

Initial Site Assessment/Characterization Report

Vacuum Drinkard Tank Battery Produced Water Spill Site Lea County, New Mexico New Mexico Oil Conservation Division (NMOCD) District RP #1RP-5517

Prepared For:
Chevron Mid-Continent Business Unit (MCBU)

Prepared By:
AECOM
19219 Katy Freeway, Suite 100
Houston, Texas 77094

N0777-190826-C-1410

Initial Site Assessment/Characterization Report

Vacuum Drinkard Tank Battery
Produced Water Spill Site
Lea County, New Mexico
NMOCD RP #1RP-5517

Chevron Mid-Continent Business Unit (MCBU)

July 2019



Prepared by: Wally Gilmore, P.G.
Senior Project Manager



Reviewed by: Peter Hicks
Team Leader

Table of Contents

1.	Introduction	1
2.	Background	1
3.	Initial Site Assessment/Characterization	1
4.	Initial Soil Assessment.....	2
5.	Additional Proposed Soil Assessment.....	3
6.	Schedule and Reporting	4
7.	References.....	5

Figures

Figure 1	Site Location Map
Figure 2	Sample Location Map
Figure 3	Proposed Soil Boring Location Map

Tables

Table 1	Soil Analytical Results
---------	-------------------------

Appendices

Appendix A	Form C-141 - Vacuum Drinkard Tank Battery
Appendix B	NMWRRS Water Column/Average Depth to Water Report
Appendix C	Summary of Field Sample Collection and Screening Activities
Appendix D	Laboratory Analytical Report
Appendix E	Field Screening Procedures for Chloride in Soil

1. Introduction

On behalf of Chevron Mid-Continent Business Unit (MCBU), AECOM Technical Services, Inc. (AECOM) has prepared this Initial Assessment/Characterization Report to describe the initial assessment activities that have been conducted to characterize potential impacts to environmental media (soil and groundwater) resulting from a produced water spill that occurred at the Vacuum Drinkard Tank Battery in Lea County, New Mexico ("the Site").

2. Background

The Site is located at Latitude 32.772713° North, Longitude 103.507701° West in Lea County, New Mexico (**Figure 1**).

On April 30, 2019, approximately 56.1 barrels (bbls) of produced water with a dissolved chloride concentration greater than 10,000 milligrams per liter (mg/L) and 0.56 bbls of crude oil were released within an approximately 20 ft by 30 ft, unlined, bermed secondary containment area for a heater treater. The release was associated with a failed gasket on the heater treater and the released fluids were reported to have been contained with the earthen berm secondary containment. Approximately 53 bbls of produced water and 0.56 bbls of crude oil were reported to have been recovered. As required by the New Mexico Oil Conservation Division (NMOCD) under 19.15.29 New Mexico Administrative Code (NMAC), Chevron's initial response to the release included:

- Stopping the release at the source;
- Securing the impacted soil area to protect human health and the environment;
- Containing the released produced water and crude oil; and
- Recovering approximately 53 bbls of produced water and 0.56 bbls of crude oil.

A Release Notification, Form C-141, dated May 10, 2019, was submitted to the NMOCD. The Form C-141 documents the responsible party, location of the release source, nature, and volume of the release, and initial response to the release. NMOCD assigned District RP #1RP-5517 to the release. An updated Form C-141 is provided as **Appendix A**.

3. Initial Site Assessment/Characterization

The findings from an initial desktop assessment/characterization of the Site are summarized below.

- Based on an online Water Column/Average Depth to Water Report from the New Mexico Water Rights Reporting System (NMWRRS) for wells located within 1,000 meters (about 3,281 feet) of the Site, the shallowest potential depth to groundwater beneath the Site is 75 feet below ground surface (ft bgs) and the average depth to groundwater is 92 ft bgs. A copy of the *Water Column/Average Depth to Water Report* is provided as **Appendix B**.
- The underlying soils at the Site are comprised of fine sand, silty sand, and caliche and it currently seems unlikely that the release resulted in chloride impact to groundwater. Soil sampling has been initiated to characterize potential chloride and petroleum hydrocarbon impacts to the Site.
- There are no continuously flowing watercourses or other significant watercourses within ½ mile of the Site.
- The Site is not located within 200 ft of any lakebed, known sinkhole, or playa lake.

- The nearest occupied permanent residence, school, hospital, institution, or church is greater than 12 miles from the Site.
- There are no known springs or wells used for domestic or stock watering purposes within ½ mile of the Site.
- There are no known water wells within ½ mile of the Site. The closest water well identified in the online NMWRRS report is a well drilled by Abbott Brothers Drilling Company in 1963 and screened from 95 to 150 ft bgs at a location approximately 0.59-mile southeast of the Site. The initial use and current status of this water well is currently unknown.
- No incorporated municipal boundaries or defined municipal fresh water well fields are located within 14 miles of the Site, which is the approximate distance from the Site to Lovington, NM northeast of the Site.
- A review of the online U.S. Fish & Wildlife Wetlands Mapper tool indicates the presence of a palustrine, unconsolidated bottom, semi-permanently flooded (PUBF) wetland area approximately 150 ft west of the Site.
- No subsurface mines are located beneath the Site.
- No karst geology features or other unstable areas are known to be located near the Site.
- A 100-year floodplain was not identified near the Site.
- Operations near the Site are for oil and gas exploration, development, production, or storage only, and no impact to areas that are not on an exploration, development, production, or storage site are expected.

Figure 1 shows the location of the Site and surrounding area on a topographic map. Based on information obtained during the initial desktop assessment/characterization and the volume of produced water released and recovered, no impact to groundwater, surface water, springs, or other sources of fresh water is currently suspected. However, sampling is required to characterize the extent of potential chloride impacts to soil at the Site.

4. Initial Soil Assessment

On June 25, 2019, initial soil assessment activities were conducted at the Site which included collection of soil samples from five hand auger boring locations as shown on **Figure 2**. One hand auger boring (VDBT-01) was drilled within the heater treater secondary containment where the release occurred and the additional four hand auger borings were drilled just outside of the four walls of the earthen berm secondary containment.

In each of the hand auger borings, caliche and some fine sand and silt were encountered from the ground surface to the total depth of the borings. The borings were terminated at two to three feet ft bgs due to auger refusal in hard caliche. Soil samples were collected at 1-ft intervals and field-screened using a photoionization detector (PID) to measure volatile organic vapor concentrations. Soil samples were collected from each of the depth intervals for laboratory analysis of chloride. Samples were also collected from the depth interval in each boring that exhibited the highest relative PID readings for laboratory analysis of benzene, toluene, ethylbenzene and xylenes (BTEX) and total petroleum hydrocarbons (TPH). The BTEX and TPH samples were collected using laboratory-provided EnCore® sampling kits in accordance with United States Environmental Protection Agency (EPA) Method 5035/5035A.

The soil samples were transferred into clean, laboratory-provided sample containers, labeled and placed on ice in laboratory-provided coolers. Chain of Custody forms were completed and the samples were shipped to the TestAmerica laboratory in Houston, Texas for analysis of BTEX by EPA Method 8260B, TPH by EPA Method 8015B and chloride by EPA Method 9056A. A Summary of Field Sample Collection

and Screening Activities is provided as **Appendix C**. The laboratory results are summarized in **Table 1** and the laboratory analytical report is provided as **Appendix D**.

At the conclusion of drilling and soil sampling activities, the soil borings were backfilled with bentonite chips. Investigation derived waste (IDW); including soil cuttings, disposable sampling equipment and disposable personal protective equipment (PPE) such as nitrile gloves, was placed in a 55-gallon drum currently stored at the Chevron Central Vacuum No. 084 site pending offsite disposal.

4.1 Initial Soil Sampling Results

Due to the wetland area that is present within 300 ft of the Site, the applicable regulatory limits in Table I of 19.15.29.12.E.2 NMAC are those for areas where groundwater is present at a depth of less than 50 ft bgs.

Laboratory analytical results indicated chloride concentrations in excess of the 600 milligrams per kilogram (mg/kg) regulatory limit for nine of the eleven samples submitted for laboratory analysis of chloride (See **Table 1** and **Figure 2**). TPH (C6-C36) concentrations exceeded the applicable regulatory limit of 100 mg/kg in four of the five samples analyzed as shown in **Table 1** and on **Figure 2**.

As described above in Section 3, NMWRRS online data for water wells located within 1,000 meters (about 3,281 feet) of the Site indicate the shallowest potential depth to groundwater beneath the Site is 75 ft bgs and the average depth to groundwater is 92 ft bgs.

5. Additional Proposed Soil Assessment

Additional soil assessment is planned pursuant to the following project objectives:

- Delineate the vertical and horizontal extent of soil impacted by chloride and petroleum hydrocarbons associated with the release;
- Develop an appropriate Remediation/Restoration Plan for the Site.

Proposed additional soil assessment activities include drilling and sampling of four vertical delineation borings (proposed additional boring locations #1 through #4) and four horizontal delineation soil borings (proposed additional boring locations #5 through 8) as shown on **Figure 3** and further described below.

The borings will be drilled using a combination of hand auger, driven split-spoon and air rotary drilling methods as appropriate for sample collection and Chevron safety requirements. Soil samples will be collected at one-ft depth intervals to a total depth of five ft bgs in each of the borings. In proposed vertical delineation borings #1 through #4, samples will also be collected from 5 to 7.5 and 7.5 to 10 ft bgs. Each depth interval sample will be field-screened for elevated petroleum hydrocarbon concentrations using a PID to measure organic vapor concentrations and for elevated chloride concentrations using an electrical conductivity (EC) meter. Additional field screening for chlorides in soil will be performed as described in **Appendix E**. Additional borings may be drilled and sampled for horizontal delineation of impacted soil, and/or drilled deeper for vertical delineation of impacted soil, based on field screening results for petroleum hydrocarbons and/or chloride.

Each of the depth interval samples will be submitted for laboratory analysis of chloride. In addition, two samples from each of the borings, including the sample interval that records the highest PID reading and the sample interval at the borehole terminus, will be submitted for laboratory analysis of TPH.

The selected soil samples will be submitted for laboratory analysis of chloride by EPA Method 9056A and TPH by EPA Method 8015B. The soil samples will be collected in clean, laboratory-provided sample containers, labeled, and placed on ice in laboratory-provided coolers. AECOM will complete Chain of

Custody forms and arrange for shipment/transportation of the samples to AECOM's subcontractor, TestAmerica Laboratory in Houston, Texas.

After soil sampling activities have been completed, the soil borings will be backfilled with bentonite chips. Investigation-derived waste (IDW); including soil cuttings, disposable sampling equipment and disposable personal protective equipment (PPE) such as nitrile gloves, will be placed in 55 gallon drum(s). One composite IDW sample from the drum(s) will be collected for waste characterization. The IDW characterization sample will be analyzed for:

- Inorganic Anions (including chloride) by EPA Method 9056A;
- Toxicity Characteristic Leaching Procedure (TCLP) Resource Conservation and Recovery Act (RCRA) Metals by SW-846 1311/6010C;
- BTEX by EPA Method 8021 or 8260B; and
- TPH by EPA Method 8015M.

AECOM will subcontract with S Brothers Waste Services, Inc. for waste manifesting, transportation and disposal. Upon receipt of the laboratory analytical report, AECOM will prepare a waste profile. AECOM will coordinate with MCBU to obtain the appropriate signatures from the waste generator (MCBU) on the waste profile and waste manifest. AECOM will then coordinate pick-up of the drums by S Brothers Waste Services, Inc. for transportation and disposal at a Chevron approved waste disposal facility that accepts oil and gas exploration and production (E&P) exempt wastes. The IDW drum(s) will be disposed at the Chevron-approved Sundance disposal facility near Eunice, New Mexico.

