Data table of soil contaminant concentration data

Sample Name	Date	Field VOCs by PID (ppm)	Laboratory Results										
			Chloride (mg/kg)	TPH as DRO (mg/kg)	TPH as GRO (mg/kg)	TPH as MRO (mg/kg)	Total TPH (mg/kg)	TPH as GRO + DRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Action Level		-	600	-	-	-	100	-	10	-	-	-	50
95 bbl pit	05/31/19	n/a	ND	210.00	ND	240.00	450.00	210.00	ND	ND	ND	ND	0
21 bbl pit	05/31/19	n/a	ND	ND	ND	ND	0.00	0.00	ND	ND	ND	ND	0
N 1/3 Base	07/11/19	n/a	ND	21	ND	50	71.00	21.00	ND	ND	ND	ND	0
M 1/3 Base	07/11/19	n/a	ND	ND	ND	ND	0.00	0.00	ND	ND	ND	ND	0
S 1/3 Base	07/11/19	n/a	ND	ND	ND	ND	0.00	0.00	ND	ND	ND	ND	0

Confirmation samples taken on 5/31/2019 in accordance with NMAC 19.15.29.12.D. The 95 bbl BGT failed on Total TPH. The area of the BGT was excavated and samples were taken again on 7/11/2019 in accordance with NMAC 19.15.29.12.D. NMOCD was present during the sampling event. Because there was no groundwater data for this site the closure standards from the BGT permit was utilized. For any future reporting and/or closures this will be revisited as necessary.

Clara Cardoza

From: Christine Brock
Sent: Tuesday, May 28, 2019 2:19 PM
To: 'Smith, Cory, EMNRD'
Cc: Whitney Thomas - BLM (l1thomas@blm.gov); 'Adeloye, Abiodun'; Cheryl Weston; Kandis Roland; Clara Cardoza; Eufracio Trujillo
Subject: 72 Hour notification - Schwerdtfeger A 3M / API 30-045-11605

Subject: 72 Hour BGT Closure Notification

Anticipated Start Date: **Friday, May 31, 2019 at approximately 10:00 a.m.**

The subject well has *two* below-grade tank that will begin the closure process between 72 hours and one week from this notification. Please contact me at any time if you have any questions or concerns.

Well Name: Schwerdtfeger A 3M

API#: 30-045-11605

Location: Unit D (NWNW), Section 06, T27N, R08W

Footages: 885' FNL & 815' FWL

Operator: Hilcorp **Surface Owner: Federal (Lease #SF-079319)**

Reason: Tanks are out of service so they are being removed from location.

Thank you,

Christine Brock
Hilcorp Energy Company
San Juan South Regulatory
Office: 505-324-5155
cbrock@hilcorp.com

Clara Cardoza

From: Clara Cardoza
Sent: Thursday, July 11, 2019 9:10 AM
To: 'Powell, Brandon, EMNRD'; 'cory.smith@state.nm.us'
Cc: 'Abiodun Adeloye'; 'whitney thomas (l1thomas@blm.gov)'; Kurt Hoekstra
Subject: RE: Schwerdtfeger A 3M - API 30-045-11605 NCS1915527449

Please let this serve as notice for confirmation samples at the Schwerdtfeger A 3M for 9 a.m. on Monday July 15th. Please let me know if you have any questions.

Thank you,
Clara

From: Clara Cardoza
Sent: Monday, June 17, 2019 9:46 AM
To: 'Powell, Brandon, EMNRD' <Brandon.Powell@state.nm.us>; 'cory.smith@state.nm.us' <cory.smith@state.nm.us>
Cc: 'Abiodun Adeloye' <aadeloye@blm.gov>; Christine Brock <cbrock@hilcorp.com>; whitney thomas (l1thomas@blm.gov) <l1thomas@blm.gov>
Subject: RE: Schwerdtferger A 3M - API 30-045-11605 NCS1915527449

Brandon/Cory, I just wanted to give you an update on this work. The rig had some delays and we were unable to get to this work as we had hoped last week. Our plan is to begin work on Thursday June 20th. Please let me know if you have any questions.

