Ms. Olivia Yu
Environmental Specialist
New Mexico Oil Conservation Division – District I
Upstream Business Unit
1625 N. French Drive
Hobbs, New Mexico 88240

Arcadis U.S., Inc.
101 Creekside Ridge Court
Suite 200
Roseville
California 95678
Tel 916 786 0320
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www.arcadis.com

ENVIRONMENT

Subject:
2018 Remediation Activities – Scope of Work
2018 HES Transfer Site - Vacuum Glorieta West Unit Tank Battery Sites
NMOCD Case No. 1RP-3648
Lea County, New Mexico

Date:
August 30, 2018

Contact:
Brett Krehbiel
Phone:
916.786.5382

Email:
Brett.Krehbiel@arcadis.com

Our ref:
B0048616

ARCADIS U.S., Inc.
TX Engineering License # F-533

Dear Ms. Yu:

Arcadis U.S., Inc. (Arcadis) has prepared this scope of work (SOW) to Chevron Environmental Management Company (CEMC) to perform environmental consulting services for the Vacuum Glorieta West Unit (VGWU) Satellite 1 (VGWU Sat 1), Satellite 2 (VGWU Sat 2) and the Tank Battery (VGWU Tank Battery) (the Site) sites located in Lea County, New Mexico.

PROJECT SUMMARY

According to the Form C-141s, three releases occurred in 2012 and one release occurred in 2013. Each release was stopped by Chevron personnel and initial response activities were conducted including: excavation and soil sampling. The Form C-141s are presented in Attachment 1.

February 1, 2012 Release

The seal on the produced water tank charge pump gave way due to a bearing failure resulting in the release of 13.5 barrels (bbls [42 gallons per bbl]) of produced water. The release was contained within the limits of the tank battery. During initial response activities, Chevron personnel stopped the release and conducted initial response activities, 11 bbls of produced water were recovered.

November 1, 2012 Release

A leak from a 6-inch injection line from VGWU Sat 2 resulted in a release of 45 bbls of produced water. The cause of the leak was unknown at the time of the response. The release occurred in a pasture south of the Tank Battery. During initial response activities, 30 bbls of produced water was recovered.

November 5, 2012 Release

A leak from a 6-inch injection line from VGWU Sat 1 resulted in a release of 34.3 bbls of produced water and 1.3 bbls of oil. The cause of the leak was unknown at the time of the response. During initial response activities,18.7 bbls of produced water and 1.3 bbls of oil were recovered.

November 9, 2013 Release

A release from the West Suction Produced Water Tank resulted in 2.88 bbls of oil and 14.48 bbls of produced water spill to land. The release occurred due to a water extraction well producing into the tank unexpectedly causing the tank to overfill. During initial response activities, 16.7 bbls of fluid were recovered.

RESPONSE ACTIVITIES

Response activities were conducted on January 22, 2013 and December 9, 2013. Visually affected soil was from VGWU Sat 1 and VGWU Sat 2 were removed in January 2013. Excavation activities were conducted at the VGWU Tank Battery in December 2013. During the January and December events, discrete confirmation soil samples were collected from the base of the excavated areas. Soil samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (collectively referred to as BTEX) in accordance with United States Environmental Protection Agency (USEPA) Method 8021B, total petroleum hydrocarbons (TPH) gasoline range organics (GRO) and TPH diesel range organics (DRO) in accordance with USEPA Method 8015M and chloride in accordance with USEPA Method SM4500Cl-B. Based on the information in the Form C-141, the depth of the excavated areas and the sample collection depth is assumed to be 2 feet below ground surface (bgs) at with the exception of the soil samples collected from VGWU Tank Battery. Soil samples at VGWU Tank Battery were collected between 8 to 12 inches. Information regarding the disposal of the excavated soil was not available to Arcadis. After collecting the soil samples, the excavated area was reportedly backfilled with imported soil.

On August 16, 2017, Arcadis conducted additional soil assessment activities including: soil sample collection and an electromagnetic conductivity survey over accessible areas of the Site covering approximately 5 acres to determine background electrical conductivity (EC) response and identify EC anomalies within the surveyed area to assess the lateral extent of possible produced water-related soil and impacts. The particularly high electrical conductivity of oil field production water makes the electromagnetic detection of produced water-related impacts in soil and groundwater a reliable approach. Soil samples were collected for the analysis of chloride in accordance with USEPA Method 300.0.

INVESTIGATION RESULTS

Benzene was detected above NMOCD soil remediation action level (SRAL) of 10 milligrams per kilogram (mg/kg) in the soil samples collected from VGWUBTY SS #2 and VGWUBTY SS #3 at concentrations of 19.8 and 48.8 mg/kg, respectively. BTEX was detected in the soil samples collected from VGWUBTY SS #2 and VGWUBTY SS #3 at concentrations of 513 and 1,100 mg/kg, exceeding the NMOCD SRAL of 50 mg/kg. TPH GRO and TPH DRO were detected above NMOCD SRAL of 100 mg/kg in the soil samples collected from VGWUBTY SS #1, VGWUBTY SS #2, VGWUBTY SS #3 and VGWUSAT2TL SAMPLE #3. Chloride was detected above NMOCD SRAL of 600 mg/kg in all soil samples collected during the 2013 initial response activities. Arcadis was not provided analytical data for the February 1, 2012 release.

Of the 23 soil samples collected at depths ranging from 0.55-foot to 2 feet bgs in August 2017, 15 soil samples exceeded NMOCD SRAL of 600 mg/kg. Several zones of anomalously high EC values are present throughout the Site. These higher EC areas are generally assumed to reflect proportionately higher TDS pore fluids (produced water influence) or conductive metallic features (site structure or subsurface utilities). With the presence of metallic features within the area, correlation of chloride concentrations to the geophysical data is not feasible.

Analytical results are presented in Figures 1 and 2. Laboratory analytical reports are presented in Attachment 2.

SCOPE OF WORK

In February 2018, Chevron petitioned the NMOCD to defer further investigation and remediation activities at the Site. In the event the NMOCD approves the deferral, the draft report will be finalized for submittal to the NMOCD after the installation of one groundwater monitoring well and two rounds of groundwater sampling. The final report will include data tables, sampling/survey location figures and will provide recommendations to CEMC on the path forward for the Site.

Utility Locate, Well Installation, and Groundwater Sample Collection

Arcadis proposes installing and sampling one groundwater monitoring well to assess chloride concentrations in groundwater. Figure 3 presents the proposed monitoring well location. Monitoring well installation will include:

- Coordinating utility clearance activities (e.g. New Mexico State One Call, private locating service and Dig Plan process);
- Potholing to expose the buried lines within or in proximately to the proposed area of excavation. The monitor well location will be hand cleared using air knife or hydro vacuum to a minimum depth of 8 feet bgs and will follow variance requirements if clearance to 8 feet bgs is not feasible. For the vadose soils, air rotary drilling/technology will be used, and for saturated soils mud rotary drilling technology will be used;
- The monitor well will be advanced at least 10 feet into the groundwater bearing unit. The monitor well will be constructed within the open borehole using nominal 2-inch outside diameter schedule 40 poly

vinyl chloride (PVC) casing. The screen will be constructed 0.010-inch slotted PVC casing. The top of the screen will be installed 2 feet above the groundwater table and will extend at least 10 feet into the groundwater bearing unit. The proposed monitoring well location is presented in Figure 1;

- Total depth and screen interval may be modified in the field based on the encountered lithology and depth to groundwater. Continuous well logs will be generated from the cored soil and classified by field staff under the direction of a Geologist and logged according to the United Soil Classification System;
- The well development process will start 24-48 hours after installation. The process will include surging and bailing until turbidity parameters have stabilized. If needed, a surge block may be used to ensure the well is fully developed;
- Arcadis will collect an additional groundwater sample from this well after well development and in the two quarters following well development. Monitoring well samples will be analyzed for chloride by USEPA Method 300.0 or an equivalent method with a standard (10-day) turnaround time by Xenco Laboratories;
- A New Mexico State Licensed Land Surveyor will survey the newly installed monitoring well. The top of the well casing will be surveyed to the nearest 0.01 feet in elevation to the existing site elevation datum located with respect to the North American Datum of 1983 (NAD83) horizontal datum and North American Vertical Datum 1988 (NAVD88); and
- Soil cuttings and water generated during drilling and development operations will be containerized in Department of Transportation approved containers. Materials will be temporarily stored on Site pending waste characterization. The soil cuttings and water will be disposed of at a CEMC approved waste disposal facility.

In the event the groundwater sample indicates chlorides are above the regulatory limit, Arcadis will develop recommendations on the path-forward for the Site.

If you have any questions or comments, please contact Brett Krehbiel at 916.786.5382 or by email at brett.krehbiel@arcadis.com or Greg Cutshall at 859.287.0242 or by e-mail at greg.cutshall@arcadis.com.

Sincerely,

Arcadis U.S., Inc.