6. Schedule and Reporting

The additional drilling and soil sampling activities will be scheduled upon receipt of NMOCD comments regarding the proposed soil assessment activities described herein. A report describing the soil sampling activities and results will be provided to NMOCD within 30 days of receipt of the analytical results from TestAmerica. The report will include the following:

- Executive Summary;
- Background information;
- Scaled map showing the impacted area, surface features, subsurface features, and delineation points;
- Topographic map and aerial photograph of the Vacuum Drinkard Tank Battery Site;
- Summary of the field and laboratory analytical data;
- Field soil boring logs;
- Photographs of the Site;
- Data interpretation relative to the nature and extent of potential impacted soil; and
- Recommendations for Site Remediation/Reclamation.

7. References

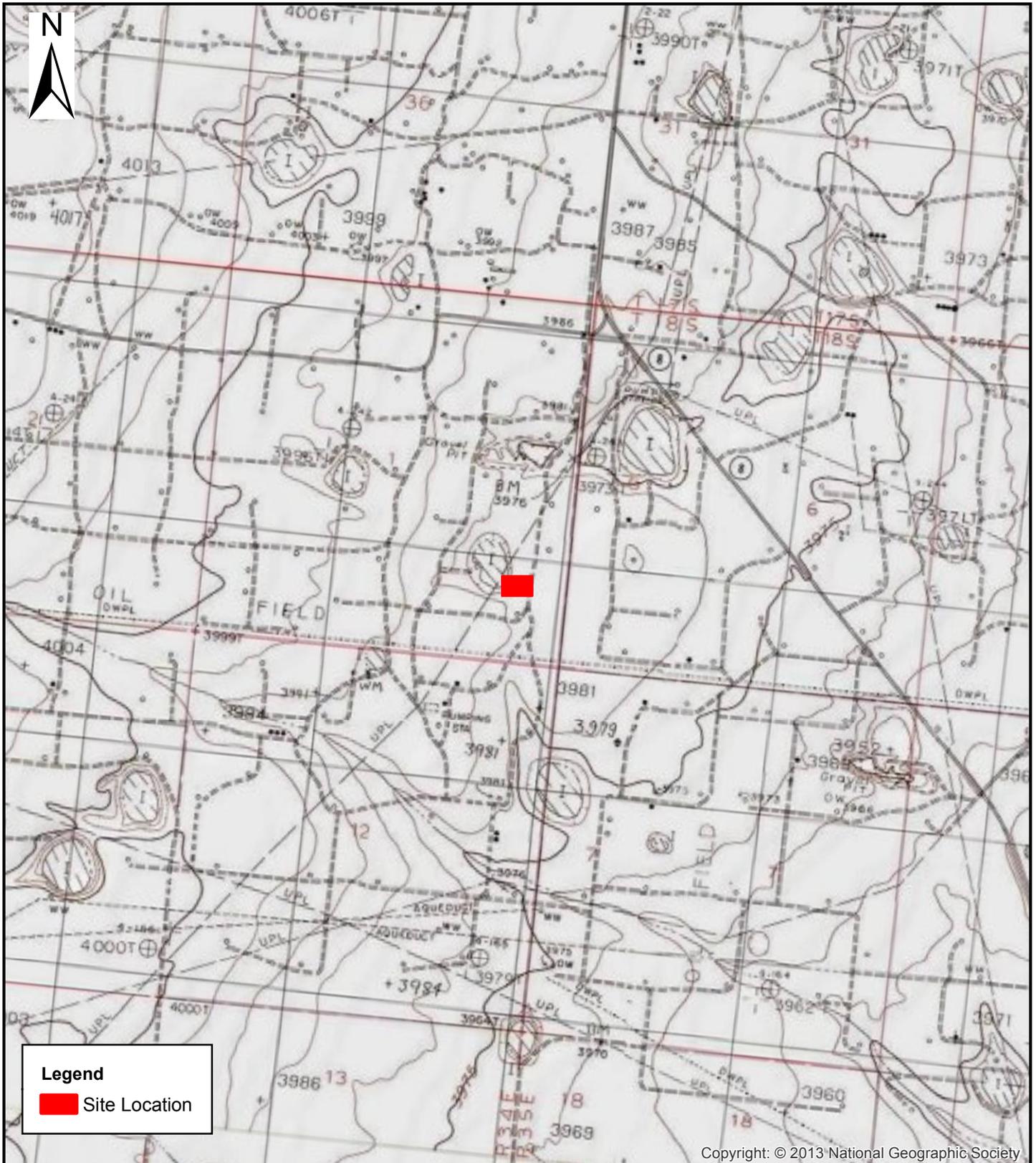
New Mexico Water Rights Reporting System (NMWRRS), Water Column/Average Depth To Water Report. <http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html> .

National Wetlands Inventory, surface waters and wetlands.
<https://www.fws.gov/wetlands/data/mapper.html>

Google Earth Pro.

United States Department of Agriculture – Natural Resources Conservation Service. Web Soil Survey. Available on line at <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.

Figures



Legend

Site Location

Copyright: © 2013 National Geographic Society



Site Location Map
 Vacumm Drinkard Tank Battery
 Lea County, New Mexico
 Chevron MCBU

0 500 1,000 2,000 3,000 4,000 5,000 6,000 Feet
 0 100 200 400 600 800 1,000 1,200 1,400 1,600 Meters

Map Projection: NAD 83, UTM 15N Feet.
 Image Source: ESRI On-line Resources USGS Topographic Map

1:24,000

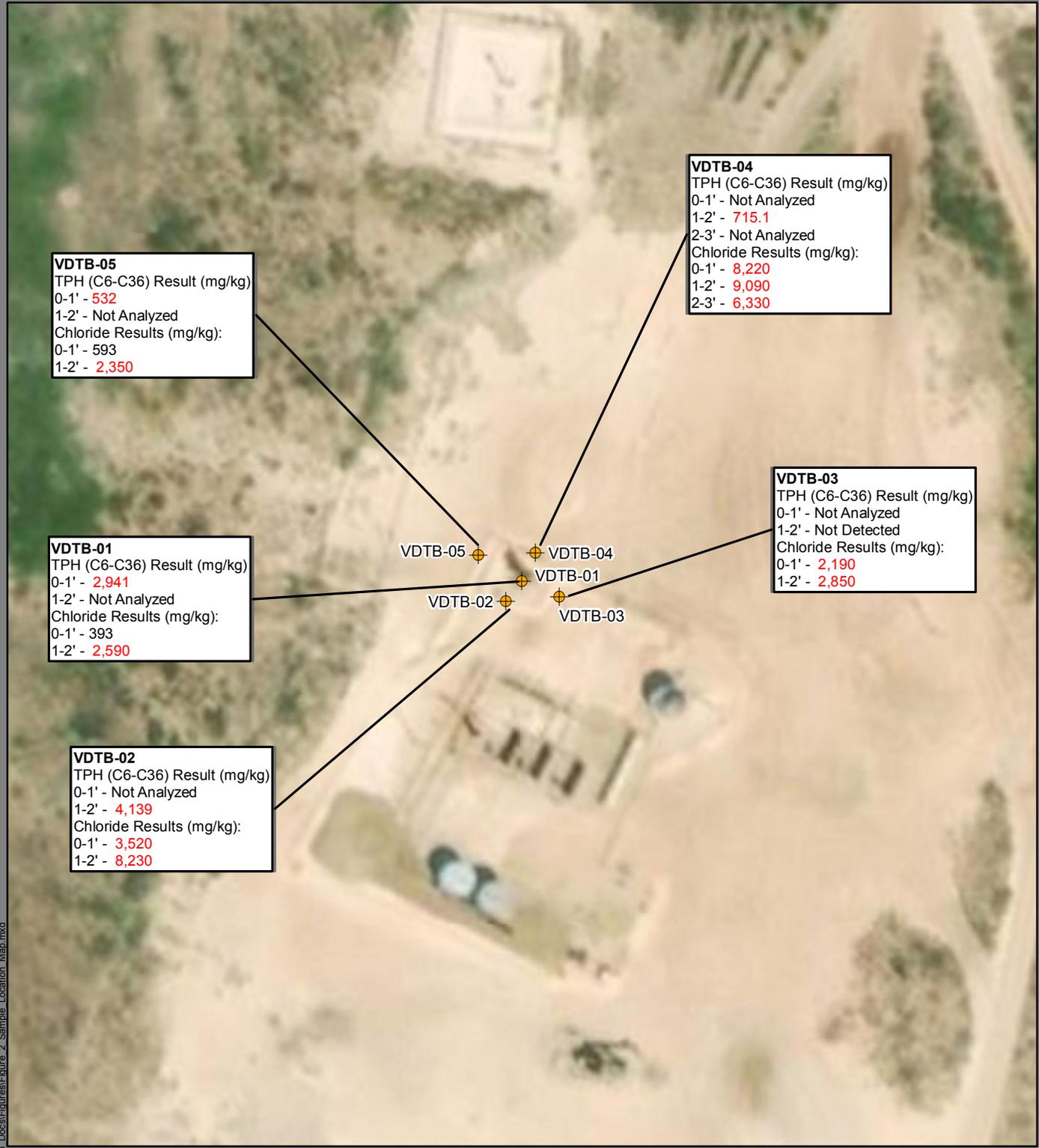
AECOM

Figure 1

Date: July 2019

Project #: 60608447

R:\Industrial\GIS\Chevron\Drinkard\Map_Docs\Figures



Author: delizk Document Path: N:\Industrial\GIS\Chevron\Drinkard\Map_Docs\Figures\Figure 2_Sample_Location_Map.mxd

Legend

- Soil Boring Locations

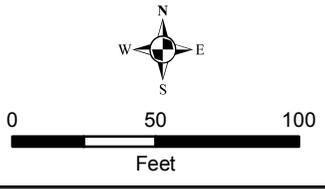
Regulatory Limits:
 TPH - 100 mg/kg
 Chloride - 600 mg/kg
 Red Font = Exceeds Regulatory Limit