Thank you,
Clara

From: Clara Cardoza
Sent: Monday, June 3, 2019 3:52 PM
To: Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>
Cc: cory.smith@state.nm.us; Abiodun Adeloye <aadeloye@blm.gov>; Christine Brock <cbrock@hilcorp.com>
Subject: Schwerdtferger A 3M - API 30-045-11605

Brandon, here is a recap of our conversation this afternoon with additional information. Hilcorp's closure samples for the 95 bbl BGT at the Schwerdtferger A 3M came back above standards (the 21bbl BGT came back ND). We are in the process of re-fracing this location which is scheduled to occur on Wednesday June 5th. With the NMOCDs approval we will backfill both pits for the short term until the re-fracing is done and should be re-excavating the 95 bbl BGT by the middle of next week. If there are any delays to this schedule we will keep you apprised.

Please let me know if you have any further questions.

Thank you,

Clara M Cardoza
Environmental Specialist
505-564-0733 (O)
505-793-2784 (C)

Clara Cardoza

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Monday, July 15, 2019 11:35 AM
To: Kurt Hoekstra
Cc: Clara Cardoza
Subject: [EXTERNAL] RE: [EXT] Schwerdtfeger A # 3M

Kurt,

As discussed onsite OCD approves the alternative sampling for today's event.

Please include this approval in HEC Closure report.

Thank you.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Kurt Hoekstra <khoekstra@hilcorp.com>
Sent: Monday, July 15, 2019 11:33 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Clara Cardoza <ccardoza@hilcorp.com>
Subject: [EXT] Schwerdtfeger A # 3M

Hello Cory, per our conversation on location today I took three confirmation samples; one composite of the base, one composite of the north and west walls, and one composite of the south and east walls.

Thank you

Kurt Hoekstra
Field Environmental Specialist
505-486-9543
khoekstra@hilcorp.com

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

June 05, 2019

Clara Cardoza
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Schwerdtferger A 3M OrderNo.: 1906006

Dear Clara Cardoza:

Hall Environmental Analysis Laboratory received 2 sample(s) on 6/1/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1906006**
Date Reported: **6/5/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: 95 bbl pit
Project: Schwerdtferger A 3M
Collection Date: 5/31/2019 10:35:00 AM
Lab ID: 1906006-001 **Matrix:** SOIL **Received Date:** 6/1/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	210	9.7		mg/Kg	1	6/3/2019 10:55:37 AM
Motor Oil Range Organics (MRO)	240	48		mg/Kg	1	6/3/2019 10:55:37 AM
Surr: DNOP	111	70-130		%Rec	1	6/3/2019 10:55:37 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	3.9		mg/Kg	1	6/3/2019 12:51:01 PM
Surr: BFB	88.3	73.8-119		%Rec	1	6/3/2019 12:51:01 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.020		mg/Kg	1	6/3/2019 12:51:01 PM
Toluene	ND	0.039		mg/Kg	1	6/3/2019 12:51:01 PM
Ethylbenzene	ND	0.039		mg/Kg	1	6/3/2019 12:51:01 PM
Xylenes, Total	ND	0.078		mg/Kg	1	6/3/2019 12:51:01 PM
Surr: 4-Bromofluorobenzene	99.6	80-120		%Rec	1	6/3/2019 12:51:01 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60		mg/Kg	20	6/3/2019 1:49:14 PM

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

Qualifiers:

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

Analytical Report
Lab Order **1906006**
Date Reported: **6/5/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: 21 bbl pit
Project: Schwerdtferger A 3M
Collection Date: 5/31/2019 10:50:00 AM
Lab ID: 1906006-002 **Matrix:** SOIL **Received Date:** 6/1/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	6/3/2019 11:39:37 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	6/3/2019 11:39:37 AM
Surr: DNOP	106	70-130		%Rec	1	6/3/2019 11:39:37 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	3.3		mg/Kg	1	6/3/2019 1:14:41 PM
Surr: BFB	91.8	73.8-119		%Rec	1	6/3/2019 1:14:41 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.017		mg/Kg	1	6/3/2019 1:14:41 PM
Toluene	ND	0.033		mg/Kg	1	6/3/2019 1:14:41 PM
Ethylbenzene	ND	0.033		mg/Kg	1	6/3/2019 1:14:41 PM
Xylenes, Total	ND	0.067		mg/Kg	1	6/3/2019 1:14:41 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	6/3/2019 1:14:41 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60		mg/Kg	20	6/3/2019 2:26:42 PM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1906006**