Brett Krehbiel
Certified Project Manager

Greg Cutshall, P.G.
Program Manager

Copies:

File

Figures

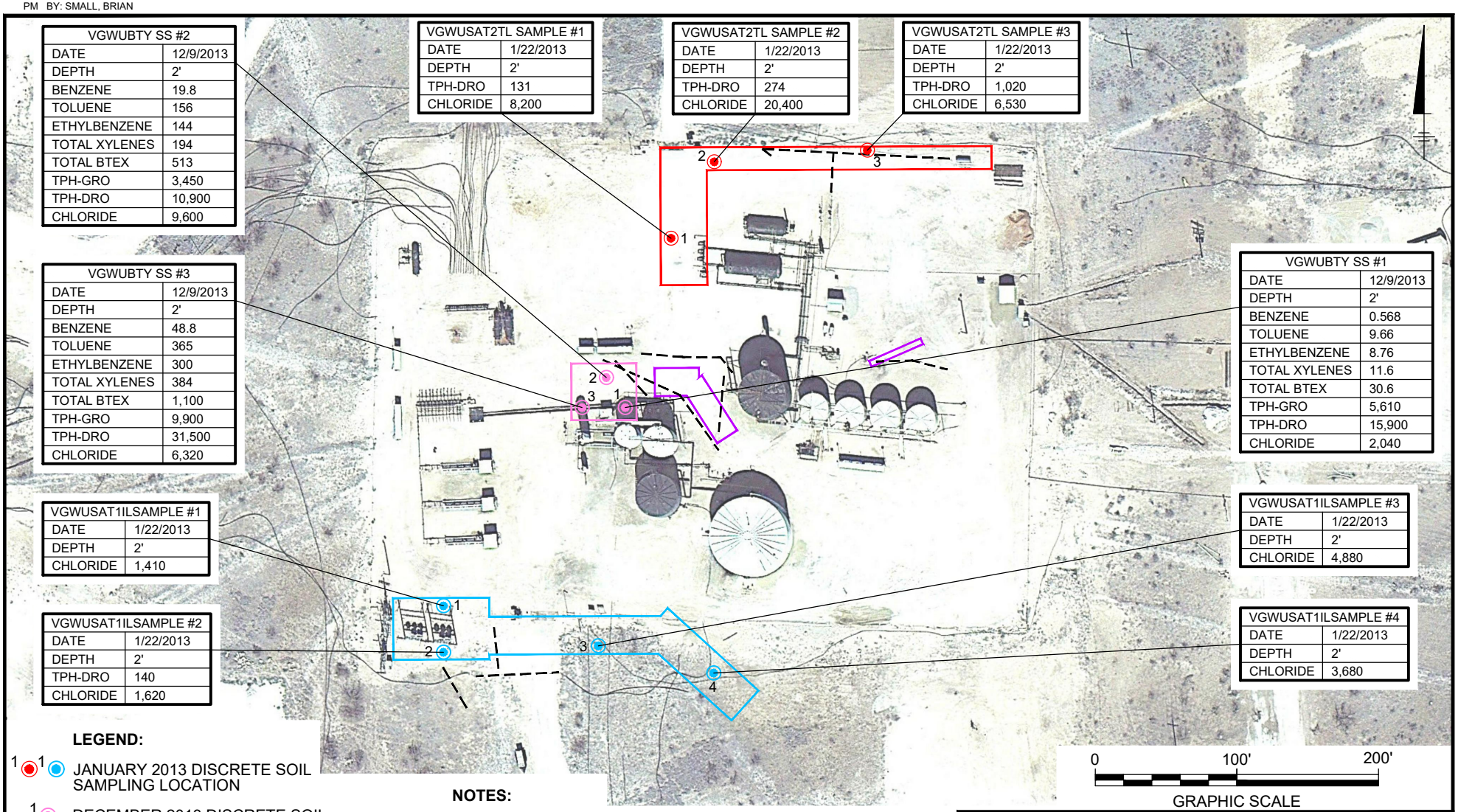
1 2013 VGWU Tank Battery Soil Analytical Results
2 2017 VGWU Tank Battery Soil Analytical Results
3 Proposed Monitor Well Location

Attachments

1 Notification of Release and Correction Form (Form C-141)
2 Laboratory Analytical Reports

FIGURES

CITY: MANCHESTER DIV/GROUP: ENVCAD DB: B.SMALL PM: TM
C:\Users\BSSmall\OneDrive - ARCADIS\BIM 360 Docs\CHEVRON CORPORATION\VGWU Tank Battery\2018\B0048787.0002\01-DWG\SoilData-Fig1.dwg LAYOUT: 1 SAVED: 8/23/2018 6:50 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 8/23/2018 6:50 PM BY: SMALL, BRIAN



VGWUBTY SS #2	
DATE	12/9/2013
DEPTH	2'
BENZENE	19.8
TOLUENE	156
ETHYLBENZENE	144
TOTAL XYLENES	194
TOTAL BTEX	513
TPH-GRO	3,450
TPH-DRO	10,900
CHLORIDE	9,600

VGWUSAT2TL SAMPLE #1	
DATE	1/22/2013
DEPTH	2'
TPH-DRO	131
CHLORIDE	8,200

VGWUSAT2TL SAMPLE #2	
DATE	1/22/2013
DEPTH	2'
TPH-DRO	274
CHLORIDE	20,400

VGWUSAT2TL SAMPLE #3	
DATE	1/22/2013
DEPTH	2'
TPH-DRO	1,020
CHLORIDE	6,530

VGWUBTY SS #3	
DATE	12/9/2013
DEPTH	2'
BENZENE	48.8
TOLUENE	365
ETHYLBENZENE	300
TOTAL XYLENES	384
TOTAL BTEX	1,100
TPH-GRO	9,900
TPH-DRO	31,500
CHLORIDE	6,320

VGWUBTY SS #1	
DATE	12/9/2013
DEPTH	2'
BENZENE	0.568
TOLUENE	9.66
ETHYLBENZENE	8.76
TOTAL XYLENES	11.6
TOTAL BTEX	30.6
TPH-GRO	5,610
TPH-DRO	15,900
CHLORIDE	2,040

VGWUSAT1ILSAMPLE #1	
DATE	1/22/2013
DEPTH	2'
CHLORIDE	1,410

VGWUSAT1ILSAMPLE #3	
DATE	1/22/2013
DEPTH	2'
CHLORIDE	4,880

VGWUSAT1ILSAMPLE #2	
DATE	1/22/2013
DEPTH	2'
TPH-DRO	140
CHLORIDE	1,620

VGWUSAT1ILSAMPLE #4	
DATE	1/22/2013
DEPTH	2'
CHLORIDE	3,680

LEGEND:

- JANUARY 2013 DISCRETE SOIL SAMPLING LOCATION
- DECEMBER 2013 DISCRETE SOIL SAMPLING LOCATION
- UNDERGROUND UTILITY LINE
- APPROXIMATE EXTENT OF SATELLITE 2 TRUNK LINE SPILL (NOVEMBER 2012)
- APPROXIMATE EXTENT OF SATELLITE 1 INJECTION LINE SPILL (NOVEMBER 2012)
- APPROXIMATE EXTENT OF BATTERY SPILL (FEBRUARY 2012)
- APPROXIMATE EXTENT OF WEST PW TANK SPILL (NOVEMBER 2013)

NOTES:

1. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO.
2. ALL RESULTS ARE IN MILLIGRAMS PER KILOGRAM (mg/kg).
3. BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES (COLLECTIVELY REFERRED TO AS BTEX) IN ACCORDANCE WITH UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA) METHOD 8021B
4. TOTAL PETROLEUM HYDROCARBONS (TPH) GASOLINE RANGE ORGANICS (GRO) AND TPH DIESEL RANGE ORGANICS (DRO) IN ACCORDANCE WITH USEPA METHOD 8015M
5. CHLORIDE IN ACCORDANCE WITH USEPA METHOD SM4500CL-B
6. ONLY DETECTED CONCENTRATIONS SHOWN IN DATA BOXES

0 100' 200'