Basemap: DigitalGlobe September 2017



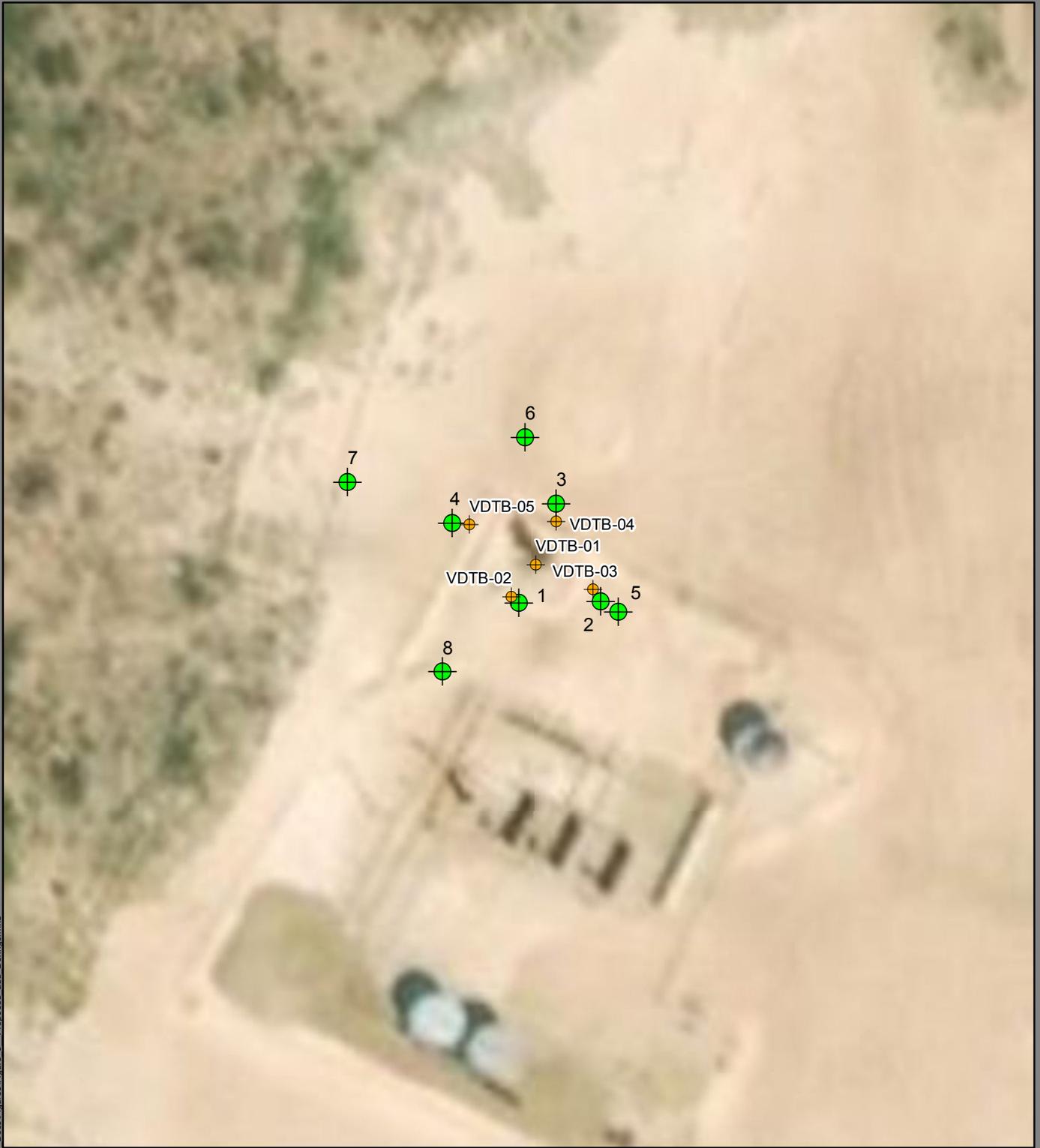
Sample Location Map

**Vacuum Drinkard Tank Battery
 Lea County, New Mexico
 Chevron MCBU**



Jul 2019

Figure 2



Author: delizk Document Path: N:\Industrial\GIS\Chevron\Drinkard\Map_Docs\Figures\Figure 3 - Proposed add Borings.mxd

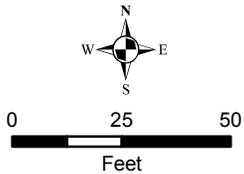
Legend

-  Soil Boring Locations
-  Proposed Additional Boring Locations

Basemap: DigitalGlobe September 2017



Proposed Soil Boring Location Map
Vacuum Drinkard Tank Battery
Lea County, New Mexico
Chevron MCBU



Jul 2019

Figure 3

Tables

Table 1
Soil Analytical Results
Vacuum Drinkard Tank Battery
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft bgs)	Total Petroleum Hydrocarbons (EPA 8015B)				Volatile Organics (EPA 8260B)				Chloride (Method 9056A)
			GRO C6-C10	DRO C10-C28	MRO C28-C36	TPH GRO+DRO+MRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	
Regulatory Limits			--	--	--	100	10	--	--	--	600
VDBT-01 - 0-1	06/25/19	0-1	41.3	2,900	346 U	2,941	0.000600 U	0.0413	2.14	4.47	393
VDBT-01 - 1-2	06/25/19	1-2	NA	NA	NA	NA	NA	NA	NA	NA	2,590
VDBT-02 - 0-1	06/25/19	0-1	NA	NA	NA	NA	NA	NA	NA	NA	3,520
VDBT-02 - 1-2	06/25/19	1-2	0.956	3,500	638	4,139	0.00520	0.0181	0.0269	0.0469	8,230
VDBT-03 - 0-1	06/25/19	0-1	NA	NA	NA	NA	NA	NA	NA	NA	2,190
VDBT-03 - 1-2	06/25/19	1-2	0.0655 U	33.6 U	33.6 U	ND	0.000563 U	0.00123 U	0.000911 U	0.00101 U	2,850
VDBT-04 - 0-1	06/25/19	0-1	NA	NA	NA	NA	NA	NA	NA	NA	8,220
VDBT-04 - 1-2	06/25/19	1-2	0.0652 U	661	54.1	715.1	0.000455 U	0.000997 U	0.000737 U	0.000816 U	9,090
VDBT-04 - 2-3	06/25/19	2-3	NA	NA	NA	NA	NA	NA	NA	NA	6,330
VDBT-05 - 0-1	06/25/19	0-1	0.0646 U	360	172	532	0.000481 U	0.00105 U	0.000779 U	0.000863 U	593
VDBT-05 - 1-2	06/25/19	1-2	NA	NA	NA	NA	NA	NA	NA	NA	2,350

Notes:

1. Soil analyses performed by TestAmerica Laboratories, Inc. in Houston, Texas.
2. Units for all analytical data provided are mg/Kg (milligrams per kilogram).
3. GRO - Gasoline Range Organic Compounds
4. DRO - Diesel Range Organic Compounds
5. MRO - Motor Oil/Lube Range Organic Compounds
6. Regulatory Limits are from 19.15.29 New Mexico Administrative Code (NMAC).
7. U - Indicates that the analyte was analyzed but not detected at or above the laboratory Sample Detection Limit (SDL).
8. **Bold** - Detectable concentration that exceeds laboratory method reporting limits.
9. **Bold and Shaded** - Reported concentration exceeds Regulatory Limits.
10. ft bgs - feet below ground surface.
11. -- Indicates that no applicable regulatory limit for that analyte.
12. NA - Not Analyzed
13. ND - Not reported above laboratory method reporting limits.

Appendix A

Form C-141 –Vacuum Drinkard Tank Battery

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	NAB1915156850
District RP	1RP-5517
Facility ID	fAB1915155171
Application ID	pAB1915156547

Release Notification

Responsible Party

Responsible Party: Chevron USA Inc.	OGRID: 4323
Contact Name: Josepha DeLeon	Contact Telephone: 575-263-0424
Contact email: jdx@chevron.com	Incident # (assigned by OCD) NAB1915156850
Contact mailing address: 1616 W. Bender Blvd., Hobbs, NM 88240	

Location of Release Source

Latitude 32.772713 Longitude: -103.507701

(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Vacuum Drinkard Tank Battery	Site Type: Battery
Date Release Discovered: 04/30/2019	API# (if applicable): N/A

Unit Letter	Section	Township	Range	County
P	01	18S	34E	Lea

Surface Owner: State Federal Tribal Private (Name: _____)
AB

Nature and Volume of Release

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

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls): 0.56 barrel	Volume Recovered (bbls): 0.56 barrel
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls): 56.1 barrels	Volume Recovered (bbls): 53 barrels
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release: Gasket on heater treater leaked. Spill was contained inside berm, berm was not lined.

Calculation, pictures and map attached at end of report.

Incident ID	NAB1915156850
District RP	1RP-5517
Facility ID	fAB1915155171
Application ID	pAB1915156547

Was this a major release as defined by 19.15.29.7(A) NMAC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? Exceeded 25 barrels.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.
If all the actions described above have <u>not</u> been undertaken, explain why:
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.
Signature: 
Date: <u>05/10/2019</u>
Printed Name: <u>Josepha DeLeon</u>
Title: <u>Environmental Compliance Specialist</u>
email: <u>jdxd@chevron.com</u>
Telephone: <u>432-425-1528</u>
<u>OCD Only</u>
Received by: <u>Amalia Bustamante</u>
Date: <u>5/31/2019</u>

Incident ID	NAB1915156850
District RP	1RP-5517
Facility ID	fAB1915155171
Application ID	pAB1915156547

N0777-190826-C-1410

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

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

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 1/2-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.

State of New Mexico
Oil Conservation Division

N0777-190826-C-1410

Incident ID	NAB1915156850
District RP	1RP-5517
Facility ID	fAB1915155171
Application ID	pAB1915156547

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: Amy Barnhill Title: Waste/Water Specialist
 Signature: [Handwritten Signature] Date: 8-26-2019
 email: ABarnhill@chevron.com Telephone: 432-687-7108

OCD Only

Received by: Victoria Venegas Date: 08/26/2019

Appendix B

NMWRRS Water Column/Average Depth to Water 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 Code	Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Well Depth	Water Column
L_04796	L	LE	LE	4	4	3	06	18S	35E	640667	3626847*	928	150	95 55
L_04851	L	LE	LE	4	2	12	18S	34E	639801	3626130*	946	155	95 60	
L_05139	L	LE	LE	2	1	12	18S	34E	638992	3626517*	955	150	95 55	
L_07361	L	LE	LE	2	1	12	18S	34E	638992	3626517*	955	202	100 102	
L_04778	L	LE	LE	2	1	07	18S	35E	640575	3626545*	966	150	75 75	

Average Depth to Water: **92 feet**
 Minimum Depth: **75 feet**
 Maximum Depth: **100 feet**

Record Count: 5

UTMNAD83 Radius Search (in meters):

Easting (X): 639767.3

Northing (Y): 3627075.75

Radius: 1000

*UTM location was derived from PLSS - see Help

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

7/11/19 4:28 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Appendix C

Summary of Field Sample Collection and Screening Activities

**Sample Collection and Screening
Vacuum Drinkard Tank Battery**

Date	Boring ID	Depth (ft bgs)	Time	Lithology	PID (ppm)	Conductivity Probe (mS/cm)	Chloride Test Strip (ppm Cl ⁻)	Chloride Test Strip (%NaCl)	EC Meter (mS/cm)
6/25/2019	VDTB-01	0-1	1310	0-2 ft bgs: caliche with some fine sand and silty sand	272	0.241	ND	ND	2.075
		1-2	1315		139	4.13	225	0.035	10.61
6/25/2019	VDTB-02	0-1	1350	0-2 ft bgs: caliche with some fine sand and silty sand	48.9	0.398	440	0.075	6.4
		1-2	1355		62.3	0.066	545	0.085	8.50
6/25/2019	VDTB-03	0-1	1420	0-2 ft bgs: caliche with some fine sand and silty sand	0.2	0.91	ND	ND	5.8
		1-2	1425		0.2	3.67	ND	ND	4.3
6/25/2019	VDTB-04	0-1	1450	0-3 ft bgs: caliche with some fine sand and silty sand	24.5	4.29	190	0.03	12.45
		1-2	1455		31.1	1.62	ND	ND	8.85
		2-3	1500		22.1	4.13	160	0.025	15.2
6/25/2019	VDTB-05	0-1	1520	0-2 ft bgs: caliche with some fine sand and silty sand	22.3	0.69	ND	ND	2.2
		1-2	1525		9.4	8.71	ND	ND	5.9

Appendix D

Laboratory Analytical Report

ANALYTICAL REPORT

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Tel: (713)690-4444

Laboratory Job ID: 600-187699-1

Client Project/Site: Vacuum Drinkard Tank Battery

For:

AECOM
19219 Katy Freeway
Suite 100
Houston, Texas 77094

Attn: Mr. Wallace Gilmore



Authorized for release by:
7/16/2019 1:38:08 PM

Sachin Kudchadkar, Senior Project Manager
(713)690-4444

sachin.kudchadkar@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Method Summary	4
Sample Summary	5
Client Sample Results	6
Definitions/Glossary	11
Surrogate Summary	12
QC Sample Results	14
Default Detection Limits	20
QC Association Summary	21
Lab Chronicle	24
Certification Summary	27
Chain of Custody	28
Receipt Checklists	33

Case Narrative

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Job ID: 600-187699-1

Laboratory: Eurofins TestAmerica, Houston

Narrative

**Job Narrative
600-187699-1**

Comments

No additional comments.