05-Jun-19

Client: HILCORP ENERGY

Project: Schwerdtferger A 3M

Sample ID: **MB-45328**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **45328**	RunNo: **60349**							
Prep Date: **6/3/2019**	Analysis Date: **6/3/2019**	SeqNo: **2041072**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-45328**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **45328**	RunNo: **60349**							
Prep Date: **6/3/2019**	Analysis Date: **6/3/2019**	SeqNo: **2041073**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	90.3	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1906006**

05-Jun-19

Client: HILCORP ENERGY

Project: Schwerdtferger A 3M

Sample ID: **LCS-45319** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **45319** RunNo: **60335**

Prep Date: **6/3/2019** Analysis Date: **6/3/2019** SeqNo: **2039825** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	99.3	63.9	124			
Surr: DNOP	4.4		5.000		87.0	70	130			

Sample ID: **MB-45319** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **45319** RunNo: **60335**

Prep Date: **6/3/2019** Analysis Date: **6/3/2019** SeqNo: **2039826** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.4		10.00		93.5	70	130			

Sample ID: **1906001-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **BatchQC** Batch ID: **45319** RunNo: **60335**

Prep Date: **6/3/2019** Analysis Date: **6/3/2019** SeqNo: **2040444** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	9.7	48.45	0	87.8	57	142			
Surr: DNOP	5.0		4.845		104	70	130			

Sample ID: **1906001-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **BatchQC** Batch ID: **45319** RunNo: **60335**

Prep Date: **6/3/2019** Analysis Date: **6/3/2019** SeqNo: **2040605** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.10	0	99.7	57	142	16.0	20	
Surr: DNOP	5.5		5.010		109	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1906006**

05-Jun-19

Client: HILCORP ENERGY

Project: Schwerdtferger A 3M

Sample ID: **1905E76-001AMS** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BatchQC** Batch ID: **45310** RunNo: **60347**
Prep Date: **5/31/2019** Analysis Date: **6/3/2019** SeqNo: **2041211** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		958.8		109	73.8	119			

Sample ID: **1905E76-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BatchQC** Batch ID: **45310** RunNo: **60347**
Prep Date: **5/31/2019** Analysis Date: **6/3/2019** SeqNo: **2041212** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		973.7		105	73.8	119	0	0	

Sample ID: **1906003-007AMS** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BatchQC** Batch ID: **R60347** RunNo: **60347**
Prep Date: Analysis Date: **6/3/2019** SeqNo: **2041222** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	30	5.0	25.00	3.317	105	69.1	142			
Surr: BFB	1500		1000		145	73.8	119			S

Sample ID: **1906003-007AMSD** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BatchQC** Batch ID: **R60347** RunNo: **60347**
Prep Date: Analysis Date: **6/3/2019** SeqNo: **2041223** 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	3.317	101	69.1	142	3.72	20	
Surr: BFB	1400		1000		145	73.8	119	0	0	S

Sample ID: **2.5UG GRO LCS** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **R60347** RunNo: **60347**
Prep Date: Analysis Date: **6/3/2019** SeqNo: **2041224** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	96.2	80.1	123			
Surr: BFB	1100		1000		106	73.8	119			

Sample ID: **LCS-45303** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **45303** RunNo: **60347**
Prep Date: **5/31/2019** Analysis Date: **6/3/2019** SeqNo: **2041225** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		109	73.8	119			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1906006**

05-Jun-19

Client: HILCORP ENERGY

Project: Schwerdtferger A 3M

Sample ID: **MB-45303**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **45303**	RunNo: **60347**
Prep Date: **5/31/2019**	Analysis Date: **6/3/2019**	SeqNo: **2041226** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	990		1000		98.8	73.8	119			

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **R60347**	RunNo: **60347**
Prep Date:	Analysis Date: **6/3/2019**	SeqNo: **2041227** 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	940		1000		93.7	73.8	119			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1906006**