GRAPHIC SCALE

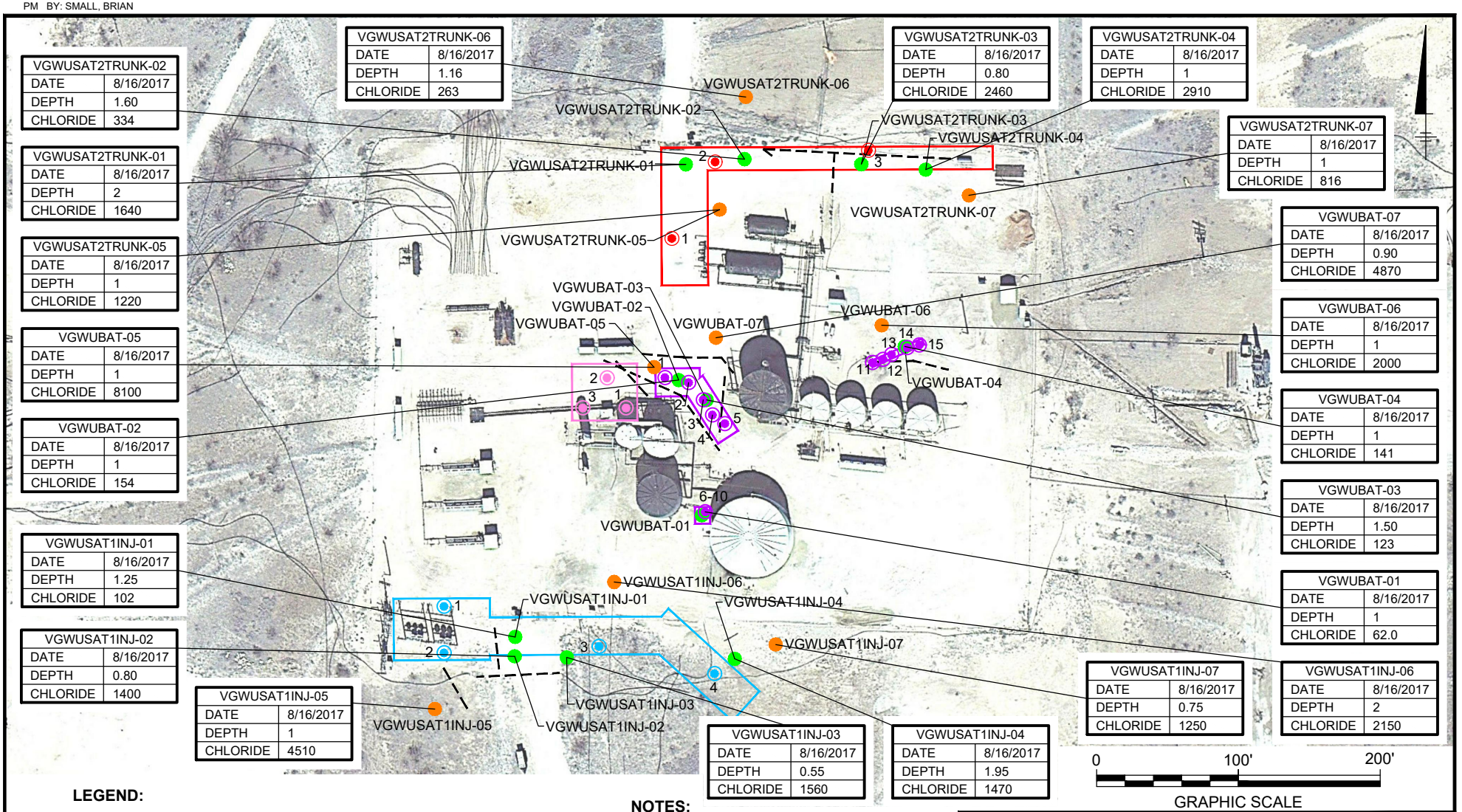
VACUUM/LOVINGTON FUNCTIONAL MANAGEMENT TEAM UNITS
LEA COUNTY, NEW MEXICO
2018 REMEDIATION ACTIVITIES SCOPE OF WORK

2013 VGWU TANK BATTERY SOIL ANALYTICAL RESULTS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

CITY: MANCHESTER DIV/GROUP: ENVCAD DB: B.SMALL PM: TM
C:\Users\BSSmall\OneDrive - ARCADIS\BIM 360 Docs\CHEVRON CORPORATION\VGWU Tank Battery\2018\B0048787.0002\01-DWG\SoilData-Fig2.dwg LAYOUT: 2 SAVED: 8/23/2018 6:47 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 8/23/2018 6:48 PM BY: SMALL, BRIAN



LEGEND:

- PRIMARY BORING
- SECONDARY BORING
- MAY 2012 5-POINT COMPOSITE SAMPLE LOCATION
- JANUARY 2013 DISCRETE SOIL SAMPLING LOCATION
- DECEMBER 2013 DISCRETE SOIL SAMPLING LOCATION
- UNDERGROUND UTILITY LINE
- APPROXIMATE EXTENT OF SATELLITE 2 TRUNK LINE SPILL (NOVEMBER 2012)
- APPROXIMATE EXTENT OF SATELLITE 1 INJECTION LINE SPILL (NOVEMBER 2012)
- APPROXIMATE EXTENT OF BATTERY SPILL (FEBRUARY 2012)
- APPROXIMATE EXTENT OF WEST PW TANK SPILL (NOVEMBER 2013)

NOTES:

1. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO.
2. ALL RESULTS ARE IN MILLIGRAMS PER KILOGRAM (mg/kg).
3. NEW MEXICO OIL CONSERVATION DIVISION (NMOCD) SOIL REMEDIATION ACTION LEVEL OF 600 mg/kg.
4. NMOCD GROUNDWATER REMEDIATION ACTION LEVEL OF 250 mg/L.

VACUUM/LOVINGTON FUNCTIONAL MANAGEMENT TEAM UNITS
LEA COUNTY, NEW MEXICO

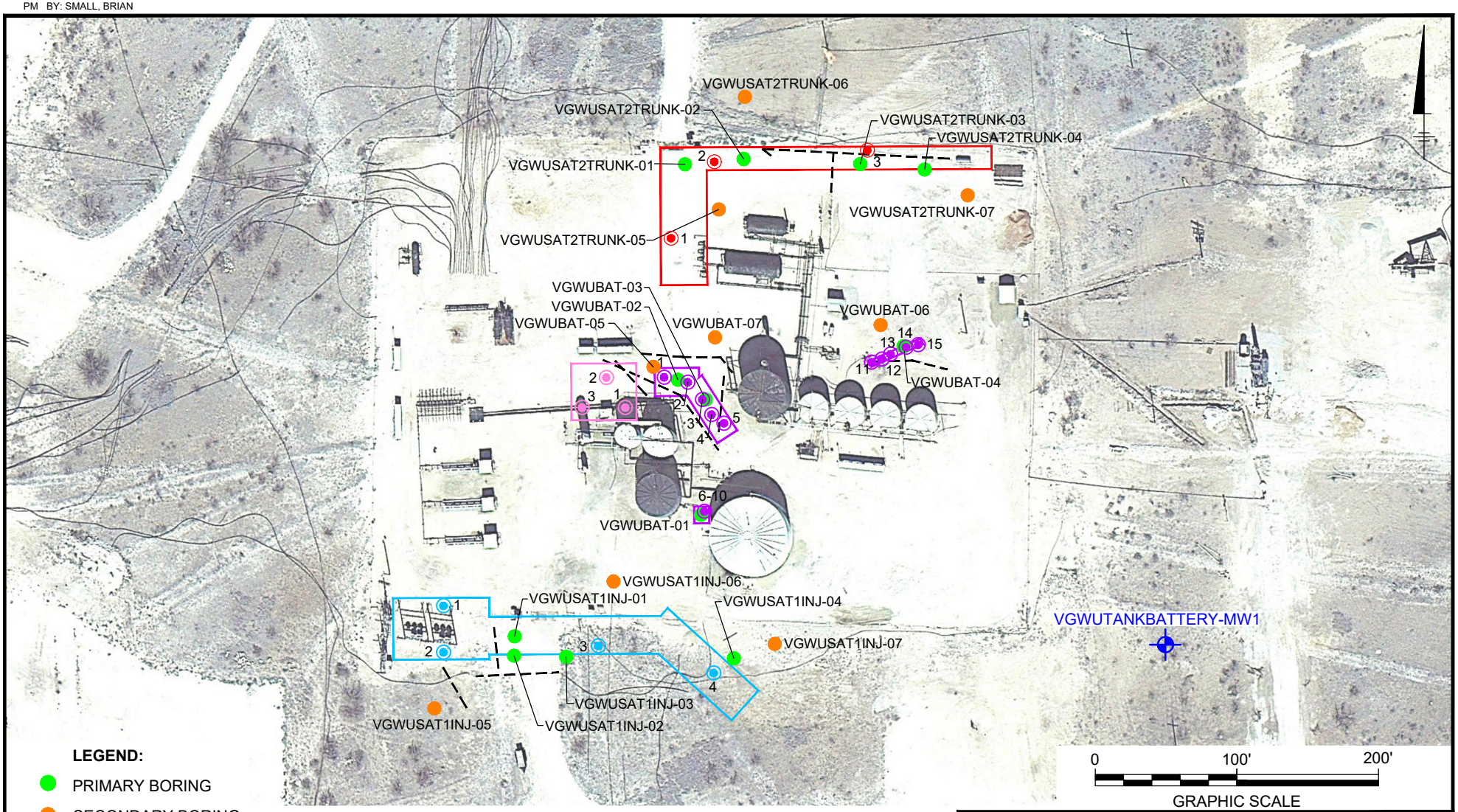
2018 REMEDIATION ACTIVITIES SCOPE OF WORK

2017 VGWU TANK BATTERY SOIL ANALYTICAL RESULTS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

CITY: MANCHESTER DIV/GROUP: ENVCAD DB: B.SMALL PM: TM
C:\Users\BSSmall\OneDrive - ARCADIS\BIM 360 Docs\CHEVRON CORPORATION\VGWU Tank Battery\2018\B0048787.0002\01-DWG\SoilData-Fig3.dwg LAYOUT: 3 SAVED: 8/23/2018 6:47 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 8/23/2018 6:48 PM BY: SMALL, BRIAN



LEGEND:

- PRIMARY BORING
- SECONDARY BORING
- 1 MAY 2012 5-POINT COMPOSITE SAMPLE LOCATION
- 1 1 JANUARY 2013 DISCRETE SOIL SAMPLING LOCATION
- 1 DECEMBER 2013 DISCRETE SOIL SAMPLING LOCATION
- UNDERGROUND UTILITY LINE
- PROPOSED MONITORING WELL LOCATION
- APPROXIMATE EXTENT OF SATELLITE 2 TRUNK LINE SPILL (NOVEMBER 2012)
- APPROXIMATE EXTENT OF SATELLITE 1 INJECTION LINE SPILL (NOVEMBER 2012)
- APPROXIMATE EXTENT OF BATTERY SPILL (FEBRUARY 2012)
- APPROXIMATE EXTENT OF WEST PW TANK SPILL (NOVEMBER 2013)

NOTES:

1. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO.