Receipt

The samples were received on 6/27/2019 9:57 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

Receipt Exceptions

A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC).

GC/MS VOA

Method(s) 8260B: Surrogate recovery for the following sample was outside control limits: VDBT-01-0-1 (600-187699-1). Evidence of matrix interference is present.

Method(s) 8260B: The following sample was diluted to bring the concentration of target analytes within the calibration range: VDBT-01-0-1 (600-187699-1). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Industrial Hygiene

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL HOU
8015B	Gasoline Range Organics - (GC)	SW846	TAL CAN
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL CAN
9056A	Anions, Ion Chromatography	SW846	TAL HOU
3546	Microwave Extraction	SW846	TAL CAN
5030A	Purge and Trap	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL HOU
5035	Closed System Purge & Trap/Field Methanol	SW846	TAL HOU
5035	Closed System Purge & Trap/Laboratory Preservation	SW846	TAL HOU
DI Leach	Deionized Water Leaching Procedure (Routine)	ASTM	TAL HOU

Protocol References:

ASTM = ASTM International

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL HOU = Eurofins TestAmerica, Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
600-187699-1	VDBT-01-0-1	Solid	06/25/19 13:10	06/27/19 09:57	
600-187699-2	VDBT-01-1-2	Solid	06/25/19 13:15	06/27/19 09:57	
600-187699-3	VDBT-02-0-1	Solid	06/25/19 13:50	06/27/19 09:57	
600-187699-4	VDBT-02-1-2	Solid	06/25/19 13:55	06/27/19 09:57	
600-187699-5	VDBT-03-0-1	Solid	06/25/19 14:20	06/27/19 09:57	
600-187699-6	VDBT-03-1-2	Solid	06/25/19 14:25	06/27/19 09:57	
600-187699-7	VDBT-04-0-1	Solid	06/25/19 14:50	06/27/19 09:57	
600-187699-8	VDBT-04-1-2	Solid	06/25/19 14:55	06/27/19 09:57	
600-187699-9	VDBT-04-2-3	Solid	06/25/19 15:00	06/27/19 09:57	
600-187699-10	VDBT-05-0-1	Solid	06/25/19 15:20	06/27/19 09:57	
600-187699-11	VDBT-05-1-2	Solid	06/25/19 15:25	06/27/19 09:57	
600-187699-12	TRIP BLANK	Water	06/25/19 00:00	06/27/19 09:57	

Client Sample Results

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Client Sample ID: VDBT-01-0-1

Lab Sample ID: 600-187699-1

Date Collected: 06/25/19 13:10

Matrix: Solid

Date Received: 06/27/19 09:57

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.000600	U	0.00476	0.000600	mg/Kg		06/27/19 11:07	06/29/19 17:33	1
Toluene	0.0143		0.00476	0.00131	mg/Kg		06/27/19 11:07	06/29/19 17:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	136	X	61 - 130	06/27/19 11:07	06/29/19 17:33	1
Dibromofluoromethane	114		68 - 140	06/27/19 11:07	06/29/19 17:33	1
Toluene-d8 (Surr)	105		50 - 130	06/27/19 11:07	06/29/19 17:33	1
4-Bromofluorobenzene	98		57 - 140	06/27/19 11:07	06/29/19 17:33	1

Method: 8260B - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	2.14		0.232	0.0474	mg/Kg		06/27/19 11:07	07/02/19 17:54	1
Xylenes, Total	4.47		0.232	0.0525	mg/Kg		06/27/19 11:07	07/02/19 17:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		61 - 130	06/27/19 11:07	07/02/19 17:54	1
Dibromofluoromethane	94		68 - 140	06/27/19 11:07	07/02/19 17:54	1
Toluene-d8 (Surr)	96		50 - 130	06/27/19 11:07	07/02/19 17:54	1
4-Bromofluorobenzene	93		57 - 140	06/27/19 11:07	07/02/19 17:54	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	41300		1060	683	ug/Kg		07/03/19 11:14	07/04/19 12:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	89		43 - 120	07/03/19 11:14	07/04/19 12:31	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	2900		501	346	mg/Kg		07/02/19 11:54	07/05/19 22:25	10
C28-C36	346	U	501	346	mg/Kg		07/02/19 11:54	07/05/19 22:25	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	86		26 - 125	07/02/19 11:54	07/05/19 22:25	10

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	393		7.98	1.07	mg/Kg			07/05/19 19:09	2

Client Sample ID: VDBT-01-1-2

Lab Sample ID: 600-187699-2

Date Collected: 06/25/19 13:15

Matrix: Solid

Date Received: 06/27/19 09:57

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2590		200	26.6	mg/Kg			07/05/19 21:33	50

Client Sample Results

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Client Sample ID: VDBT-02-0-1

Lab Sample ID: 600-187699-3

Date Collected: 06/25/19 13:50

Matrix: Solid

Date Received: 06/27/19 09:57

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3520		199	26.6	mg/Kg			07/02/19 20:00	50

Client Sample ID: VDBT-02-1-2

Lab Sample ID: 600-187699-4

Date Collected: 06/25/19 13:55

Matrix: Solid

Date Received: 06/27/19 09:57

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.00520		0.00437	0.000551	mg/Kg		06/27/19 11:07	06/29/19 18:19	1
Ethylbenzene	0.0269		0.00437	0.000892	mg/Kg		06/27/19 11:07	06/29/19 18:19	1
Toluene	0.0181		0.00437	0.00121	mg/Kg		06/27/19 11:07	06/29/19 18:19	1
Xylenes, Total	0.0469		0.00437	0.000988	mg/Kg		06/27/19 11:07	06/29/19 18:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		61 - 130	06/27/19 11:07	06/29/19 18:19	1
Dibromofluoromethane	111		68 - 140	06/27/19 11:07	06/29/19 18:19	1
Toluene-d8 (Surr)	107		50 - 130	06/27/19 11:07	06/29/19 18:19	1
4-Bromofluorobenzene	96		57 - 140	06/27/19 11:07	06/29/19 18:19	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	956		101	64.8	ug/Kg		07/01/19 09:46	07/01/19 16:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	87		43 - 120	07/01/19 09:46	07/01/19 16:12	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	3500		499	345	mg/Kg		07/02/19 11:54	07/05/19 22:53	10
C28-C36	638		499	345	mg/Kg		07/02/19 11:54	07/05/19 22:53	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	81		26 - 125	07/02/19 11:54	07/05/19 22:53	10

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8230		200	26.6	mg/Kg			07/02/19 19:42	50

Client Sample ID: VDBT-03-0-1

Lab Sample ID: 600-187699-5

Date Collected: 06/25/19 14:20

Matrix: Solid

Date Received: 06/27/19 09:57

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2190		39.9	5.33	mg/Kg			07/02/19 19:24	10

Client Sample Results

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Client Sample ID: VDBT-03-1-2

Lab Sample ID: 600-187699-6

Date Collected: 06/25/19 14:25

Matrix: Solid

Date Received: 06/27/19 09:57

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.000563	U	0.00446	0.000563	mg/Kg	-	06/27/19 11:07	06/29/19 19:06	1
Ethylbenzene	0.000911	U	0.00446	0.000911	mg/Kg	-	06/27/19 11:07	06/29/19 19:06	1
Toluene	0.00123	U	0.00446	0.00123	mg/Kg	-	06/27/19 11:07	06/29/19 19:06	1
Xylenes, Total	0.00101	U	0.00446	0.00101	mg/Kg	-	06/27/19 11:07	06/29/19 19:06	1
Surrogate									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		61 - 130				06/27/19 11:07	06/29/19 19:06	1
Dibromofluoromethane	106		68 - 140				06/27/19 11:07	06/29/19 19:06	1
Toluene-d8 (Surr)	101		50 - 130				06/27/19 11:07	06/29/19 19:06	1
4-Bromofluorobenzene	92		57 - 140				06/27/19 11:07	06/29/19 19:06	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	65.5	U	102	65.5	ug/Kg	-	07/01/19 09:46	07/01/19 17:38	1
Surrogate									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	92		43 - 120				07/01/19 09:46	07/01/19 17:38	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	33.6	U	48.6	33.6	mg/Kg	-	07/02/19 11:54	07/05/19 23:21	1
C28-C36	33.6	U	48.6	33.6	mg/Kg	-	07/02/19 11:54	07/05/19 23:21	1
Surrogate									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	56		26 - 125				07/02/19 11:54	07/05/19 23:21	1

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2850		79.8	10.7	mg/Kg	-		07/05/19 22:27	20

Client Sample ID: VDBT-04-0-1

Lab Sample ID: 600-187699-7

Date Collected: 06/25/19 14:50

Matrix: Solid

Date Received: 06/27/19 09:57

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8220		1980	264	mg/Kg	-		07/02/19 18:30	500

Client Sample ID: VDBT-04-1-2

Lab Sample ID: 600-187699-8

Date Collected: 06/25/19 14:55

Matrix: Solid

Date Received: 06/27/19 09:57

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.000455	U	0.00361	0.000455	mg/Kg	-	06/27/19 11:07	06/29/19 19:29	1
Ethylbenzene	0.000737	U	0.00361	0.000737	mg/Kg	-	06/27/19 11:07	06/29/19 19:29	1
Toluene	0.000997	U	0.00361	0.000997	mg/Kg	-	06/27/19 11:07	06/29/19 19:29	1
Xylenes, Total	0.000816	U	0.00361	0.000816	mg/Kg	-	06/27/19 11:07	06/29/19 19:29	1
Surrogate									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		61 - 130				06/27/19 11:07	06/29/19 19:29	1
Dibromofluoromethane	107		68 - 140				06/27/19 11:07	06/29/19 19:29	1

Eurofins TestAmerica, Houston

Client Sample Results

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Client Sample ID: VDBT-04-1-2

Lab Sample ID: 600-187699-8

Date Collected: 06/25/19 14:55

Matrix: Solid

Date Received: 06/27/19 09:57

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	108		50 - 130	06/27/19 11:07	06/29/19 19:29	1
4-Bromofluorobenzene	100		57 - 140	06/27/19 11:07	06/29/19 19:29	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	65.2	U	102	65.2	ug/Kg		07/01/19 09:46	07/01/19 18:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	91		43 - 120	07/01/19 09:46	07/01/19 18:21	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	661		48.5	33.5	mg/Kg		07/02/19 11:54	07/05/19 23:49	1
C28-C36	54.1		48.5	33.5	mg/Kg		07/02/19 11:54	07/05/19 23:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	84		26 - 125	07/02/19 11:54	07/05/19 23:49	1

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9090		1990	266	mg/Kg			07/02/19 19:06	500

Client Sample ID: VDBT-04-2-3

Lab Sample ID: 600-187699-9

Date Collected: 06/25/19 15:00

Matrix: Solid

Date Received: 06/27/19 09:57

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6330		397	53.0	mg/Kg			07/05/19 22:44	100