05-Jun-19

Client: HILCORP ENERGY

Project: Schwerdtferger A 3M

Sample ID: **100NG BTEX LCS** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **B60347** RunNo: **60347**

Prep Date: Analysis Date: **6/3/2019** SeqNo: **2041231** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	1.000	0	91.6	80	120			
Toluene	0.94	0.050	1.000	0	94.1	80	120			
Ethylbenzene	0.95	0.050	1.000	0	95.0	80	120			
Xylenes, Total	2.9	0.10	3.000	0	95.5	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		107	80	120			

Sample ID: **1905E76-003AMS** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **BatchQC** Batch ID: **45310** RunNo: **60347**

Prep Date: **5/31/2019** Analysis Date: **6/3/2019** SeqNo: **2041235** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		0.9852		106	80	120			

Sample ID: **1905E76-003AMSD** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **BatchQC** Batch ID: **45310** RunNo: **60347**

Prep Date: **5/31/2019** Analysis Date: **6/3/2019** SeqNo: **2041236** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		0.9434		110	80	120	0	0	

Sample ID: **1906003-008AMS** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **BatchQC** Batch ID: **B60347** RunNo: **60347**

Prep Date: Analysis Date: **6/3/2019** SeqNo: **2041244** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	93.0	63.9	127			
Toluene	0.96	0.050	1.000	0	96.2	69.9	131			
Ethylbenzene	0.98	0.050	1.000	0	98.2	71	132			
Xylenes, Total	3.0	0.10	3.000	0	100	71.8	131			
Surr: 4-Bromofluorobenzene	1.1		1.000		108	80	120			

Sample ID: **1906003-008AMSD** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **BatchQC** Batch ID: **B60347** RunNo: **60347**

Prep Date: Analysis Date: **6/3/2019** SeqNo: **2041245** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	92.7	63.9	127	0.269	20	
Toluene	0.96	0.050	1.000	0	96.4	69.9	131	0.291	20	
Ethylbenzene	0.98	0.050	1.000	0	97.6	71	132	0.664	20	
Xylenes, Total	3.0	0.10	3.000	0	98.7	71.8	131	1.57	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1906006**

05-Jun-19

Client: HILCORP ENERGY

Project: Schwerdtferger A 3M

Sample ID: **1906003-008AMSD** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **BatchQC** Batch ID: **B60347** RunNo: **60347**

Prep Date: Analysis Date: **6/3/2019** SeqNo: **2041245** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		106	80	120	0	0	

Sample ID: **LCS-45303** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **45303** RunNo: **60347**

Prep Date: **5/31/2019** Analysis Date: **6/3/2019** SeqNo: **2041246** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		108	80	120			

Sample ID: **MB-45303** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **45303** RunNo: **60347**

Prep Date: **5/31/2019** Analysis Date: **6/3/2019** SeqNo: **2041247** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		110	80	120			

Sample ID: **RB** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **B60347** RunNo: **60347**

Prep Date: Analysis Date: **6/3/2019** SeqNo: **2041248** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		105	80	120			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **HILCORP ENERGY FAR** Work Order Number: **1906006** RcptNo: **1**

Received By: **Desiree Dominguez** **6/1/2019 8:30:00 AM** DD

Completed By: **Desiree Dominguez** **6/1/2019 10:08:46 AM** DD

Reviewed By: YC 6/1/19

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: DAD 6/1/19

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	2.3	Good	Not Present			

Chain-of-Custody Record

Client: Hilcorp Energy

Mailing Address: 382 CR 3100
Aztec NM 87410

Phone #: 505.564.0733

email or Fax#: ccardoza@hilcorp.com

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other_____

☐ EDD (Type) _____

Turn-Around Time:
☐ Standard X **Rush**_ Same day

Project Name:
Schwerdtferger A 3M

Project #:

Project Manager:
Clara Cardoza

Sampler: B Salazar
On Ice: X Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 2.5-0.2=2.3°c

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1906006	8015 DRO/GRO/MRO	300 Chlorides	8260B BTEX
5/31/2019	10:35 a.m.	soil	95 bbl pit	4oz - 1	None	-001	X	X	X
5/31/2019	10:50 a.m.	soil	21 bbl pit	4 oz - 1	None	-002	X	X	X