VACUUM/LOVINGTON FUNCTIONAL MANAGEMENT TEAM UNITS
LEA COUNTY, NEW MEXICO

2018 REMEDIATION ACTIVITIES SCOPE OF WORK

PROPOSED MONITOR WELL LOCATION

ARCADIS Design & Consultancy for natural and built assets

FIGURE
3

ATTACHMENT 1

Notification of Release and Correction Form

(Form C-141)

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company CHEVRON U.S.A Inc.	Contact David Pagano
Address 56 Texas Camp Road, Lovington, NM 88260	Telephone No. Office: 575-396-4414 ext 275 Cellular: 505-787-9816
Facility Name Vacuum Glorietta West Unit Battery	Facility Type Water Injection Station at Production Battery

Surface Owner State of New Mexico	Mineral Owner State of New Mexico	API No. OGRID No. B-155

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	36	17.0S	34.0E					Lea

Latitude 32.795804 **Longitude** -103.514502

NATURE OF RELEASE

Type of Release Produced Water Spill	Volume of Release 13.5bbl of Produced Water	Volume Recovered 11 bbls
Source of Release Water Injection Station Pump	Date and Hour of Occurrence 02/01/12 07:00	Date and Hour of Discovery 02/01/12 09:00
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mr. Leking via voicemail	
By Whom? David Pagano	Date and Hour 02/01/12 17:30	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Pump Barring Failure caused a seal on the Produced Water Tank Charge pump to give resulting in a 13.5bbl produced water spill at the Battery.

Describe Area Affected and Cleanup Action Taken.*

Spill stayed within the boundaries of the Battery. On discovery vacuum truck contacted and vacuumed up the standing fluids which were sent to disposal. Next steps are for the visually contaminated cliché to be excavated up to 2 feet and sent off for disposal.

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

Signature: David B	OIL CONSERVATION DIVISION	
Printed Name: David Pagano	Approved by Environmental Specialist:	
Title: Health & Environmental Specialist	Approval Date:	Expiration Date:
E-mail Address: david.pagano@chevron.com	Conditions of Approval:	Attached ☐
Date: 02/02/12 Phone: 505-787-9816		

* Attach Additional Sheets If Necessary

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

State of New Mexico
Energy Minerals and Natural Resources

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

1RP-2861

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company CHEVRON U.S.A Inc.	Contact David Pagano
Address 56 Texas Camp Road, Lovington, NM 88260	Telephone No. Office: 575-396-4414 ext 275 Cellular: 505-787-9816
Facility Name Vacuum Glorietta West Unit Battery	Facility Type Production Tank Battery

Surface Owner State of New Mexico	Mineral Owner State of New Mexico	API No. OGRID No. B-155

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	36	17.0S	34.0E					Lea

Latitude 32.795804 **Longitude** -103.514502

NATURE OF RELEASE

Type of Release Spill to Land	Volume of Release 45.8bbls of Produced Water	Volume Recovered 30.00bbls of Produced Water
Source of Release Water Injection Station Pump	Date and Hour of Occurrence 11/1/12 15:15	Date and Hour of Discovery 11/1/12 15:30
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Geoffrey Leking	
By Whom? David Pagano	Date and Hour 11/2/12 15:30	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

6" buried injection line leaked underground. Cause of leak will be determined when line is excavated.

Describe Area Affected and Cleanup Action Taken.*

Spill occurred in the pasture just south of the Battery. On discovery vacuum truck contacted and vacuumed up the standing fluids. Recovered 30.00bbls and recovered liquids placed into 10K overflow tank to be re-circulated back into the system. Next steps are for the visually contaminated soil to be excavated up to 2 feet and sent off for disposal.

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

Signature:	OIL CONSERVATION DIVISION	
Printed Name: David Pagano	Approved by Environmental Specialist:	
Title: Health & Environmental Specialist	Approval Date:	Expiration Date:
E-mail Address: david.pagano@chevron.com	Conditions of Approval:	Attached ☐
Date: 11/05/12 Phone: 505-787-9816		

* Attach Additional Sheets If Necessary

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State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
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Form C-141
Revised August 8, 2011

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Facility Name Vacuum Glorietta West Unit Battery	Facility Type Production Tank Battery

Surface Owner State of New Mexico	Mineral Owner State of New Mexico	API No. OGRID No. B-155

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	36	17.0S	34.0E					Lea

Latitude 32.795804 **Longitude** -103.514502

NATURE OF RELEASE

Type of Release Spill to Land	Volume of Release 34.3bbls of Produced Water & 1.3bbls of oil	Volume Recovered 18.7bbls of Produced Water and 1.3bbls oil
Source of Release Water Injection Station Pump	Date and Hour of Occurrence 11/5/12 02:00 AM	Date and Hour of Discovery 11/5/12 03:00AM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Geoffrey Leking	
By Whom? David Pagano	Date and Hour 11/2/12 15:30	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

6" buried trunk line from Satellite #1 leaked underground near the header inside the battery. Cause of leak will be determined when line is excavated.

Describe Area Affected and Cleanup Action Taken.*

Release occurred underground inside the battery. On discovery vacuum truck contacted and vacuumed up the standing fluids. Recovered 30.00bbls of fluids and recovered liquids placed hauled off to disposal. Next steps are for the visually contaminated soil to be excavated up to 2 feet and sent off for disposal.

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

Signature:	OIL CONSERVATION DIVISION	
Printed Name: David Pagano	Approved by Environmental Specialist:	
Title: Health & Environmental Specialist	Approval Date:	Expiration Date:
E-mail Address: david.pagano@chevron.com	Conditions of Approval:	Attached ☐
Date: 11/08/12 Phone: 505-787-9816		

* Attach Additional Sheets If Necessary

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State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
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Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Chevron USA Inc.	Contact David A. Pagano
Address 15 Smith Rd., Midland, TX, 79705	Telephone No. wk: 575-396-4414X275 cell: 505-787-9816
Facility Name Vacuum Glorietta West Unit Battery	Facility Type Battery

Surface Owner **NA**	Mineral Owner **State of New Mexico**	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	1	18.0S	34E					Lea

Latitude = 32.796051 Longitude = -103.514502

NATURE OF RELEASE

Type of Release Spill to Land	Volume of Release 2.88 bbl oil & 14.48 bbl produced water	Volume Recovered 0mcf
Source of Release West Suction Tank	Date and Hour of Occurrence 11/9/13 6:00AM	Date and Hour of Discovery 11/9/13 6:00AM
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom? Geoffrey Leking	
By Whom? James Trujillo	Date and Hour 11/10/13 1:30PM left voicemail	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

West Suction produced water tank over filled due water extraction well producing into the tank unexpectedly. Operations immediately shut in production to minimize volume released.

Describe Area Affected and Cleanup Action Taken.*

Spill area was approx. 8' by 8' area just north and north west of the West Suction Tank. Vacuum Truck called out to vacuum up standing fluids and hydrovac excavated top layer of soil approx. 8-12". Vacuum Truck Recovered 16.7 bbls of fluid. Next step is to take samples to determine effectiveness of local remediation and possibly turn remediation over to the Chevron Environmental Management Company.