Client Sample ID: VDBT-05-0-1

Lab Sample ID: 600-187699-10

Date Collected: 06/25/19 15:20

Matrix: Solid

Date Received: 06/27/19 09:57

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.000481	U	0.00382	0.000481	mg/Kg		06/27/19 11:07	06/29/19 20:15	1
Ethylbenzene	0.000779	U	0.00382	0.000779	mg/Kg		06/27/19 11:07	06/29/19 20:15	1
Toluene	0.00105	U	0.00382	0.00105	mg/Kg		06/27/19 11:07	06/29/19 20:15	1
Xylenes, Total	0.000863	U	0.00382	0.000863	mg/Kg		06/27/19 11:07	06/29/19 20:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		61 - 130	06/27/19 11:07	06/29/19 20:15	1
Dibromofluoromethane	106		68 - 140	06/27/19 11:07	06/29/19 20:15	1
Toluene-d8 (Surr)	99		50 - 130	06/27/19 11:07	06/29/19 20:15	1
4-Bromofluorobenzene	90		57 - 140	06/27/19 11:07	06/29/19 20:15	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	64.6	U	101	64.6	ug/Kg		07/01/19 09:46	07/01/19 19:47	1

Eurofins TestAmerica, Houston

Client Sample Results

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Client Sample ID: VDBT-05-0-1

Date Collected: 06/25/19 15:20

Date Received: 06/27/19 09:57

Lab Sample ID: 600-187699-10

Matrix: Solid

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	96		43 - 120	07/01/19 09:46	07/01/19 19:47	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	360		47.6	32.9	mg/Kg		07/09/19 14:23	07/11/19 19:09	1
C28-C36	172		47.6	32.9	mg/Kg		07/09/19 14:23	07/11/19 19:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	83		26 - 125	07/09/19 14:23	07/11/19 19:09	1

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	593		7.94	1.06	mg/Kg			07/02/19 21:11	2

Client Sample ID: VDBT-05-1-2

Date Collected: 06/25/19 15:25

Date Received: 06/27/19 09:57

Lab Sample ID: 600-187699-11

Matrix: Solid

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2350		79.8	10.7	mg/Kg			07/05/19 23:02	20

Client Sample ID: TRIP BLANK

Date Collected: 06/25/19 00:00

Date Received: 06/27/19 09:57

Lab Sample ID: 600-187699-12

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.000176	U	0.00100	0.000176	mg/L			06/29/19 18:57	1
Ethylbenzene	0.000212	U	0.00100	0.000212	mg/L			06/29/19 18:57	1
Toluene	0.000198	U	0.00100	0.000198	mg/L			06/29/19 18:57	1
Xylenes, Total	0.000366	U	0.00100	0.000366	mg/L			06/29/19 18:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		50 - 134		06/29/19 18:57	1
Dibromofluoromethane	97		62 - 130		06/29/19 18:57	1
Toluene-d8 (Surr)	100		70 - 130		06/29/19 18:57	1
4-Bromofluorobenzene	106		67 - 139		06/29/19 18:57	1

Definitions/Glossary

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.
X	Surrogate is outside control limits

GC VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

GC Semi VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

HPLC/IC

Qualifier	Qualifier Description
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
U	Analyte was not detected at or above the SDL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Surrogate Summary

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (61-130)	DBFM (68-140)	TOL (50-130)	BFB (57-140)
600-187699-1	VDBT-01-0-1	136 X	114	105	98
600-187699-1 - DL	VDBT-01-0-1	98	94	96	93
600-187699-4	VDBT-02-1-2	118	111	107	96
600-187699-6	VDBT-03-1-2	115	106	101	92
600-187699-8	VDBT-04-1-2	111	107	108	100
600-187699-10	VDBT-05-0-1	119	106	99	90
LCS 600-268339/4	Lab Control Sample	101	100	102	93
LCS 600-268517/1-A	Lab Control Sample	95	93	97	92
LCSD 600-268339/5	Lab Control Sample Dup	114	107	99	92
LCSD 600-268517/2-A	Lab Control Sample Dup	87	87	90	82
MB 600-268339/7	Method Blank	107	104	103	94
MB 600-268517/3-A	Method Blank	103	98	96	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (50-134)	DBFM (62-130)	TOL (70-130)	BFB (67-139)
600-187699-12	TRIP BLANK	84	97	100	106
LCS 600-268327/3	Lab Control Sample	84	106	107	109
LCSD 600-268327/4	Lab Control Sample Dup	87	103	102	108
MB 600-268327/6	Method Blank	92	104	102	109

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene

Method: 8015B - Gasoline Range Organics - (GC)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TFT2
		(43-120)
600-187699-1	VDBT-01-0-1	89
600-187699-4	VDBT-02-1-2	87
600-187699-6	VDBT-03-1-2	92
600-187699-8	VDBT-04-1-2	91
600-187699-10	VDBT-05-0-1	96
LCS 240-389163/2-A	Lab Control Sample	101
LCS 240-389621/2-A	Lab Control Sample	97
MB 240-389163/1-A	Method Blank	89
MB 240-389621/1-A	Method Blank	90

Eurofins TestAmerica, Houston

Surrogate Summary

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

Surrogate Legend

TFT = Trifluorotoluene (Surr)

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OTPH1 (26-125)
600-187699-1	VDBT-01-0-1	86
600-187699-4	VDBT-02-1-2	81
600-187699-6	VDBT-03-1-2	56
600-187699-8	VDBT-04-1-2	84
600-187699-10	VDBT-05-0-1	83
LCS 240-389411/23-A	Lab Control Sample	82
LCS 240-390361/10-A	Lab Control Sample	72
MB 240-389411/22-A	Method Blank	83
MB 240-390361/9-A	Method Blank	66

Surrogate Legend

OTPH = o-Terphenyl (Surr)

QC Sample Results

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 600-268327/6
Matrix: Water
Analysis Batch: 268327

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.000176	U	0.00100	0.000176	mg/L			06/29/19 10:48	1
Ethylbenzene	0.000212	U	0.00100	0.000212	mg/L			06/29/19 10:48	1
Toluene	0.000198	U	0.00100	0.000198	mg/L			06/29/19 10:48	1
Xylenes, Total	0.000366	U	0.00100	0.000366	mg/L			06/29/19 10:48	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		50 - 134		06/29/19 10:48	1
Dibromofluoromethane	104		62 - 130		06/29/19 10:48	1
Toluene-d8 (Surr)	102		70 - 130		06/29/19 10:48	1
4-Bromofluorobenzene	109		67 - 139		06/29/19 10:48	1

Lab Sample ID: LCS 600-268327/3
Matrix: Water
Analysis Batch: 268327

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0100	0.01052		mg/L		105	70 - 130
Ethylbenzene	0.0100	0.01061		mg/L		106	70 - 130
Toluene	0.0100	0.01097		mg/L		110	70 - 130
Xylenes, Total	0.0200	0.02071		mg/L		104	70 - 130
o-Xylene	0.0100	0.01052		mg/L		105	70 - 130
m-Xylene & p-Xylene	0.0100	0.01019		mg/L		102	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	84		50 - 134
Dibromofluoromethane	106		62 - 130
Toluene-d8 (Surr)	107		70 - 130
4-Bromofluorobenzene	109		67 - 139

Lab Sample ID: LCSD 600-268327/4
Matrix: Water
Analysis Batch: 268327

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.0100	0.01011		mg/L		101	70 - 130	4	20
Ethylbenzene	0.0100	0.01030		mg/L		103	70 - 130	3	20
Toluene	0.0100	0.01056		mg/L		106	70 - 130	4	20
Xylenes, Total	0.0200	0.01998		mg/L		100	70 - 130	4	20
o-Xylene	0.0100	0.01005		mg/L		101	70 - 130	5	20
m-Xylene & p-Xylene	0.0100	0.009927		mg/L		99	70 - 130	3	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	87		50 - 134
Dibromofluoromethane	103		62 - 130
Toluene-d8 (Surr)	102		70 - 130
4-Bromofluorobenzene	108		67 - 139

QC Sample Results

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 600-268339/7

Matrix: Solid

Analysis Batch: 268339

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	0.000630	U	0.00500	0.000630	mg/Kg			06/29/19 14:03	1
Ethylbenzene	0.00102	U	0.00500	0.00102	mg/Kg			06/29/19 14:03	1
Toluene	0.00138	U	0.00500	0.00138	mg/Kg			06/29/19 14:03	1
Xylenes, Total	0.00113	U	0.00500	0.00113	mg/Kg			06/29/19 14:03	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	107		61 - 130		06/29/19 14:03	1
Dibromofluoromethane	104		68 - 140		06/29/19 14:03	1
Toluene-d8 (Surr)	103		50 - 130		06/29/19 14:03	1
4-Bromofluorobenzene	94		57 - 140		06/29/19 14:03	1

Lab Sample ID: LCS 600-268339/4

Matrix: Solid

Analysis Batch: 268339

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzene	0.0500	0.05084		mg/Kg		102	70 - 131
Ethylbenzene	0.0500	0.05101		mg/Kg		102	66 - 130
Toluene	0.0500	0.04956		mg/Kg		99	67 - 130
Xylenes, Total	0.100	0.1079		mg/Kg		108	63 - 130
m-Xylene & p-Xylene	0.0500	0.05339		mg/Kg		107	64 - 130
o-Xylene	0.0500	0.05447		mg/Kg		109	62 - 130

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	101		61 - 130
Dibromofluoromethane	100		68 - 140
Toluene-d8 (Surr)	102		50 - 130
4-Bromofluorobenzene	93		57 - 140

Lab Sample ID: LCSD 600-268339/5

Matrix: Solid

Analysis Batch: 268339

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
		Result	Qualifier						
Benzene	0.0500	0.05408		mg/Kg		108	70 - 131	6	30
Ethylbenzene	0.0500	0.05173		mg/Kg		103	66 - 130	1	30
Toluene	0.0500	0.05012		mg/Kg		100	67 - 130	1	30
Xylenes, Total	0.100	0.1089		mg/Kg		109	63 - 130	1	30
m-Xylene & p-Xylene	0.0500	0.05333		mg/Kg		107	64 - 130	0	30
o-Xylene	0.0500	0.05557		mg/Kg		111	62 - 130	2	30

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	114		61 - 130
Dibromofluoromethane	107		68 - 140
Toluene-d8 (Surr)	99		50 - 130
4-Bromofluorobenzene	92		57 - 140

Eurofins TestAmerica, Houston

QC Sample Results

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 600-268517/3-A

Matrix: Solid

Analysis Batch: 268524

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 268517

Analyte	MB MB		MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Ethylbenzene	0.128	U	0.625	0.128	mg/Kg		07/02/19 10:00	07/02/19 14:46	1
Xylenes, Total	0.141	U	0.625	0.141	mg/Kg		07/02/19 10:00	07/02/19 14:46	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	103		61 - 130	07/02/19 10:00	07/02/19 14:46	1
Dibromofluoromethane	98		68 - 140	07/02/19 10:00	07/02/19 14:46	1
Toluene-d8 (Surr)	96		50 - 130	07/02/19 10:00	07/02/19 14:46	1
4-Bromofluorobenzene	99		57 - 140	07/02/19 10:00	07/02/19 14:46	1

Lab Sample ID: LCS 600-268517/1-A

Matrix: Solid

Analysis Batch: 268524

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 268517

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Ethylbenzene	6.25	5.470		mg/Kg		88	66 - 130
Xylenes, Total	12.5	11.25		mg/Kg		90	63 - 130
m-Xylene & p-Xylene	6.25	5.479		mg/Kg		88	64 - 130
o-Xylene	6.25	5.774		mg/Kg		92	62 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	95		61 - 130
Dibromofluoromethane	93		68 - 140
Toluene-d8 (Surr)	97		50 - 130
4-Bromofluorobenzene	92		57 - 140