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
5/31/19	304PM		Christine Walker		5/31/19	1504
5/31/19	1820	Christine Walker		Courier	6/1/19	8:30

Remarks: Billing ATTN: Clara Cardoza

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

July 16, 2019

Clara Cardoza

Hilcorp Energy
PO Box PO Box 4700
Farmington, NM 84701
TEL:
FAX

RE: SCHWERDTFEGER A 3M OrderNo.: 1907593

Dear Clara Cardoza:

Hall Environmental Analysis Laboratory received 3 sample(s) on 7/12/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1907593**
Date Reported: **7/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: N 1/3 BASE
Project: SCHWERDTFEGER A 3M
Collection Date: 7/11/2019 10:12:00 AM
Lab ID: 1907593-001 **Matrix:** SOIL
Received Date: 7/12/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	21	9.8		mg/Kg	1	7/12/2019 9:57:01 AM
Motor Oil Range Organics (MRO)	50	49		mg/Kg	1	7/12/2019 9:57:01 AM
Surr: DNOP	99.2	70-130		%Rec	1	7/12/2019 9:57:01 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	18		mg/Kg	5	7/12/2019 10:46:37 AM
Surr: BFB	89.5	73.8-119		%Rec	5	7/12/2019 10:46:37 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.36		mg/Kg	5	7/12/2019 10:46:37 AM
Benzene	ND	0.089		mg/Kg	5	7/12/2019 10:46:37 AM
Toluene	ND	0.18		mg/Kg	5	7/12/2019 10:46:37 AM
Ethylbenzene	ND	0.18		mg/Kg	5	7/12/2019 10:46:37 AM
Xylenes, Total	ND	0.36		mg/Kg	5	7/12/2019 10:46:37 AM
Surr: 4-Bromofluorobenzene	91.5	80-120		%Rec	5	7/12/2019 10:46:37 AM
EPA METHOD 300.0: ANIONS						Analyst: **smb**
Chloride	ND	60		mg/Kg	20	7/12/2019 11:46:39 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1907593**
Date Reported: **7/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: M 1/3 BASE
Project: SCHWERDTFEGER A 3M
Collection Date: 7/11/2019 10:15:00 AM
Lab ID: 1907593-002 **Matrix:** SOIL **Received Date:** 7/12/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/12/2019 10:19:05 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/12/2019 10:19:05 AM
Surr: DNOP	105	70-130		%Rec	1	7/12/2019 10:19:05 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	19		mg/Kg	5	7/12/2019 11:10:02 AM
Surr: BFB	94.5	73.8-119		%Rec	5	7/12/2019 11:10:02 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.38		mg/Kg	5	7/12/2019 11:10:02 AM
Benzene	ND	0.094		mg/Kg	5	7/12/2019 11:10:02 AM
Toluene	ND	0.19		mg/Kg	5	7/12/2019 11:10:02 AM
Ethylbenzene	ND	0.19		mg/Kg	5	7/12/2019 11:10:02 AM
Xylenes, Total	ND	0.38		mg/Kg	5	7/12/2019 11:10:02 AM
Surr: 4-Bromofluorobenzene	96.7	80-120		%Rec	5	7/12/2019 11:10:02 AM
EPA METHOD 300.0: ANIONS						Analyst: **smb**
Chloride	ND	60		mg/Kg	20	7/12/2019 11:59:03 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1907593**
Date Reported: **7/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: S 1/3 BASE
Project: SCHWERDTFEGER A 3M
Collection Date: 7/11/2019 10:20:00 AM
Lab ID: 1907593-003 **Matrix:** SOIL **Received Date:** 7/12/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	7/12/2019 10:41:10 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/12/2019 10:41:10 AM
Surr: DNOP	102	70-130		%Rec	1	7/12/2019 10:41:10 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	20		mg/Kg	5	7/12/2019 11:33:28 AM
Surr: BFB	94.7	73.8-119		%Rec	5	7/12/2019 11:33:28 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.40		mg/Kg	5	7/12/2019 11:33:28 AM
Benzene	ND	0.10		mg/Kg	5	7/12/2019 11:33:28 AM
Toluene	ND	0.20		mg/Kg	5	7/12/2019 11:33:28 AM
Ethylbenzene	ND	0.20		mg/Kg	5	7/12/2019 11:33:28 AM
Xylenes, Total	ND	0.40		mg/Kg	5	7/12/2019 11:33:28 AM
Surr: 4-Bromofluorobenzene	97.0	80-120		%Rec	5	7/12/2019 11:33:28 AM
EPA METHOD 300.0: ANIONS						Analyst: **smb**
Chloride	ND	60		mg/Kg	20	7/12/2019 12:11:28 PM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1907593**