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

Signature: David Pagano	OIL CONSERVATION DIVISION	
Printed Name: David A. Pagano	Approved by Environmental Specialist:	
Title: Health & Environmental Specialist	Approval Date:	Expiration Date:
E-mail Address: dpgn@chevron.com	Conditions of Approval:	Attached ☐
Date: 10/23/13 Phone: 505-787-9816		

* Attach Additional Sheets If Necessary

ATTACHMENT 2

Laboratory Analytical Reports

CARDINAL Laboratories

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

January 29, 2013

DAVID PAGANO

Chevron - Lovington

HCR 60 Box 423

Lovington, NM 88260

RE: SOIL SAMPLES

Enclosed are the results of analyses for samples received by the laboratory on 01/22/13 16:56.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

Chevron - Lovington
DAVID PAGANO
HCR 60 Box 423
Lovington NM, 88260
Fax To: None

Received:	01/22/2013	Sampling Date:	01/22/2013
Reported:	01/29/2013	Sampling Type:	Soil
Project Name:	SOIL SAMPLES	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: VGWU SAT 1IL SAMPLE #1 (H300180-01)

BTEX 8021B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/28/2013	ND	1.76	88.2	2.00	25.1	
Toluene*	<0.050	0.050	01/28/2013	ND	1.89	94.6	2.00	24.5	
Ethylbenzene*	<0.050	0.050	01/28/2013	ND	1.95	97.6	2.00	24.5	
Total Xylenes*	<0.150	0.150	01/28/2013	ND	5.97	99.6	6.00	24.0	
Total BTEX	<0.300	0.300	01/28/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.0 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1410**	16.0	01/25/2013	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/24/2013	ND	205	103	200	19.4	
DRO >C10-C28	<10.0	10.0	01/24/2013	ND	198	99.0	200	15.1	

Surrogate: 1-Chlorooctane *65.7 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *75.5 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

Chevron - Lovington
DAVID PAGANO
HCR 60 Box 423
Lovington NM, 88260
Fax To: None

Received:	01/22/2013	Sampling Date:	01/22/2013
Reported:	01/29/2013	Sampling Type:	Soil
Project Name:	SOIL SAMPLES	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: VGWU SAT 1IL SAMPLE #2 (H300180-02)

BTEX 8021B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/29/2013	ND	1.76	88.2	2.00	25.1	
Toluene*	<0.050	0.050	01/29/2013	ND	1.89	94.6	2.00	24.5	
Ethylbenzene*	<0.050	0.050	01/29/2013	ND	1.95	97.6	2.00	24.5	
Total Xylenes*	<0.150	0.150	01/29/2013	ND	5.97	99.6	6.00	24.0	
Total BTEX	<0.300	0.300	01/29/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *102 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1620**	16.0	01/25/2013	ND	400	100	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	01/24/2013	ND	205	103	200	19.4	
DRO >C10-C28	**140**	50.0	01/24/2013	ND	198	99.0	200	15.1	

Surrogate: 1-Chlorooctane *76.8 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *102 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

Chevron - Lovington
DAVID PAGANO
HCR 60 Box 423
Lovington NM, 88260
Fax To: None

Received:	01/22/2013	Sampling Date:	01/22/2013
Reported:	01/29/2013	Sampling Type:	Soil
Project Name:	SOIL SAMPLES	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: VGWU SAT 1IL SAMPLE #3 (H300180-03)

BTEX 8021B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/28/2013	ND	1.76	88.2	2.00	25.1	
Toluene*	<0.050	0.050	01/28/2013	ND	1.89	94.6	2.00	24.5	
Ethylbenzene*	<0.050	0.050	01/28/2013	ND	1.95	97.6	2.00	24.5	
Total Xylenes*	<0.150	0.150	01/28/2013	ND	5.97	99.6	6.00	24.0	
Total BTEX	<0.300	0.300	01/28/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.9 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4880**	16.0	01/25/2013	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/26/2013	ND	152	76.0	200	12.7	
DRO >C10-C28	<10.0	10.0	01/26/2013	ND	142	70.9	200	15.1	

Surrogate: 1-Chlorooctane *73.8 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *81.0 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

Chevron - Lovington
DAVID PAGANO
HCR 60 Box 423
Lovington NM, 88260
Fax To: None

Received:	01/22/2013	Sampling Date:	01/22/2013
Reported:	01/29/2013	Sampling Type:	Soil
Project Name:	SOIL SAMPLES	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: VGWU SAT 1IL SAMPLE #4 (H300180-04)

BTEX 8021B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/28/2013	ND	1.76	88.2	2.00	25.1	
Toluene*	<0.050	0.050	01/28/2013	ND	1.89	94.6	2.00	24.5	
Ethylbenzene*	<0.050	0.050	01/28/2013	ND	1.95	97.6	2.00	24.5	
Total Xylenes*	<0.150	0.150	01/28/2013	ND	5.97	99.6	6.00	24.0	
Total BTEX	<0.300	0.300	01/28/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *102 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3680**	16.0	01/25/2013	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/26/2013	ND	152	76.0	200	12.7	
DRO >C10-C28	<10.0	10.0	01/26/2013	ND	142	70.9	200	15.1	

Surrogate: 1-Chlorooctane *74.5 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *82.5 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	Chevron
Project Manager:	David Pagano
Address:	56 Texas Camp Rd.
City:	Lovington State: NM Zip: 88260
Phone #:	505-787-9816 Fax #:
Project #:	Project Owner:
Project Name:	
Project Location:	
Sampler Name:	

BILL TO

P.O. #:	
Company:	Chevron
Attn:	Nick Moschetti
Address:	56 Texas Camp Rd
City:	Lovington
State:	NM Zip: 88260
Phone #:	575-396-4414 x201
Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING DATE	TIME	TPH	BTEX	Chlorides
H300180																	
1	V6W4 Sat 1 IL Sample #1	G	1			✓					✓		1/22/13	2:45pm	✓	✓	✓
2	V6W4 Sat 1 FL Sample #2	G	1			✓					✓			2:50pm			
3	V6W4 Sat 1 IL Sample #3	G	1			✓					✓			2:55pm			
4	V6W4 Sat 1 IL Sample #4	G	1			✓					✓			3:00pm			
5	V6W4 Sat 2 TL Sample #1	G	1			✓					✓			3:05pm			
6	V6W4 Sat 2 TL Sample #2	G	1			✓					✓			3:10pm			
7	V6W4 Sat 2 TL Sample #3	G	1			✓					✓			3:15pm			

Relinquished By: Paul Lara Date: 1/22/13 Time: 4:56 Received By: Jodi Henson

Relinquished By: Date: Received By:

Time:

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

Sample Condition: Cool ✓ Yes / Intact ✓ Yes / No / No

CHECKED BY: (Initials) JH

5°C

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26

Phone Result: ☐ Yes ☐ No Add'l Phone #:

Fax Result: ☐ Yes ☐ No Add'l Fax #:

REMARKS:

CARDINAL Laboratories

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

January 29, 2013

DAVID PAGANO

Chevron - Lovington

HCR 60 Box 423

Lovington, NM 88260

RE: SOIL SAMPLES

Enclosed are the results of analyses for samples received by the laboratory on 01/22/13 16:56.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

Chevron - Lovington
DAVID PAGANO
HCR 60 Box 423
Lovington NM, 88260
Fax To: None

Received:	01/22/2013	Sampling Date:	01/22/2013
Reported:	01/29/2013	Sampling Type:	Soil
Project Name:	SOIL SAMPLES	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: VGWU SAT 2TL SAMPLE #1 (H300180-05)

BTEX 8021B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/28/2013	ND	1.76	88.2	2.00	25.1	
Toluene*	<0.050	0.050	01/28/2013	ND	1.89	94.6	2.00	24.5	
Ethylbenzene*	<0.050	0.050	01/28/2013	ND	1.95	97.6	2.00	24.5	
Total Xylenes*	<0.150	0.150	01/28/2013	ND	5.97	99.6	6.00	24.0	
Total BTEX	<0.300	0.300	01/28/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *101 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**8200**	16.0	01/25/2013	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/28/2013	ND	152	76.0	200	12.7	
DRO >C10-C28	**131**	10.0	01/28/2013	ND	142	70.9	200	15.1	

Surrogate: 1-Chlorooctane *94.8 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *104 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

Chevron - Lovington
DAVID PAGANO
HCR 60 Box 423
Lovington NM, 88260
Fax To: None

Received:	01/22/2013	Sampling Date:	01/22/2013
Reported:	01/29/2013	Sampling Type:	Soil
Project Name:	SOIL SAMPLES	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: VGWU SAT 2TL SAMPLE #2 (H300180-06)

BTEX 8021B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/28/2013	ND	1.76	88.2	2.00	25.1	
Toluene*	<0.050	0.050	01/28/2013	ND	1.89	94.6	2.00	24.5	
Ethylbenzene*	<0.050	0.050	01/28/2013	ND	1.95	97.6	2.00	24.5	
Total Xylenes*	<0.150	0.150	01/28/2013	ND	5.97	99.6	6.00	24.0	
Total BTEX	<0.300	0.300	01/28/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *100 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**20400**	16.0	01/25/2013	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/28/2013	ND	152	76.0	200	12.7	
DRO >C10-C28	**274**	10.0	01/28/2013	ND	142	70.9	200	15.1	

Surrogate: 1-Chlorooctane *96.6 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *107 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

Chevron - Lovington
DAVID PAGANO
HCR 60 Box 423
Lovington NM, 88260
Fax To: None

Received:	01/22/2013	Sampling Date:	01/22/2013
Reported:	01/29/2013	Sampling Type:	Soil
Project Name:	SOIL SAMPLES	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: VGWU SAT 2TL SAMPLE #3 (H300180-07)