Lab Sample ID: LCSD 600-268517/2-A

Matrix: Solid

Analysis Batch: 268524

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 268517

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	Limits	RPD	Limit
		Result	Qualifier						
Ethylbenzene	6.25	5.011		mg/Kg		80	66 - 130	9	30
Xylenes, Total	12.5	10.10		mg/Kg		81	63 - 130	11	30
m-Xylene & p-Xylene	6.25	4.950		mg/Kg		79	64 - 130	10	30
o-Xylene	6.25	5.153		mg/Kg		82	62 - 130	11	30

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	87		61 - 130
Dibromofluoromethane	87		68 - 140
Toluene-d8 (Surr)	90		50 - 130
4-Bromofluorobenzene	82		57 - 140

QC Sample Results

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 240-389163/1-A
Matrix: Solid
Analysis Batch: 389182

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389163

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	64.2	U	100	64.2	ug/Kg		07/01/19 09:46	07/01/19 13:23	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	89		43 - 120				07/01/19 09:46	07/01/19 13:23	1

Lab Sample ID: LCS 240-389163/2-A
Matrix: Solid
Analysis Batch: 389182

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389163

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
C6-C10	800	890.3		ug/Kg		111	76 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
Trifluorotoluene (Surr)	101		43 - 120				

Lab Sample ID: MB 240-389621/1-A
Matrix: Solid
Analysis Batch: 389626

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389621

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	64.2	U	100	64.2	ug/Kg		07/03/19 11:14	07/04/19 06:09	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	90		43 - 120				07/03/19 11:14	07/04/19 06:09	1

Lab Sample ID: LCS 240-389621/2-A
Matrix: Solid
Analysis Batch: 389626

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389621

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
C6-C10	800	786.0		ug/Kg		98	76 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
Trifluorotoluene (Surr)	97		43 - 120				

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 240-389411/22-A
Matrix: Solid
Analysis Batch: 389892

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389411

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	34.6	U	50.0	34.6	mg/Kg		07/02/19 11:54	07/05/19 21:29	1
C28-C36	34.6	U	50.0	34.6	mg/Kg		07/02/19 11:54	07/05/19 21:29	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	83		26 - 125				07/02/19 11:54	07/05/19 21:29	1

Eurofins TestAmerica, Houston

QC Sample Results

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 240-389411/23-A
Matrix: Solid
Analysis Batch: 389892

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389411
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Diesel Range Organics [C10 - C28]	250	217.3		mg/Kg		87	45 - 120
Surrogate	%Recovery	LCS Qualifier	Limits				
<i>o</i> -Terphenyl (Surr)	82		26 - 125				

Lab Sample ID: MB 240-390361/9-A
Matrix: Solid
Analysis Batch: 390807

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390361

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	34.6	U	50.0	34.6	mg/Kg		07/09/19 14:23	07/11/19 17:45	1
C28-C36	34.6	U	50.0	34.6	mg/Kg		07/09/19 14:23	07/11/19 17:45	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl (Surr)	66		26 - 125				07/09/19 14:23	07/11/19 17:45	1

Lab Sample ID: LCS 240-390361/10-A
Matrix: Solid
Analysis Batch: 390807

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390361
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Diesel Range Organics [C10 - C28]	250	171.9		mg/Kg		69	45 - 120
Surrogate	%Recovery	LCS Qualifier	Limits				
<i>o</i> -Terphenyl (Surr)	72		26 - 125				

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 600-268541/1-A
Matrix: Solid
Analysis Batch: 268534

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.534	U	4.00	0.534	mg/Kg			07/02/19 12:30	1

Lab Sample ID: LCS 600-268541/2-A
Matrix: Solid
Analysis Batch: 268534

Client Sample ID: Lab Control Sample
Prep Type: Soluble
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chloride	200	196.8		mg/Kg		98	90 - 110

QC Sample Results

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 600-187699-10 MS

Matrix: Solid

Analysis Batch: 268534

Client Sample ID: VDBT-05-0-1

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	593		198	722.0	N1	mg/Kg		65	80 - 120

Lab Sample ID: 600-187699-10 MSD

Matrix: Solid

Analysis Batch: 268534

Client Sample ID: VDBT-05-0-1

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	593		198	721.8	N1	mg/Kg		65	80 - 120	0	20

Lab Sample ID: MB 600-268802/1-A

Matrix: Solid

Analysis Batch: 268797

Client Sample ID: Method Blank

Prep Type: Soluble

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.534	U	4.00	0.534	mg/Kg			07/05/19 17:16	1

Lab Sample ID: LCS 600-268802/2-A

Matrix: Solid

Analysis Batch: 268797

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	200	197.6		mg/Kg		99	90 - 110

Lab Sample ID: 600-187699-2 MS

Matrix: Solid

Analysis Batch: 268797

Client Sample ID: VDBT-01-1-2

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2590		4990	6399	N1	mg/Kg		76	80 - 120

Lab Sample ID: 600-187699-2 MSD

Matrix: Solid

Analysis Batch: 268797

Client Sample ID: VDBT-01-1-2

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	2590		4990	6387	N1	mg/Kg		76	80 - 120	0	20

Unadjusted Detection Limits

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units
Benzene	0.00100	0.000176	mg/L
Ethylbenzene	0.00100	0.000212	mg/L
Toluene	0.00100	0.000198	mg/L
Xylenes, Total	0.00100	0.000366	mg/L

Method: 8260B - Volatile Organic Compounds (GC/MS)

Prep: 5035

Analyte	MQL	MDL	Units
Benzene	0.00500	0.000630	mg/Kg
Ethylbenzene	0.00500	0.00102	mg/Kg
Toluene	0.00500	0.00138	mg/Kg
Xylenes, Total	0.00500	0.00113	mg/Kg

Method: 8015B - Gasoline Range Organics - (GC)

Prep: 5030A

Analyte	MQL	MDL	Units
C6-C10	100	64.2	ug/Kg

Method: 8015B - Diesel Range Organics (DRO) (GC)

Prep: 3546

Analyte	MQL	MDL	Units
C28-C36	50.0	34.6	mg/Kg
Diesel Range Organics [C10 - C28]	50.0	34.6	mg/Kg

Method: 9056A - Anions, Ion Chromatography - Soluble

Leach: DI Leach

Analyte	MQL	MDL	Units
Chloride	4.00	0.534	mg/Kg

QC Association Summary

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

GC/MS VOA

Analysis Batch: 268327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-12	TRIP BLANK	Total/NA	Water	8260B	
MB 600-268327/6	Method Blank	Total/NA	Water	8260B	
LCS 600-268327/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 600-268327/4	Lab Control Sample Dup	Total/NA	Water	8260B	

Analysis Batch: 268339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-1	VDBT-01-0-1	Total/NA	Solid	8260B	268345
600-187699-4	VDBT-02-1-2	Total/NA	Solid	8260B	268345
600-187699-6	VDBT-03-1-2	Total/NA	Solid	8260B	268345
600-187699-8	VDBT-04-1-2	Total/NA	Solid	8260B	268345
600-187699-10	VDBT-05-0-1	Total/NA	Solid	8260B	268345
MB 600-268339/7	Method Blank	Total/NA	Solid	8260B	
LCS 600-268339/4	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 600-268339/5	Lab Control Sample Dup	Total/NA	Solid	8260B	

Prep Batch: 268345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-1	VDBT-01-0-1	Total/NA	Solid	5035	
600-187699-4	VDBT-02-1-2	Total/NA	Solid	5035	
600-187699-6	VDBT-03-1-2	Total/NA	Solid	5035	
600-187699-8	VDBT-04-1-2	Total/NA	Solid	5035	
600-187699-10	VDBT-05-0-1	Total/NA	Solid	5035	

Prep Batch: 268517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 600-268517/3-A	Method Blank	Total/NA	Solid	5030B	
LCS 600-268517/1-A	Lab Control Sample	Total/NA	Solid	5030B	
LCSD 600-268517/2-A	Lab Control Sample Dup	Total/NA	Solid	5030B	

Prep Batch: 268518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-1 - DL	VDBT-01-0-1	Total/NA	Solid	5035	

Analysis Batch: 268524

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-1 - DL	VDBT-01-0-1	Total/NA	Solid	8260B	268518
MB 600-268517/3-A	Method Blank	Total/NA	Solid	8260B	268517
LCS 600-268517/1-A	Lab Control Sample	Total/NA	Solid	8260B	268517
LCSD 600-268517/2-A	Lab Control Sample Dup	Total/NA	Solid	8260B	268517

GC VOA

Prep Batch: 389163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-4	VDBT-02-1-2	Total/NA	Solid	5030A	
600-187699-6	VDBT-03-1-2	Total/NA	Solid	5030A	
600-187699-8	VDBT-04-1-2	Total/NA	Solid	5030A	
600-187699-10	VDBT-05-0-1	Total/NA	Solid	5030A	
MB 240-389163/1-A	Method Blank	Total/NA	Solid	5030A	
LCS 240-389163/2-A	Lab Control Sample	Total/NA	Solid	5030A	

Eurofins TestAmerica, Houston

QC Association Summary

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

GC VOA

Analysis Batch: 389182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-4	VDBT-02-1-2	Total/NA	Solid	8015B	389163
600-187699-6	VDBT-03-1-2	Total/NA	Solid	8015B	389163
600-187699-8	VDBT-04-1-2	Total/NA	Solid	8015B	389163
600-187699-10	VDBT-05-0-1	Total/NA	Solid	8015B	389163
MB 240-389163/1-A	Method Blank	Total/NA	Solid	8015B	389163
LCS 240-389163/2-A	Lab Control Sample	Total/NA	Solid	8015B	389163

Prep Batch: 389621

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-1	VDBT-01-0-1	Total/NA	Solid	5030A	
MB 240-389621/1-A	Method Blank	Total/NA	Solid	5030A	
LCS 240-389621/2-A	Lab Control Sample	Total/NA	Solid	5030A	

Analysis Batch: 389626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-1	VDBT-01-0-1	Total/NA	Solid	8015B	389621
MB 240-389621/1-A	Method Blank	Total/NA	Solid	8015B	389621
LCS 240-389621/2-A	Lab Control Sample	Total/NA	Solid	8015B	389621

GC Semi VOA

Prep Batch: 389411

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-1	VDBT-01-0-1	Total/NA	Solid	3546	
600-187699-4	VDBT-02-1-2	Total/NA	Solid	3546	
600-187699-6	VDBT-03-1-2	Total/NA	Solid	3546	
600-187699-8	VDBT-04-1-2	Total/NA	Solid	3546	
MB 240-389411/22-A	Method Blank	Total/NA	Solid	3546	
LCS 240-389411/23-A	Lab Control Sample	Total/NA	Solid	3546	

Analysis Batch: 389892

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-1	VDBT-01-0-1	Total/NA	Solid	8015B	389411
600-187699-4	VDBT-02-1-2	Total/NA	Solid	8015B	389411
600-187699-6	VDBT-03-1-2	Total/NA	Solid	8015B	389411
600-187699-8	VDBT-04-1-2	Total/NA	Solid	8015B	389411
MB 240-389411/22-A	Method Blank	Total/NA	Solid	8015B	389411
LCS 240-389411/23-A	Lab Control Sample	Total/NA	Solid	8015B	389411

Prep Batch: 390361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-10	VDBT-05-0-1	Total/NA	Solid	3546	
MB 240-390361/9-A	Method Blank	Total/NA	Solid	3546	
LCS 240-390361/10-A	Lab Control Sample	Total/NA	Solid	3546	