16-Jul-19

Client: Hilcorp Energy

Project: SCHWERDTFEGER A 3M

Sample ID: **MB-46150**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **46150**	RunNo: **61355**							
Prep Date: **7/12/2019**	Analysis Date: **7/12/2019**	SeqNo: **2080349**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-46150**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **46150**	RunNo: **61355**							
Prep Date: **7/12/2019**	Analysis Date: **7/12/2019**	SeqNo: **2080350**	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:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1907593**

16-Jul-19

Client: Hilcorp Energy

Project: SCHWERDTFEGER A 3M

Sample ID: **LCS-46149** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **46149** RunNo: **61332**

Prep Date: **7/12/2019** Analysis Date: **7/12/2019** SeqNo: **2079460** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	104	63.9	124			
Surr: DNOP	4.4		5.000		87.7	70	130			

Sample ID: **MB-46149** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **46149** RunNo: **61332**

Prep Date: **7/12/2019** Analysis Date: **7/12/2019** SeqNo: **2079461** 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	9.3		10.00		93.4	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1907593**

16-Jul-19

Client: Hilcorp Energy

Project: SCHWERDTFEGER A 3M

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **G61346**	RunNo: **61346**							
Prep Date:	Analysis Date: **7/12/2019**	SeqNo: **2079994**	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	950		1000		94.9	73.8	119			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **G61346**	RunNo: **61346**							
Prep Date:	Analysis Date: **7/12/2019**	SeqNo: **2079995**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	90.4	80.1	123			
Surr: BFB	1100		1000		105	73.8	119			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1907593**

16-Jul-19

Client: Hilcorp Energy

Project: SCHWERDTFEGER A 3M

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **PBS**	Batch ID: **B61346**	RunNo: **61346**							
Prep Date:	Analysis Date: **7/12/2019**	SeqNo: **2080006**	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	0.96		1.000		95.8	80	120			

Sample ID: **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **LCSS**	Batch ID: **B61346**	RunNo: **61346**							
Prep Date:	Analysis Date: **7/12/2019**	SeqNo: **2080007**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.81	0.10	1.000	0	80.5	80	120			
Benzene	0.92	0.025	1.000	0	91.9	80	120			
Toluene	0.95	0.050	1.000	0	95.2	80	120			
Ethylbenzene	0.95	0.050	1.000	0	94.9	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.4	80	120			
Surr: 4-Bromofluorobenzene	0.96		1.000		95.6	80	120			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 1907593 RcptNo: 1

Received By: **Desiree Dominguez** 7/12/2019 8:05:00 AM

Completed By: **Anne Thorne** 7/12/2019 8:36:18 AM

Reviewed By: DAD 7/12/19

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: _____

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	1.5	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp

Mailing Address:

Phone #: 505-486-9543

email or Fax#:

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

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush SAME DAY

Project Name:
SCHWERDTFEGER A# 3M

Project #:

Project Manager:
CLARA CARDOZA

Sampler: KURT

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.9°C - 0.4% = 1.5°C

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and # (07/12/19 Market)	Preservative Type	HEAL No. 1907593	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)	CHLORIDE				Air Bubbles (Y or N)
7-11	10:12	Soil	N 1/3 BASE	(1) 4oz JAR	On Ice	001	X		X									X				
7-11	10:15	"	M 1/3 BASE	"	"	002	X		X									X				
7-11	10:20	"	S 1/3 BASE	"	"	003	X		X									X				

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
7-11	11:20	Kurt Hunter		7/11/19	1120	
7/11/19	1256	Clinton Walter	courier	7/12/19	8:05	

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.