BTEX 8021B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/28/2013	ND	1.76	88.2	2.00	25.1	
Toluene*	<0.050	0.050	01/28/2013	ND	1.89	94.6	2.00	24.5	
Ethylbenzene*	<0.050	0.050	01/28/2013	ND	1.95	97.6	2.00	24.5	
Total Xylenes*	<0.150	0.150	01/28/2013	ND	5.97	99.6	6.00	24.0	
Total BTEX	<0.300	0.300	01/28/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *112 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**6530**	16.0	01/25/2013	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	01/26/2013	ND	152	76.0	200	12.7	
DRO >C10-C28	**1020**	50.0	01/26/2013	ND	142	70.9	200	15.1	

Surrogate: 1-Chlorooctane *77.1 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *107 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	Chevron
Project Manager:	David Pagano
Address:	56 Texas Camp Rd.
City:	Lovington State: NM Zip: 88260
Phone #:	505-787-9816 Fax #:
Project #:	Project Owner:
Project Name:	
Project Location:	
Sampler Name:	

BILL TO

P.O. #:	
Company:	Chevron
Attn:	Nick Moschetti
Address:	56 Texas Camp Rd
City:	Lovington
State:	NM Zip: 88260
Phone #:	575-396-4414 x201
Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING DATE	TIME	TPH	BTEX	Chlorides
H300180																	
1	V6W4 Sat 1 IL Sample #1	G	1			✓					✓		1/22/13	2:45pm	✓	✓	✓
2	V6W4 Sat 1 FL Sample #2	G	1			✓					✓			2:50pm			
3	V6W4 Sat 1 IL Sample #3	G	1			✓					✓			2:55pm			
4	V6W4 Sat 1 IL Sample #4	G	1			✓					✓			3:00pm			
5	V6W4 Sat 2 TL Sample #1	G	1			✓					✓			3:05pm			
6	V6W4 Sat 2 TL Sample #2	G	1			✓					✓			3:10pm			
7	V6W4 Sat 2 TL Sample #3	G	1			✓					✓			3:15pm			

Relinquished By: Paul Lara Date: 1/22/13 Time: 4:56 Received By: Jodi Henson

Relinquished By: Date: Received By:

Time:

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

Sample Condition: Cool ✓ Yes / Intact ✓ Yes / No / No

CHECKED BY: (Initials) JH

5°C

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26

Phone Result: ☐ Yes ☐ No Add'l Phone #:

Fax Result: ☐ Yes ☐ No Add'l Fax #:

REMARKS:

CARDINAL Laboratories

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

December 16, 2013

NICK MOSCHETTI

Chevron - Lovington

HCR 60 Box 423

Lovington, NM 88260

RE: SOIL SAMPLES

Enclosed are the results of analyses for samples received by the laboratory on 12/09/13 17:05.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

Chevron - Lovington
NICK MOSCHETTI
HCR 60 Box 423
Lovington NM, 88260
Fax To: None

Received:	12/09/2013	Sampling Date:	12/09/2013
Reported:	12/16/2013	Sampling Type:	Soil
Project Name:	SOIL SAMPLES	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: VGWU BTY SS #1 (H302969-01)

BTEX 8021B mg/kg Analyzed By: MS S-04

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**0.568**	0.050	12/10/2013	ND	1.85	92.7	2.00	0.310	
Toluene*	**9.66**	0.050	12/10/2013	ND	1.85	92.6	2.00	0.214	
Ethylbenzene*	**8.76**	0.050	12/10/2013	ND	1.82	90.8	2.00	0.456	
Total Xylenes*	**11.6**	0.150	12/10/2013	ND	5.32	88.6	6.00	0.866	
Total BTEX	**30.6**	0.300	12/10/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *189 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2040**	16.0	12/16/2013	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: ms S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**5610**	100	12/10/2013	ND	197	98.3	200	2.18	
DRO >C10-C28	**15900**	100	12/10/2013	ND	202	101	200	2.77	

Surrogate: 1-Chlorooctane *222 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *274 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

Chevron - Lovington
NICK MOSCHETTI
HCR 60 Box 423
Lovington NM, 88260
Fax To: None

Received:	12/09/2013	Sampling Date:	12/09/2013
Reported:	12/16/2013	Sampling Type:	Soil
Project Name:	SOIL SAMPLES	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: VGWU BTY SS #2 (H302969-02)

BTEX 8021B mg/kg Analyzed By: MS/

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**19.8**	5.00	12/11/2013	ND	1.95	97.3	2.00	2.59	
Toluene*	**156**	5.00	12/11/2013	ND	1.93	96.3	2.00	2.40	
Ethylbenzene*	**144**	5.00	12/11/2013	ND	1.88	93.9	2.00	2.90	
Total Xylenes*	**194**	15.0	12/11/2013	ND	5.47	91.1	6.00	3.41	
Total BTEX	**513**	30.0	12/11/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *107 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**9600**	16.0	12/16/2013	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: ms S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**3450**	100	12/10/2013	ND	197	98.3	200	2.18	
DRO >C10-C28	**10900**	100	12/10/2013	ND	202	101	200	2.77	

Surrogate: 1-Chlorooctane *173 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *253 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

Chevron - Lovington
NICK MOSCHETTI
HCR 60 Box 423
Lovington NM, 88260
Fax To: None

Received:	12/09/2013	Sampling Date:	12/09/2013
Reported:	12/16/2013	Sampling Type:	Soil
Project Name:	SOIL SAMPLES	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: VGWU BTY SS #3 (H302969-03)

BTEX 8021B mg/kg Analyzed By: MS/

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**48.8**	10.0	12/11/2013	ND	1.95	97.3	2.00	2.59	
Toluene*	**365**	10.0	12/11/2013	ND	1.93	96.3	2.00	2.40	
Ethylbenzene*	**300**	10.0	12/11/2013	ND	1.88	93.9	2.00	2.90	
Total Xylenes*	**384**	30.0	12/11/2013	ND	5.47	91.1	6.00	3.41	
Total BTEX	**1100**	60.0	12/11/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *103 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**6320**	16.0	12/16/2013	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: ms S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**9900**	200	12/10/2013	ND	197	98.3	200	2.18	
DRO >C10-C28	**31500**	200	12/10/2013	ND	202	101	200	2.77	

Surrogate: 1-Chlorooctane *305 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *296 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	Chevron
Project Manager:	David Pagano
Address:	56 Texas Camp Rd.
City:	Lovington State: NM Zip: 88260
Phone #:	505-787-9816 Fax #:
Project #:	Project Owner:
Project Name:	
Project Location:	
Sampler Name:	

BILL TO

P.O. #:	
Company:	Chevron
Attn:	Nick Moschetti
Address:	56 Texas Camp Rd.
City:	Lovington
State:	NM Zip: 88260
Phone #:	575-396-4414 x201
Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	TPH	Chlorides	Benzene
H302969																	
1	V6W4 Bty SS#1	G	1			✓					✓		12/9/13	12:40	✓	✓	✓
2	V6W4 Bty SS#2	1	1			1					1		1	12:45	1	1	1
3	V6W4 Bty SS#3													12:50			

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 12/9/13 Time: 5:05	Received By:	Jodi Henson
David Pagano			
Relinquished By:	Date:	Received By:	
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool ☐ Yes ☐ No — Intact ☑ Yes ☐ No
3.8°C

CHECKED BY: (Initials) JH

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS:

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

Certificate of Analysis Summary 560619

Arcadis - Houston, Houston, TX

Project Name: HES Transfer Sites

Project Id: B0048626.1701
Contact: Jonathan Olsen
Project Location: Buckeye NM

Date Received in Lab: Fri Aug-18-17 10:17 am
Report Date: 29-AUG-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	560619-001		560619-002		560619-003		560619-004		560619-005		560619-006	
	Field Id:	VGWUSAT1INJ-06 (2')		VGWUSAT1INJ-07 (0.75')		VGWUSAT2TRUNK-05 (1'		VGWUSAT1INJ-04 (1.95')		VGWUSAT2TRUNK-03 (0.8		VGWUSAT1INJ-01 (1.25')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Aug-16-17 15:15		Aug-16-17 14:35		Aug-16-17 13:05		Aug-16-17 16:00		Aug-16-17 13:30		Aug-16-17 14:20	
Chloride by EPA 300	***Extracted:***	Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00	
	Analyzed:	Aug-26-17 17:06		Aug-26-17 17:37		Aug-26-17 17:48		Aug-26-17 17:58		Aug-26-17 18:09		Aug-26-17 18:40	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		2150	25.0	1250	4.99	1220	4.92	1470	25.0	2460	24.5	102	4.94