Analysis Batch: 390807

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-10	VDBT-05-0-1	Total/NA	Solid	8015B	390361
MB 240-390361/9-A	Method Blank	Total/NA	Solid	8015B	390361
LCS 240-390361/10-A	Lab Control Sample	Total/NA	Solid	8015B	390361

Eurofins TestAmerica, Houston

QC Association Summary

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

HPLC/IC

Analysis Batch: 268534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-3	VDBT-02-0-1	Soluble	Solid	9056A	268541
600-187699-4	VDBT-02-1-2	Soluble	Solid	9056A	268541
600-187699-5	VDBT-03-0-1	Soluble	Solid	9056A	268541
600-187699-7	VDBT-04-0-1	Soluble	Solid	9056A	268541
600-187699-8	VDBT-04-1-2	Soluble	Solid	9056A	268541
600-187699-10	VDBT-05-0-1	Soluble	Solid	9056A	268541
MB 600-268541/1-A	Method Blank	Soluble	Solid	9056A	268541
LCS 600-268541/2-A	Lab Control Sample	Soluble	Solid	9056A	268541
600-187699-10 MS	VDBT-05-0-1	Soluble	Solid	9056A	268541
600-187699-10 MSD	VDBT-05-0-1	Soluble	Solid	9056A	268541

Leach Batch: 268541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-3	VDBT-02-0-1	Soluble	Solid	DI Leach	
600-187699-4	VDBT-02-1-2	Soluble	Solid	DI Leach	
600-187699-5	VDBT-03-0-1	Soluble	Solid	DI Leach	
600-187699-7	VDBT-04-0-1	Soluble	Solid	DI Leach	
600-187699-8	VDBT-04-1-2	Soluble	Solid	DI Leach	
600-187699-10	VDBT-05-0-1	Soluble	Solid	DI Leach	
MB 600-268541/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 600-268541/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
600-187699-10 MS	VDBT-05-0-1	Soluble	Solid	DI Leach	
600-187699-10 MSD	VDBT-05-0-1	Soluble	Solid	DI Leach	

Analysis Batch: 268797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-1	VDBT-01-0-1	Soluble	Solid	9056A	268802
600-187699-2	VDBT-01-1-2	Soluble	Solid	9056A	268802
600-187699-6	VDBT-03-1-2	Soluble	Solid	9056A	268802
600-187699-9	VDBT-04-2-3	Soluble	Solid	9056A	268802
600-187699-11	VDBT-05-1-2	Soluble	Solid	9056A	268802
MB 600-268802/1-A	Method Blank	Soluble	Solid	9056A	268802
LCS 600-268802/2-A	Lab Control Sample	Soluble	Solid	9056A	268802
600-187699-2 MS	VDBT-01-1-2	Soluble	Solid	9056A	268802
600-187699-2 MSD	VDBT-01-1-2	Soluble	Solid	9056A	268802

Leach Batch: 268802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-1	VDBT-01-0-1	Soluble	Solid	DI Leach	
600-187699-2	VDBT-01-1-2	Soluble	Solid	DI Leach	
600-187699-6	VDBT-03-1-2	Soluble	Solid	DI Leach	
600-187699-9	VDBT-04-2-3	Soluble	Solid	DI Leach	
600-187699-11	VDBT-05-1-2	Soluble	Solid	DI Leach	
MB 600-268802/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 600-268802/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
600-187699-2 MS	VDBT-01-1-2	Soluble	Solid	DI Leach	
600-187699-2 MSD	VDBT-01-1-2	Soluble	Solid	DI Leach	

Lab Chronicle

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Client Sample ID: VDBT-01-0-1

Lab Sample ID: 600-187699-1

Date Collected: 06/25/19 13:10

Matrix: Solid

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			268345	06/27/19 11:07	WS1	TAL HOU
Total/NA	Analysis	8260B		1	268339	06/29/19 17:33	KLV	TAL HOU
Total/NA	Prep	5035	DL		268518	06/27/19 11:07	KLV	TAL HOU
Total/NA	Analysis	8260B	DL	1	268524	07/02/19 17:54	KLV	TAL HOU
Total/NA	Prep	5030A			389621	07/03/19 11:14	LKG	TAL CAN
Total/NA	Analysis	8015B		1	389626	07/04/19 12:31	KMG	TAL CAN
Total/NA	Prep	3546			389411	07/02/19 11:54	ZMF	TAL CAN
Total/NA	Analysis	8015B		10	389892	07/05/19 22:25	DEB	TAL CAN
Soluble	Leach	DI Leach			268802	07/05/19 18:25	SKR	TAL HOU
Soluble	Analysis	9056A		2	268797	07/05/19 19:09	SKR	TAL HOU

Client Sample ID: VDBT-01-1-2

Lab Sample ID: 600-187699-2

Date Collected: 06/25/19 13:15

Matrix: Solid

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268802	07/05/19 18:25	SKR	TAL HOU
Soluble	Analysis	9056A		50	268797	07/05/19 21:33	SKR	TAL HOU

Client Sample ID: VDBT-02-0-1

Lab Sample ID: 600-187699-3

Date Collected: 06/25/19 13:50

Matrix: Solid

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268541	07/02/19 12:43	SKR	TAL HOU
Soluble	Analysis	9056A		50	268534	07/02/19 20:00	SKR	TAL HOU

Client Sample ID: VDBT-02-1-2

Lab Sample ID: 600-187699-4

Date Collected: 06/25/19 13:55

Matrix: Solid

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			268345	06/27/19 11:07	WS1	TAL HOU
Total/NA	Analysis	8260B		1	268339	06/29/19 18:19	KLV	TAL HOU
Total/NA	Prep	5030A			389163	07/01/19 09:46	LKG	TAL CAN
Total/NA	Analysis	8015B		1	389182	07/01/19 16:12	LKG	TAL CAN
Total/NA	Prep	3546			389411	07/02/19 11:54	ZMF	TAL CAN
Total/NA	Analysis	8015B		10	389892	07/05/19 22:53	DEB	TAL CAN
Soluble	Leach	DI Leach			268541	07/02/19 12:43	SKR	TAL HOU
Soluble	Analysis	9056A		50	268534	07/02/19 19:42	SKR	TAL HOU

Lab Chronicle

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Client Sample ID: VDBT-03-0-1

Lab Sample ID: 600-187699-5

Date Collected: 06/25/19 14:20

Matrix: Solid

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268541	07/02/19 12:43	SKR	TAL HOU
Soluble	Analysis	9056A		10	268534	07/02/19 19:24	SKR	TAL HOU

Client Sample ID: VDBT-03-1-2

Lab Sample ID: 600-187699-6

Date Collected: 06/25/19 14:25

Matrix: Solid

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			268345	06/27/19 11:07	WS1	TAL HOU
Total/NA	Analysis	8260B		1	268339	06/29/19 19:06	KLV	TAL HOU
Total/NA	Prep	5030A			389163	07/01/19 09:46	LKG	TAL CAN
Total/NA	Analysis	8015B		1	389182	07/01/19 17:38	LKG	TAL CAN
Total/NA	Prep	3546			389411	07/02/19 11:54	ZMF	TAL CAN
Total/NA	Analysis	8015B		1	389892	07/05/19 23:21	DEB	TAL CAN
Soluble	Leach	DI Leach			268802	07/05/19 18:25	SKR	TAL HOU
Soluble	Analysis	9056A		20	268797	07/05/19 22:27	SKR	TAL HOU

Client Sample ID: VDBT-04-0-1

Lab Sample ID: 600-187699-7

Date Collected: 06/25/19 14:50

Matrix: Solid

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268541	07/02/19 12:43	SKR	TAL HOU
Soluble	Analysis	9056A		500	268534	07/02/19 18:30	SKR	TAL HOU

Client Sample ID: VDBT-04-1-2

Lab Sample ID: 600-187699-8

Date Collected: 06/25/19 14:55

Matrix: Solid

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			268345	06/27/19 11:07	WS1	TAL HOU
Total/NA	Analysis	8260B		1	268339	06/29/19 19:29	KLV	TAL HOU
Total/NA	Prep	5030A			389163	07/01/19 09:46	LKG	TAL CAN
Total/NA	Analysis	8015B		1	389182	07/01/19 18:21	LKG	TAL CAN
Total/NA	Prep	3546			389411	07/02/19 11:54	ZMF	TAL CAN
Total/NA	Analysis	8015B		1	389892	07/05/19 23:49	DEB	TAL CAN
Soluble	Leach	DI Leach			268541	07/02/19 12:43	SKR	TAL HOU
Soluble	Analysis	9056A		500	268534	07/02/19 19:06	SKR	TAL HOU

Client Sample ID: VDBT-04-2-3

Lab Sample ID: 600-187699-9

Date Collected: 06/25/19 15:00

Matrix: Solid

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268802	07/05/19 18:25	SKR	TAL HOU
Soluble	Analysis	9056A		100	268797	07/05/19 22:44	SKR	TAL HOU

Eurofins TestAmerica, Houston

Lab Chronicle

Client: AECOM
Project/Site: Vacuum Drinkard Tank Battery

Job ID: 600-187699-1

Client Sample ID: VDBT-05-0-1

Lab Sample ID: 600-187699-10

Date Collected: 06/25/19 15:20

Matrix: Solid

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			268345	06/27/19 11:07	WS1	TAL HOU
Total/NA	Analysis	8260B		1	268339	06/29/19 20:15	KLV	TAL HOU
Total/NA	Prep	5030A			389163	07/01/19 09:46	LKG	TAL CAN
Total/NA	Analysis	8015B		1	389182	07/01/19 19:47	LKG	TAL CAN
Total/NA	Prep	3546			390361	07/09/19 14:23	ZMF	TAL CAN
Total/NA	Analysis	8015B		1	390807	07/11/19 19:09	DEB	TAL CAN
Soluble	Leach	DI Leach			268541	07/02/19 17:11	SKR	TAL HOU
Soluble	Analysis	9056A		2	268534	07/02/19 21:11	SKR	TAL HOU

Client Sample ID: VDBT-05-1-2

Lab Sample ID: 600-187699-11

Date Collected: 06/25/19 15:25

Matrix: Solid

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268802	07/05/19 18:25	SKR	TAL HOU
Soluble	Analysis	9056A		20	268797	07/05/19 23:02	SKR	TAL HOU

Client Sample ID: TRIP BLANK

Lab Sample ID: 600-187699-12

Date Collected: 06/25/19 00:00

Matrix: Water

Date Received: 06/27/19 09:57

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	268327	06/29/19 18:57	WS1	TAL HOU

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL HOU = Eurofins TestAmerica, Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Accreditation/Certification Summary

Client: AECOM

Job ID: 600-187699-1

Project/Site: Vacuum Drinkard Tank Battery

Laboratory: Eurofins TestAmerica, Houston

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Texas	NELAP	6	T104704223-18-23	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
-----------------	-------------	--------	---------

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-19 *
Illinois	NELAP		004498	07-31-19
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State		OH00048	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

Client Information
Client Contact: Mr. Wallace Gilmore
Address: 19219 Katy Freeway Suite 100
City: Houston
State, Zip: TX, 77094
Phone: 713-520-9900 (Tel) 713-520-6800 (Fax)
Email: wallace.gilmore@aeccom.com
Project Name: Chevron
Project #: 60008660
Site #: SSOVW#

Sampler: SF
Sample ID: 505-699-3257
Lab PM: Kudchadkar, Sachin G
E-Mail: sachin.kudchadkar@testamericainc.com

Carrier Tracking (olt/s):

COC No.: 600-69310-18903.1
Page: 1/1

Analysis Requested

Field Filtered Sample (Yes or No)

Perform MS/MSD (Yes or No)

TX_1005 - (TPH)	N	N	N	N	N	N	N
8260B - BTEX Only	N	N	N	N	N	N	N
9056_ORGFM_28D - Chloride	N	N	N	N	N	N	N
1311/ 6010B, 7470A- TCLP metals	N	N	N	N	N	N	N
moisture	N	N	N	N	N	N	N

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Ammonia	S - H2SO4
H - Ascorbic Acid	T - TSP (Dobscarbonate)
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDTA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=soil, G=grab, ST=trans, Anal)	Preservation Code	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers	Special Instructions/Note	
VDBT-01-0-1	6/25/19	1310	G	Solid		2	3	1	1	Hold
VDBT-01-1-2	6/25/19	1315	G	Solid		2	3	1	1	Hold
VDBT-02-0-1	6/25/19	1350	G	Solid		2	3	1	1	Hold
VDBT-02-1-2	6/25/19	1355	G	Solid		2	3	1	1	Hold
VDBT-03-0-1	6/25/19	1420	G	Solid		2	3	1	1	Hold
VDBT-03-1-2	6/25/19	1425	G	Solid		2	3	1	1	Hold
VDBT-04-0-1	6/25/19	1450	G	Solid		2	3	1	1	Hold
VDBT-04-1-2	6/25/19	1455	G	Solid		2	3	1	1	Hold
VDBT-04-2-3	6/25/19	1500	G	Solid		2	3	1	1	Hold
VDBT-05-0-1	6/25/19	1520	G	Solid		2	3	1	1	Hold
VDBT-05-1-2	6/25/19	1525	G	Solid		2	3	1	1	Hold



Possible Hazard Identification

Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological

Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Months

Relinquished by: [Signature]

Date: 6/24/19
Time: 4:45

Company: HEB

Received by: [Signature]

Date/Time: [Signature]

Company: [Signature]

Relinquished by: [Signature]

Date/Time:

Company:

Custody Seals Intact: Yes No

Custody Seal NO.:

Color Temperature(s) °C and Other Remarks:

Sample Receipt Checklist

'19 JUN 27 9:57

JOB NUMBER: _____

Date/Time Received: _____

UNPACKED BY: As

CLIENT: AECOM

CARRIER/DRIVER: FedEx

Custody Seal Present: YES NO

Number of Coolers Received: 1

Cooler ID	Temp Blank	Trip Blank	Observed Temp (°C)	Therm ID	Therm CF	Corrected Temp (°C)
<u>BW</u>	<u>Y / N</u>	<u>Y / N</u>	<u>4.5</u>	<u>078</u>	<u>+0.1</u>	<u>4.6</u>
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				

CF = correction factor

As
6/26/19
6/27/19

Samples received on ice? YES NO

LABORATORY PRESERVATION OF SAMPLES REQUIRED: NO YES

Base samples are > pH 12: YES NO Acid preserved are < pH 2: YES NO

pH paper Lot # _____

VOA headspace acceptable (5-6mm): YES NO NA

	YES	NO
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

COMMENTS:

not COC
IB received NOT listed on COC.

As
6/26/19
6/27/19

600-187699 Waybill



FedEx
TRK# 4840 2006 5599
0221

THU - 27 JUN 10:30A
PRIORITY OVERNIGHT

AB LKSA

77040
TX-US IAH



#244918 06/26 56511/D210/29AD

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Chain of Custody Record



Environment Testing
 TestAmerica



Client Information (Sub Contract Lab)
 Client Contact: Kuchhadkar, Sachin G
 Shipping/Receiving: sachin.kuchhadkar@testamerica.com
 Company: TestAmerica Laboratories, Inc.
 Address: 4101 Shuffel Street NW, North Canton, OH, 44720
 Phone: 330-497-9396(Tel) 330-497-0772(Fax)
 Email: [Blank]
 Project Name: Chevron
 Site: [Blank]

Sampler: Lab PM: Kuchhadkar, Sachin G
 Phone: E-Mail: sachin.kuchhadkar@testamerica.com
 State of Origin: Texas
 Carrier Tracking No(s): [Blank]
 COC No: 600-40347.1
 Page: Page 1 of 1
 Job #: 600-187699-1
 Preservation Codes:
 A - HCL
 B - NaOH
 C - Zn Acetate
 D - Nitric Acid
 E - NaHSO4
 F - MeOH
 G - Amchlor
 H - Ascorbic Acid
 I - Ice
 J - DI Water
 K - EDTA
 L - EDA
 Other: [Blank]
 M - Hexane
 N - None
 O - AsNaO2
 P - Na2O4S
 Q - Na2SO3
 R - Na2SO4
 S - H2SO4
 T - TSP Dodecahydrate
 U - Acetone
 V - MCAA
 W - pH 4.5
 Z - other (specify)

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=organics, BT=titans, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8015B_GRO/503B_SolidNAC (MOD) Copy Analytes	8015B_DRO/354E (MOD) Diesel Range Organics [C10-C28]	Total Number of Containers	Special Instructions/Note:
VDBT-01-0-1 (600-187699-1)	6/25/19	13:10 Central	Solid	Solid	X	X	X	X	3	
VDBT-01-1-2 (600-187699-2)	6/25/19	13:15 Central	Solid	Solid	X	X	X	X	3	
VDBT-02-1-2 (600-187699-4)	6/25/19	13:55 Central	Solid	Solid	X	X	X	X	3	
VDBT-03-0-1 (600-187699-5)	6/25/19	14:20 Central	Solid	Solid	X	X	X	X	3	
VDBT-03-1-2 (600-187699-6)	6/25/19	14:25 Central	Solid	Solid	X	X	X	X	3	
VDBT-04-1-2 (600-187699-8)	6/25/19	14:55 Central	Solid	Solid	X	X	X	X	3	
VDBT-04-2-3 (600-187699-9)	6/25/19	15:00 Central	Solid	Solid	X	X	X	X	3	
VDBT-05-0-1 (600-187699-10)	6/25/19	15:20 Central	Solid	Solid	X	X	X	X	3	
VDBT-05-1-2 (600-187699-11)	6/25/19	15:25 Central	Solid	Solid	X	X	X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) _____
 Primary Deliverable Rank: 2
 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/OC Requirements: _____

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: [Signature]	6/27/19 (188)		
Relinquished by: [Signature]	6-28-19	9:15	Company: ETAC
Relinquished by:			Company:
Relinquished by:			Company:

Custody Seals Intact Custody Seal No.:
 Δ Yes Δ No
 Cooler Temperature(s) °C and Other Remarks:



Eurofins TestAmerica Canton Sample Receipt Form/Narrative		Login # : _____
Canton Facility		
Client <u>ETA Houston</u>	Site Name _____	Cooler unpacked by: <u>MJL</u>
Cooler Received on <u>6-28-19</u>	Opened on <u>6-28-19</u>	
FedEx: 1 st Grd <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FAS <input type="checkbox"/> Clipper <input type="checkbox"/> Client Drop Off <input type="checkbox"/> TestAmerica Courier <input type="checkbox"/> Other <input type="checkbox"/>		
Receipt After-hours: Drop-off Date/Time		Storage Location
TestAmerica Cooler # <u>TA</u>	Foam Box <input type="checkbox"/>	Client Cooler <input type="checkbox"/>
	Box <input type="checkbox"/>	Other <input type="checkbox"/>
Packing material used: <u>Bubble Wrap</u> <input type="checkbox"/> Foam <u>Plastic Bag</u> <input type="checkbox"/> None <input type="checkbox"/> Other <input type="checkbox"/>		
COOLANT: <u>Wet Ice</u> <input type="checkbox"/> Blue Ice <input type="checkbox"/> Dry Ice <input type="checkbox"/> Water <input type="checkbox"/> None <input type="checkbox"/>		
1. Cooler temperature upon receipt		<input type="checkbox"/> See Multiple Cooler Form
IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp. <u>2.4</u> °C Corrected Cooler Temp. <u>2.5</u> °C		
IR GUN #36 (CF +0.6°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C		
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity <u>1</u>	<input checked="" type="radio"/> Yes	<input type="radio"/> No
-Were the seals on the outside of the cooler(s) signed & dated?	<input checked="" type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
-Were tamper/custody seals intact and uncompromised?	<input checked="" type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> NA
3. Shippers' packing slip attached to the cooler(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
4. Did custody papers accompany the sample(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
5. Were the custody papers relinquished & signed in the appropriate place?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
7. Did all bottles arrive in good condition (Unbroken)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
8. Could all bottle labels be reconciled with the COC?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
9. Were correct bottle(s) used for the test(s) indicated?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
10. Sufficient quantity received to perform indicated analyses?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
11. Are these work share samples?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	<input type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> NA
13. Were VOAs on the COC?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
14. Were air bubbles >6 mm in any VOA vials? <input checked="" type="radio"/> Larger than this.	<input checked="" type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	<input checked="" type="radio"/> Yes	<input type="radio"/> No
16. Was a LL Hg or Me Hg trip blank present? _____	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____		
Concerning _____		

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES	Samples processed by: _____
_____ _____ _____ _____	
18. SAMPLE CONDITION	
Sample(s) _____ were received after the recommended holding time had expired.	
Sample(s) _____ were received in a broken container.	
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)	
19. SAMPLE PRESERVATION	
Sample(s) _____ were further preserved in the laboratory.	
Time preserved: _____ Preservative(s) added/Lot number(s): _____	
VOA Sample Preservation - Date/Time VOAs Frozen: _____	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 600-187699-1

Login Number: 187699

List Source: Eurofins TestAmerica, Houston

List Number: 1

Creator: Taylor, Jacquelyn R

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Received Trip Blank(s) not listed on COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

Appendix E

Field Screening Procedures for Chloride in Soil

V. Soil Analytical Tests

A. Analytical Procedure to Determine the Electrical Conductivity (EC) of Soil:

- Soil sample preparation
 - a) Mix soil sample from 0-6 inch analysis.
 - b) If soil is “wet,” reduce soil moisture content by air drying.
 - c) If soil is “damp,” proceed with analysis.
- Measure a level tablespoon of soil into 60 ml of distilled water. This will result in a 1 to 5 dilution of soil, one part soil into four parts distilled water. The volume of one level tablespoon is 15 ml.
- Shake mixture for 2 minutes. After mixing, allow sample to stand for additional 2 minutes.
- Prepare the syringe with the millipore filter adaptor and draw the fluid sample (0.5 to 1 ml) into syringe.
- Place the fluid sample onto the instrument sensor and discard the first sample load. Repeat this “flushing” procedure, then test and record the third load. TEST STRIPS
- Calculate the EC by multiplying the EC reading on the meter by five.
Instrument EC reading x 5 = soil EC
- Wash the instrument sensor using a dedicated “wash syringe” and distilled water.
- Record results of the test and other information and disable and discard the syringe.
- Repeat procedure for additional depths, if necessary.

Note: Use the same fluid sample to measure the pH. No additional calculations are needed; pH is measured directly by the meter.

Note: Most EC units read as microsiemens per centimeter (uS/cm). In addition, high EC readings may read as millisiemens per centimeter (mS/cm). It should be noted one millisiemen (mS/cm) is equal to 1,000 microsiemens (uS/cm). Either unit may be used, but to compare data, choose one unit for all analyses, and convert all readings to the chosen unit. This remediation guide uses uS/cm.

A siemen is an inverse ohm (conductance = $1/\text{resistance}$). The original siemen was measured through a distance of one meter. Most of the field equipment measure one centimeter unit (cm). Although not precise, one millimhos/cm is equal to one millisiemen/cm. For remediation purposes the field guide uses mS/cm or uS/cm.