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 560619

Arcadis - Houston, Houston, TX

Project Name: HES Transfer Sites

Project Id: B0048626.1701
Contact: Jonathan Olsen
Project Location: Buckeye NM

Date Received in Lab: Fri Aug-18-17 10:17 am
Report Date: 29-AUG-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	560619-007		560619-008		560619-009		560619-010		560619-011		560619-012	
	Field Id:	VGWUBAT-08 (1')		VGWUSAT1INJ-03 (0.55)		VGWUBAT-06 (1')		VGWUBAT-04 (1')		VGWUSAT1INJ-08 (0.80')		VGWUSAT2TRUNK-04 (1'	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Aug-16-17 12:45		Aug-16-17 15:35		Aug-16-17 12:20		Aug-16-17 12:35		Aug-16-17 15:40		Aug-16-17 13:15	
Chloride by EPA 300	***Extracted:***	Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00	
	Analyzed:	Aug-26-17 18:50		Aug-26-17 19:00		Aug-26-17 19:11		Aug-26-17 19:21		Aug-26-17 19:31		Aug-26-17 20:02	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		942	4.94	1560	5.00	2000	24.7	141	4.95	303	4.95	2910	24.8

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 560619

Arcadis - Houston, Houston, TX

Project Name: HES Transfer Sites

Project Id: B0048626.1701
Contact: Jonathan Olsen
Project Location: Buckeye NM

Date Received in Lab: Fri Aug-18-17 10:17 am
Report Date: 29-AUG-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	560619-013		560619-014		560619-015		560619-016		560619-017		560619-018	
	Field Id:	VGWUSAT1INJ-05 (1')		VGWUSAT1INJ-02 (0.80')		VGWUSAT2TRUNK-01 (2'		VGWUBAT-01 (1')		VGWUBAT-07 (0.90')		VGWUBAT-05 (1')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Aug-16-17 15:25		Aug-16-17 14:30		Aug-16-17 10:45		Aug-16-17 13:55		Aug-16-17 14:05		Aug-16-17 12:05	
Chloride by EPA 300	***Extracted:***	Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 10:00	
	Analyzed:	Aug-26-17 20:13		Aug-26-17 20:44		Aug-26-17 20:54		Aug-26-17 21:04		Aug-26-17 21:15		Aug-26-17 21:25	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		4510	25.0	1400	24.9	1640	24.8	62.0	4.98	4870	49.4	8100	49.8

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 560619

Arcadis - Houston, Houston, TX

Project Name: HES Transfer Sites

Project Id: B0048626.1701
Contact: Jonathan Olsen
Project Location: Buckeye NM

Date Received in Lab: Fri Aug-18-17 10:17 am
Report Date: 29-AUG-17
Project Manager: Kelsey Brooks

Analysis Requested											
	Lab Id:	560619-019		560619-020		560619-021		560619-022		560619-023	
	Field Id:	VGWUBAT-03 (1.50')		VGWUSAT2TRUNK-02 (1.(		VGWUBAT-02 (1')		VGWUSAT2TRUNK-07 (1		VGWUSAT2TRUNK-06 (1.1	
	Depth:										
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Aug-16-17 11:55		Aug-16-17 11:05		Aug-16-17 11:50		Aug-16-17 11:15		Aug-16-17 10:10	
Chloride by EPA 300	***Extracted:***	Aug-26-17 10:00		Aug-26-17 10:00		Aug-26-17 15:00		Aug-26-17 15:00		Aug-26-17 15:00	
	Analyzed:	Aug-26-17 21:35		Aug-26-17 21:46		Aug-26-17 22:48		Aug-26-17 23:19		Aug-26-17 23:29	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		123	4.97	334	4.96	154	4.90	816	4.97	263	4.94

Kelsey Brooks
Project Manager

Analytical Report 560619

for

Arcadis - Houston

Project Manager: Jonathan Olsen

HES Transfer Sites

B0048626.1701

29-AUG-17

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

29-AUG-17

Project Manager: **Jonathan Olsen**
Arcadis - Houston
10205 Westheimer Rd., Suite 800
Houston, TX 77042

Reference: XENCO Report No(s): **560619**
HES Transfer Sites
Project Address: Buckeye NM

Jonathan Olsen:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 560619. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 560619 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Kelsey Brooks
Project Manager

Sample Cross Reference 560619

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
VGWUSAT1INJ-06 (2')	S	08-16-17 15:15		560619-001
VGWUSAT1INJ-07 (0.75')	S	08-16-17 14:35		560619-002
VGWUSAT2TRUNK-05 (1')	S	08-16-17 13:05		560619-003
VGWUSAT1INJ-04 (1.95')	S	08-16-17 16:00		560619-004
VGWUSAT2TRUNK-03 (0.80')	S	08-16-17 13:30		560619-005
VGWUSAT1INJ-01 (1.25')	S	08-16-17 14:20		560619-006
VGWUBAT-08 (1')	S	08-16-17 12:45		560619-007
VGWUSAT1INJ-03 (0.55)	S	08-16-17 15:35		560619-008
VGWUBAT-06 (1')	S	08-16-17 12:20		560619-009
VGWUBAT-04 (1')	S	08-16-17 12:35		560619-010
VGWUSAT1INJ-08 (0.80')	S	08-16-17 15:40		560619-011
VGWUSAT2TRUNK-04 (1')	S	08-16-17 13:15		560619-012
VGWUSAT1INJ-05 (1')	S	08-16-17 15:25		560619-013
VGWUSAT1INJ-02 (0.80')	S	08-16-17 14:30		560619-014
VGWUSAT2TRUNK-01 (2')	S	08-16-17 10:45		560619-015
VGWUBAT-01 (1')	S	08-16-17 13:55		560619-016
VGWUBAT-07 (0.90')	S	08-16-17 14:05		560619-017
VGWUBAT-05 (1')	S	08-16-17 12:05		560619-018
VGWUBAT-03 (1.50')	S	08-16-17 11:55		560619-019
VGWUSAT2TRUNK-02 (1.60')	S	08-16-17 11:05		560619-020
VGWUBAT-02 (1')	S	08-16-17 11:50		560619-021
VGWUSAT2TRUNK-07 (1')	S	08-16-17 11:15		560619-022
VGWUSAT2TRUNK-06 (1.16')	S	08-16-17 10:10		560619-023

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3026136 Chloride by EPA 300

Lab Sample ID 560619-011 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 560619-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Certificate of Analytical Results 560619

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT1INJ-06 (2')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-001	Date Collected:	08.16.17 15.15		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**2150**	25.0	mg/kg	08.26.17 17.06		5

Certificate of Analytical Results 560619

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT1INJ-07 (0.75')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-002	Date Collected:	08.16.17 14.35		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1250**	4.99	mg/kg	08.26.17 17.37		1

Certificate of Analytical Results 560619

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT2TRUNK-05 (1')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-003	Date Collected:	08.16.17 13.05		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1220**	4.92	mg/kg	08.26.17 17.48		1

Certificate of Analytical Results 560619

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT1INJ-04 (1.95')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-004	Date Collected:	08.16.17 16.00		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1470**	25.0	mg/kg	08.26.17 17.58		5

Certificate of Analytical Results 560619

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT2TRUNK-03 (0.80')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-005	Date Collected:	08.16.17 13.30		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**2460**	24.5	mg/kg	08.26.17 18.09		5

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT1INJ-01 (1.25')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-006	Date Collected:	08.16.17 14.20		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**102**	4.94	mg/kg	08.26.17 18.40		1

Certificate of Analytical Results 560619

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUBAT-08 (1')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-007	Date Collected:	08.16.17 12.45		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**942**	4.94	mg/kg	08.26.17 18.50		1

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT1INJ-03 (0.55)**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-008	Date Collected:	08.16.17 15.35		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1560**	5.00	mg/kg	08.26.17 19.00		1

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUBAT-06 (1')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-009	Date Collected:	08.16.17 12.20		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**2000**	24.7	mg/kg	08.26.17 19.11		5

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUBAT-04 (1')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-010	Date Collected:	08.16.17 12.35		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**141**	4.95	mg/kg	08.26.17 19.21		1

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT1INJ-08 (0.80')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-011	Date Collected:	08.16.17 15.40		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**303**	4.95	mg/kg	08.26.17 19.31		1

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT2TRUNK-04 (1')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-012	Date Collected:	08.16.17 13.15		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**2910**	24.8	mg/kg	08.26.17 20.02		5

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT1INJ-05 (1')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-013	Date Collected:	08.16.17 15.25		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**4510**	25.0	mg/kg	08.26.17 20.13		5

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT1INJ-02 (0.80')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-014	Date Collected:	08.16.17 14.30		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1400**	24.9	mg/kg	08.26.17 20.44		5

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT2TRUNK-01 (2')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-015	Date Collected:	08.16.17 10.45		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1640**	24.8	mg/kg	08.26.17 20.54		5

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUBAT-01 (1')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-016	Date Collected:	08.16.17 13.55		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**62.0**	4.98	mg/kg	08.26.17 21.04		1

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUBAT-07 (0.90')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-017	Date Collected:	08.16.17 14.05		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**4870**	49.4	mg/kg	08.26.17 21.15		10

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUBAT-05 (1')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-018	Date Collected:	08.16.17 12.05		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**8100**	49.8	mg/kg	08.26.17 21.25		10

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUBAT-03 (1.50')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-019	Date Collected:	08.16.17 11.55		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**123**	4.97	mg/kg	08.26.17 21.35		1

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Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT2TRUNK-02 (1.60')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-020	Date Collected:	08.16.17 11.05		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 10.00	Basis:	Wet Weight
Seq Number:	3026136				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**334**	4.96	mg/kg	08.26.17 21.46		1

Certificate of Analytical Results 560619

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUBAT-02 (1')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-021	Date Collected:	08.16.17 11.50		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 15.00	Basis:	Wet Weight
Seq Number:	3026137				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**154**	4.90	mg/kg	08.26.17 22.48		1

Certificate of Analytical Results 560619

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT2TRUNK-07 (1')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-022	Date Collected:	08.16.17 11.15		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 15.00	Basis:	Wet Weight
Seq Number:	3026137				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**816**	4.97	mg/kg	08.26.17 23.19		1

Certificate of Analytical Results 560619

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id:	**VGWUSAT2TRUNK-06 (1.16')**	Matrix:	Soil	Date Received:	08.18.17 10.17
Lab Sample Id:	560619-023	Date Collected:	08.16.17 10.10		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	08.26.17 15.00	Basis:	Wet Weight
Seq Number:	3026137				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**263**	4.94	mg/kg	08.26.17 23.29		1

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

QC Summary 560619

Arcadis - Houston

HES Transfer Sites

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3026136 Matrix: Solid Date Prep: 08.26.17
MB Sample Id: 730012-1-BLK LCS Sample Id: 730012-1-BKS LCSD Sample Id: 730012-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	253	101	253	101	90-110	0	20	mg/kg	08.26.17 16:46	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3026137 Matrix: Solid Date Prep: 08.26.17
MB Sample Id: 730013-1-BLK LCS Sample Id: 730013-1-BKS LCSD Sample Id: 730013-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	249	100	251	100	90-110	1	20	mg/kg	08.26.17 22:27	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3026136 Matrix: Soil Date Prep: 08.26.17
Parent Sample Id: 560619-001 MS Sample Id: 560619-001 S MSD Sample Id: 560619-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2150	250	2330	72	2320	68	90-110	0	20	mg/kg	08.26.17 17:17	X

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3026136 Matrix: Soil Date Prep: 08.26.17
Parent Sample Id: 560619-011 MS Sample Id: 560619-011 S MSD Sample Id: 560619-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	303	248	567	106	566	106	90-110	0	20	mg/kg	08.26.17 19:42	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3026137 Matrix: Soil Date Prep: 08.26.17
Parent Sample Id: 560619-021 MS Sample Id: 560619-021 S MSD Sample Id: 560619-021 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	154	245	405	102	405	102	90-110	0	20	mg/kg	08.26.17 22:58	

ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

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Lab Work Order #: 560619

Send Results to:

Contact & Company Name: Jonathon Olsen / Arcadis

Telephone: 713-953-4874

Address: 10205 Westheimer Road Suite 800

Fax: NA

City: Houston State: TX Zip: 77042

E-mail Address: jonathon.olsen@arcadis.com

Project Name/Location (City, State): HES Transfer Sites / Buckeye, NM

Project #: B00486261701

Sampler's Printed Name: Ryan Nanny

Sampler's Signature:

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	Chlorides	REMARKS
						E	—	14	7		
VGWUSAT1INJ-06 (2')	8-16-17	1515		✓	SO			1		1	
VGWUSAT1INJ-07(0.75')	8-16-17	1435		✓	SO			1		1	15'S (~65 ms/m)
VGWUSAT2Trunk-05(1')	8-16-17	1305		✓	SO			1		1	
VGWUSAT1INJ-04(1.95')	8-16-17	1600		✓	SO			1		1	
VGWUSAT2Trunk-03(0.80')	8-16-17	1330		✓	SO			1		1	
VGWUSAT1INJ-01(1.25')	8-16-17	1420		✓	SO			1		1	
VGWUBAT-08 (1')	8-16-17	1245		✓	SO			1		1	15'N (~18ms/m)
VGWUSAT1INJ-03(0.55')	8-16-17	1535		✓	SO			1		1	
VGWUBAT-06(1')	8-16-17	1220		✓	SO			1		1	
VGWUBAT-04(1')	8-16-17	1235		✓	SO			1		1	
VGWUSAT1INJ-08(0.80')	8-16-17	1540		✓	SO			1		1	15'SW (~20ms/m)
VGWUSAT2Trunk-04(1')	8-16-17	1315		✓	SO			1		1	
VGWUSAT1INJ-05(1')	8-16-17	1525		✓	SO			1		1	
VGWUSAT1INJ-02(0.80')	8-16-17	1430		✓	SO			1		1	

PARAMETER ANALYSIS & METHOD

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

Matrix Key:
SO - Soil
W - Water
T - Tissue
SE - Sediment
SL - Sludge
A - Air
NL - NAPL/Oil
SW - Sample Wipe
Other: _____

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Temp: ~~1.0~~ 1.3 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 1.0

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Xenco	Cooler Custody Seal (✓)	Printed Name: Ryan Nanny	Printed Name: Shawnee Smith	Printed Name:	Printed Name:
☑ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature:	Signature: Shawnee Smith	Signature:	Signature:
Specify Turnaround Requirements: Standard TAT	Sample Receipt:	Firm: Arcadis	Firm/Courier: Xenco	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time: 8-17-17/1700	Date/Time: 8-18-17 10:17	Date/Time:	Date/Time:

ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

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Lab Work Order # 560619

Send Results to:

Contact & Company Name: Jonathan Olson/Arcadis	Telephone: 713-953-4874
Address: 10205 Westheimer Road	Fax: NA
City: Houston State: TX Zip: 77042	E-mail Address: jonathan.olson@arcadis.com
Project Name/Location (City, State): HES Transfer Sites/Buckeye, NM	Project #: 60048626.1701
Sampler's Printed Name: Ryan Nanny	Sampler's Signature:

Preservative	E						
Filtered (✓)	–						
# of Containers	9						
Container Information	7						

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

Matrix Key:
SO - Soil, SE - Sediment, NL - NAPL/Oil
W - Water, SL - Sludge, SW - Sample Wipe
T - Tissue, A - Air, Other: _____

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	PARAMETER ANALYSIS & METHOD: Chlorides	REMARKS
VGWLSAT2Trunk-01(2')	8-16-17	1045		✓	SO	1	
VGWLBAT-01(1')	8-16-17	1355		✓	SO	1	
VGWLBAT-07(0.90')	8-16-17	1405		✓	SO	1	15'W(~45ms/m)
VGWLBAT-05(1')	8-16-17	1205		✓	SO	1	
VGWLBAT-03(1.50')	8-16-17	1155		✓	SO	1	
VGWLSAT2Trunk-02(1.60')	8-16-17	1105		✓	SO	1	
VGWLBAT-02(1')	8-16-17	1150		✓	SO	1	
VGWLSAT2Trunk-07(1')	8-16-17	1115		✓	SO	1	15'S(~30ms/m)
VGWLSAT2Trunk-06(1.16')	8-16-17	1010		✓	SO	1	

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Temp: 1.3 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 1.0

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Xenco	Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact	Printed Name: Ryan Nanny	Printed Name: Shawnee Smith	Printed Name:	Printed Name:
☑ Cooler packed with ice (✓)		Signature:	Signature: Shawnee Smith	Signature:	Signature:
Specify Turnaround Requirements: Standard TAT	Sample Receipt:	Firm: Arcadis	Firm/Courier: Xenco	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time: 8-17-17/1700	Date/Time: 8-18-17 10:17	Date/Time:	Date/Time:

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Arcadis - Houston

Date/ Time Received: 08/18/2017 10:17:00 AM

Work Order #: 560619

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	1
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**N/A**
#5 *Custody Seals intact on shipping container/ cooler?	**N/A**
#6 Custody Seals intact on sample bottles?	**N/A**
#7 *Custody Seals Signed and dated?	**N/A**
#8 *Chain of Custody present?	**Yes**
#9 Sample instructions complete on Chain of Custody?	**Yes**
#10 Any missing/extra samples?	**No**
#11 Chain of Custody signed when relinquished/ received?	**Yes**
#12 Chain of Custody agrees with sample label(s)?	**Yes**
#13 Container label(s) legible and intact?	**Yes**
#14 Sample matrix/ properties agree with Chain of Custody?	**Yes**
#15 Samples in proper container/ bottle?	**Yes**
#16 Samples properly preserved?	**Yes**
#17 Sample container(s) intact?	**Yes**
#18 Sufficient sample amount for indicated test(s)?	**Yes**
#19 All samples received within hold time?	**Yes**
#20 Subcontract of sample(s)?	**N/A**
#21 VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Jessica Kramer Date: 08/18/2017
Jessica Kramer

Checklist reviewed by: Kelsey Brooks Date: 08/22/2017
Kelsey Brooks